**EPA CONTRACT NO. EP-S1-06-01**
**EPA TASK ORDER NO. 0004-RS-BD-0140**

**EPA Project Officer: Heidi Horahan**
**EPA Task Order Project Officer: David Newton**

# SUPPLEMENTAL HUMAN HEALTH RISK ASSESSMENT
## UNNAMED ISLAND

## PETERSON PURITAN SUPERFUND SITE
## OPERABLE UNIT 2
## Cumberland and Lincoln, Rhode Island

**July 2010**

Document Control Number:
TO0004-SHHRA-072110-525

SDMS DocID 488190

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***Prepared By:***

METCALF & EDDY | AECOM

**701 Edgewater Drive**
**Wakefield, MA 01880**

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**Supplemental Human Health Risk Assessment**
**Unnamed Island**
**Peterson Puritan Site – Operable Unit 2**
**Cumberland and Lincoln, Rhode Island**
**July 2010**

## 1.0 Introduction

This supplemental human health risk assessment (HHRA) evaluates potential human health risks associated with the Unnamed Island portion of the Peterson Puritan Operable Unit 2 (OU2) Superfund Site located in Cumberland and Lincoln, Rhode Island (the site). A baseline HHRA was completed as part of the Remedial Investigation (RI) for OU2 (Arcadis, 2007) for the other subareas of the site including the J.M. Mills Landfill area, debris fields (upstream of the J.M. Mills Landfill), Quinnville Wellfield, Wetlands A, B, C, and D, and the Nunes Parcel in April 2009 (USEPA, 2009c). Since the presumptive remedy approach was initially considered appropriate for the Unnamed Island, soil data were not collected to characterize the impacts of the buried waste on soil quality and to evaluate the risks associated with future soil exposure pathways. However, complications associated with application of the presumptive remedy to areas of buried and surficial waste on the Unnamed Island were recognized. The complications, both technical and regulatory, arose primarily from the island's location within the floodway of the Blackstone River, which results in its complete inundation during flood events. Therefore, since the presumptive remedy may not be applicable, supplemental sampling was performed for the Unnamed Island in order to determine the need to perform remedial actions at this subarea.

This supplemental HHRA is based on the results of the RI completed at the site (Arcadis, 2007) as well as the supplemental sampling conducted by Arcadis US, Inc. at the Unnamed Island in November 2009. The goal of this supplemental HHRA is to evaluate potential human health risks posed by site-related contaminants in surface soil, subsurface soil, leachate, sediment, surface water, and shallow groundwater located on the Unnamed Island and to support any remedial action decision needed to address those risks. Table 1 presents the media and exposure pathways evaluated in this supplemental HHRA for the Unnamed Island.

This supplemental HHRA has been conducted in accordance with the United States Environmental Protection Agency (USEPA) guidance (USEPA, 1989; 1991; 1997a; and 2001), and involves the following four steps: 1) data evaluation, to identify site-related chemicals of interest; 2) exposure assessment, to determine potential exposure pathways and quantify the magnitude of potential exposure; 3) toxicity assessment, to determine types of effects associated with exposures; and 4) risk characterization, to quantify cancer risks and non-cancer health hazards associated with specific exposures at the Unnamed Island. This HHRA is presented in the format outlined in the USEPA guidance entitled *Risk Assessment Guidance for Superfund Volume I – Human Health Evaluation Manual, Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments* (USEPA, 2001).

The supplemental HHRA evaluation steps are discussed in Sections 2 through 4. An uncertainty analysis is presented in Section 5. Summary and conclusions of this supplemental HHRA are presented in Section 6. Finally, Section 7 lists the references cited in this supplemental HHRA.

## 2.0 Data Evaluation

This section briefly describes the datasets used to derive exposure point concentrations (EPCs) and how chemicals of potential concern (COPCs) were identified.

### 2.1 Analytical Data

The analytical data evaluated in this supplemental HHRA were those collected during the RI on the Unnamed Island as well as the supplemental data collected by Arcadis US, Inc. between November 18, 2009 and November 25, 2009. Only validated data provided by Arcadis US, Inc. were used in this supplemental HHRA. Results without data qualifiers, plus those values with J, JEB, JTB, EB, and TB qualifiers, were treated as detected concentrations at the reported/estimated concentrations. Values qualified with U and UJ were treated as non-detects. Values with R qualifiers, indicating the result was rejected during data validation, were not used in the supplemental HHRA.

Thirty-seven surface soil samples (plus three duplicates) and twenty-two subsurface soil samples (plus two duplicates) were collected from the Unnamed Island between 2003 and 2009. All twenty-two subsurface soil samples were collected during the 2009 supplemental data collection activities while eight of the thirty-seven surface soil samples were collected in 2009. Eighteen sediment samples (plus one duplicate) and fifteen surface water samples (plus two duplicates) were collected between 2003 and 2005 as part of the RI investigation. Groundwater data were collected from the Unnamed Island as part of the RI investigation and 2009 supplemental data collection activities. Figure 1 shows the location of the site features of interest and the 2009 sampling locations. Figures 2-1 through 2-7 of the RI Report (Arcadis, 2007) show the sampling locations from 2003 through 2005. The specific environmental samples used are listed in Appendix A (Sample Groupings) by medium.

Background surface water and sediment data, collected from upstream areas of the Blackstone River, were not used to eliminate COPCs in the screening process, but are presented in the RAGS D Table 2 series for completeness.

### 2.2 Chemicals of Potential Concern

The COPC screening conducted as part of this supplemental HHRA used USEPA-recommended screening criteria, which were compared to maximum detected concentrations in site media. The screening criteria used to identify COPCs for environmental media (i.e., surface soil, subsurface soil, sediment, shallow groundwater, leachate, surface water, and outdoor air [trench scenario]) are listed below. Details on COPC screening methodology are briefly discussed in the following subsections.

- Surface and Subsurface Soil – USEPA (2009a) Screening Levels for residential soil
- Groundwater – USEPA (2009a) Screening Levels for tap water
- Leachate – USEPA (2009a) Screening Levels for tap water
- Sediment – USEPA (2009a) Screening Levels for residential soil

- Surface Water – USEPA (2009a) Screening Levels for tap water
- Outdoor Air (Trench Scenario) – USEPA (2009a) Screening Levels for residential air

#### *2.2.1 Soil*

Prior to selecting COPCs, soil data were divided into surface (0 to 1 foot below ground surface [bgs]) and subsurface (greater than 1 foot bgs) data sets. (It should be noted that the Rhode Island Department of Environmental Management's [RIDEM's] definitions of surface soil [0 to 2 feet bgs] and subsurface soil [greater than 2 feet bgs] differ from USEPA Region 1's definitions of surface soil [0 to 1 foot bgs] and subsurface soil [from 1 foot bgs to up to 10 feet bgs or the water table]. The impact of these differences in regulatory definitions of soil intervals on site cleanup decisions will be addressed in the Feasibility Study.)

Duplicate soil samples were averaged with their parent sample prior to risk evaluation. However, duplicate samples were treated as discrete samples in the COPC screening process. Soil COPCs for direct contact exposures (i.e., incidental ingestion and dermal contact) were identified by comparing maximum detected soil concentrations to the USEPA (2009a) Screening Levels for residential soil. Screening levels for non-carcinogens were adjusted to reflect a target hazard quotient (HQ) of 0.1. Those chemicals that exceeded these screening levels were selected as COPCs for the direct contact soil pathway. Surface soil COPCs for this pathway are presented in Table 2.1. Subsurface soil COPCs for the direct contact soil pathway are presented in Table 2.2.

#### *2.2.2 Shallow Groundwater*

Shallow groundwater COPCs for direct contact worker exposures (i.e., ingestion and dermal contact) were identified by comparing maximum detected groundwater concentrations to the USEPA (2009a) Screening Levels for tap water. Groundwater samples were treated as discrete samples. Screening levels for non-carcinogens were adjusted to reflect a target HQ of 0.1. Those chemicals that exceeded these screening levels were selected as COPCs for the direct contact groundwater pathway. Shallow groundwater COPCs for this pathway are presented in Table 2.3.

#### *2.2.3 Leachate*

Because no leachate samples have been collected at the site, analytical data from unfiltered grab water samples collected at the bottom of an open excavation were used in the leachate COPC selection process. To identify leachate COPCs for direct contact exposure (i.e., dermal contact), maximum detected concentrations from the grab water samples were compared to the USEPA (2009a) Screening Levels for tap water. Screening levels for non-carcinogens were adjusted to reflect a target HQ of 0.1. Those chemicals that exceeded these screening levels were selected as COPCs for the direct contact leachate pathway. Leachate COPCs for this pathway are presented in Table 2.4. Once COPCs were selected using the grab water sampling data, surrogate groundwater sampling data were used to quantitatively evaluate the leachate pathway for the Unnamed Island. Due to the high turbidity in the grab water samples, shallow groundwater data are likely to be more representative of contaminant concentrations that may be present in leachate. The surrogate groundwater samples used to evaluate the leachate pathway are presented in Appendix A (Sample Groupings). Groundwater samples were treated as discrete samples.

#### *2.2.4 Sediment*

Sediment COPCs for direct contact exposures (i.e., incidental ingestion and dermal contact) were identified by comparing maximum detected sediment concentrations in site ponds to the USEPA (2009a) Screening Levels for residential soil. Data for duplicate sediment samples were averaged with their parent sample prior to risk evaluation. However, duplicate samples were treated as discrete samples in the COPC screening process. Screening levels for non-carcinogens were adjusted to reflect a target HQ of 0.1. Those chemicals that exceeded these screening levels were selected as COPCs for the direct contact sediment pathway. Sediment COPCs for this pathway are presented in Table 2.5.

#### *2.2.5 Surface Water*

Surface water COPCs for dermal contact were identified by comparing maximum detected surface water concentrations in site ponds to the USEPA (2009a) Screening Levels for tap water. Screening levels for non-carcinogens were adjusted to reflect a target HQ of 0.1. Those chemicals that exceeded these screening levels were selected as COPCs for the direct contact surface water pathway. Duplicate surface water sample data were averaged with their parent sample prior to risk evaluation. However, duplicate samples were treated as discrete samples in the COPC screening process. Both dissolved and total metals surface water data were used in the COPC screening process, but consistent with the USEPA (1989) guidance, only total metals surface water data were used to evaluate the surface water pathway (i.e., dissolved metals data were not used in the quantification of potential risks and hazards). Surface water COPCs for this pathway are presented in Table 2.6.

#### *2.2.6 Outdoor Air (Trench Scenario)*

To evaluate potential outdoor air exposures for intrusive (construction) workers under a trenching scenario, groundwater and soils data from the Unnamed Island were used to estimate potential trench air concentrations resulting from vapor intrusion. Surface and subsurface soil and groundwater data were used in the Johnson & Ettinger (USEPA, 2004b) model to estimate potential trench concentrations. These modeled concentrations were subsequently compared to the USEPA (2009a) Screening Levels for residential air to identify COPCs for this pathway. Specifically, maximum detected concentrations in soil and groundwater were used in the Johnson & Ettinger slab-on-grade model to estimate possible indoor air concentrations (Cbuilding). The Cbuilding concentrations were subsequently compared to the USEPA (2009a) Screening Levels for residential air to identify COPCs for trench air. Outdoor (trench) air COPCs are presented in Tables 2.7 and 2.8 for soil and groundwater contributions, respectively. Outputs from the Johnson & Ettinger advanced soil (SL-ADV) and groundwater (GW-ADV) models for outdoor (trench) air are presented as Appendix B. To model trench air (Cbuilding) using the Johnson & Ettinger model, default parameters were used, except for the following assumptions: groundwater was assumed to be 5 feet bgs, the trench was assumed to measure 3 feet wide by 8 feet long by 8 feet high, the soil type was assumed to be sandy, and the air exchange rate (2 per hour) represents that for a trench scenario derived from the Virginia Department of Environmental Quality (VDEQ) (2007).

### 2.3 Exposure Point Concentrations

EPCs (e.g., 95 percent Upper Confidence Levels [UCLs]) were derived from existing site data using the USEPA ProUCL Software (Version 4.00.04). ProUCL statistical software was used to calculate the UCL of

the unknown population arithmetic mean (USEPA, 2006). The rationale for calculating the UCL term followed the procedures outlined in the ProUCL's User's Guide. Each data set was tested for normality using the Shapiro-Wilk W Test statistic with accompanying Quantile-Quantile (Q-Q) plots. Each data set was also tested for the gamma distribution using the Anderson-Darling and Kolmogorov-Smirnov Empirical Distribution Functions test statistics with accompanying Q-Q plots.

Based on the distribution of the data set, a recommended UCL calculation procedure was followed. In instances where the recommended UCL exceeded the maximum detected concentration, a lower percentage UCL (not less than 95 percent) was used as the EPC consistent with USEPA (2007) guidance. The UCL computation for data sets without any non-detects follows the recommendations in the ProUCL (USEPA, 2006) User's Guide.

For data sets with non-detect observations occurring at multiple detection limits, the Kaplan Meier (KM) estimate method was used. The KM estimate method adjusts for censoring by calculating an estimate of standard error of the mean, which then can be used to calculate a UCL for various methods (e.g., normal approximations, percentile bootstrap, Chebyshev inequality) (USEPA, 2006).

For all media evaluated, the same EPCs were used for both the Reasonable Maximum Exposure (RME) and Central Tendency Exposure (CTE) scenarios with the following exceptions. If ProUCL recommended a UCL that exceeded the maximum detected concentration, a lower percentile UCL or the maximum detected concentration was selected as the EPC. Maximum detected concentrations were also used as EPCs when the sample size was less than 8. In instances where the maximum detected concentration was used as the EPC for the RME scenario, the arithmetic mean was then used as the EPC for the CTE scenario. If the arithmetic mean concentration exceeded the maximum detected concentration, the maximum detected concentration was also used as the EPC for the CTE scenario.

Media- and receptor-specific EPCs are presented in Tables 3.1 through 3.7. ProUCL outputs are provided as Appendix C. Sample groupings that were used to calculate EPCs are provided as Appendix A.

## 3.0 Exposure Assessment

The exposure assessment identifies potential pathways of human exposure to site-related contaminants and estimates the magnitude of that exposure.

### 3.1 Land Use

The Peterson Puritan Superfund site is located in the towns of Cumberland and Lincoln, Rhode Island, along the banks of the Blackstone River, beginning at approximately 1 mile below the Ashton Dam and ending at the Pratt Dam. OU2 includes the land formerly owned and operated as a landfill by Mr. Joseph Marzalkowski and his agent(s)/associate(s) for the purposes of waste transfer and disposal. The Unnamed Island, located within the river, is used recreationally. The *Ashton-Pratt Redevelopment Plan* indicates that redevelopment would consist of enhancing recreational uses of the area, maximizing river and canal access, improving transportation facilities and traffic, and overall improvement of aesthetics.

### 3.2 Exposure Pathways

The exposure pathways quantitatively evaluated in this supplemental HHRA are discussed below for each medium. Table 1 (Selection for Exposure Pathways) presents a summary of these exposure pathways. In addition to those exposure pathways identified in Table 1, the site also presents other physical hazards, such as metal debris, tires, and broken glass. Although these materials are not quantitatively evaluated in this HHRA, potential direct contact exposure of receptors to these materials may also be associated with some risks. These physical hazards will be further considered in the Feasibility Study.

#### 3.2.1 Surface and Subsurface Soil

Surface soil represents a potentially complete exposure pathway for adolescent (ages 9 through 18) trespassers, recreational users (adults and older children 6 through 12 years of age), and construction workers. Subsurface soil exposures are potentially complete for recreational users and construction workers. Potential exposure routes that were quantitatively evaluated as part of the HHRA are incidental ingestion and dermal contact. Inhalation of fugitive dust is likely insignificant due to lack of intrusive activities and dust generation except for the construction worker (see Table 1).

Current scenarios that were quantitatively evaluated as part of this HHRA included:

- exposure of adolescent trespassers to surface soils

Future scenarios that were quantitatively evaluated as part of this HHRA included:

- exposure of recreational users (adults and older children) to surface and subsurface soils
- exposure of construction workers to surface and subsurface soils
- exposure of construction workers to fugitive dust released from surface and subsurface soils

#### 3.2.2 Sediment

Sediment represents a potentially complete exposure pathway for adolescent (ages 9 through 18) trespassers and recreational users (adults and older children 6 through 12 years). Specifically, trespassers and recreational users may be exposed to sediments in Ponds A, D, E, and P and the Excavator Pond. Potential exposure routes quantitatively evaluated as part of this HHRA are incidental ingestion and dermal contact representative of a wading scenario.

Current scenarios quantitatively evaluated as part of this HHRA are:

- exposure of adolescent trespassers to sediments within Ponds A, D, E, and P and the Excavator Pond

Future scenarios quantitatively evaluated as part of this HHRA are:

- exposure of recreational users (adults and older children) to sediments within Ponds A, D, E, P and Excavator Pond

#### *3.2.2.1 Surface Water*

Surface water represents a potentially complete exposure pathway for adolescent (ages 9 through 18) trespassers and recreational users (adults and older children 6 through 12 years). Specifically, trespassers and recreational users may be exposed to surface water in Ponds A, D, E and P. No surface water samples are available for the Excavator Pond as it was found to be dry at the time of sampling. Potential exposure routes that were quantitatively evaluated as part of this HHRA are dermal contact for a wading scenario.

Current scenarios quantitatively evaluated as part of this HHRA are:

- exposure of adolescent trespassers to surface water in Ponds A, D, E and P

Future scenarios quantitatively evaluated as part of this HHRA are:

- exposure of recreational users (adults and older children) to surface water in Ponds A, D, E and P

#### *3.2.2.2 Shallow Groundwater*

Shallow groundwater represents a potentially complete future exposure pathway for construction workers. Construction workers may be exposed to shallow groundwater during intrusive activities. Potential exposure routes that were quantitatively evaluated for the construction worker are incidental ingestion and dermal contact.

#### *3.2.2.3 Leachate*

Leachate at the Unnamed Island was assumed to represent a potentially complete exposure pathway via dermal contact for adolescent (ages 9 through 18) trespassers, recreational users (adults and older children 6 through 12 years), and construction workers. Because true leachate data are not available for the Unnamed Island, shallow groundwater data collected on the Unnamed Island between 2003 and 2009 were used as a surrogate to evaluate this pathway. Exposure of trespassers to leachate was quantitatively evaluated under a current scenario, and exposure of recreational users (adults and older children) and construction workers was quantitatively evaluated under a future scenario.

#### *3.2.2.4 Outdoor Air (Trench)*

Outdoor air within an excavation trench represents a potentially complete future exposure pathway for the construction workers at the Unnamed Island. Specifically, receptors may be exposed to COPCs that volatilize from soils and/or groundwater to ambient air within an excavation trench. Potential outdoor (trench) air concentrations (Cbuilding) were estimated using the Johnson & Ettinger model. These estimated air concentrations were used in the quantification of potential risks and hazards for the construction worker.

### 3.2.3 Exposure Factors

This HHRA used exposure factors that reflect conditions at the site consistent with current scientific and regulatory policy. While some exposure factors are USEPA default values, others are site-specific values that more accurately reflect exposures at the site. Both the RME and CTE scenarios were evaluated in this HHRA. The RME scenario is intended to represent the "highest exposure that is reasonably expected to occur at a site" (USEPA, 1989), and the CTE scenario is intended to represent more realistic exposures. The exposure factors used for the receptors/pathways identified previously are presented in the Table 4 series and are briefly discussed below for each medium (i.e., soil, shallow groundwater, sediment, surface water, leachate, and outdoor air).

#### *3.2.3.1 Reasonable Maximum Exposure*

##### 3.2.3.1.1 Soil

The RME scenario used USEPA (2002) default values for soil ingestion (100 milligrams per day [mg/day] for the trespasser and recreational user, and 330 mg/day for the construction worker. The exposure frequencies used to quantitatively evaluate potential soil exposures for trespassers, recreational users, and construction workers were recommended by the USEPA. For the trespasser and recreational user, it was assumed that these receptors visit the site 104 days per year, which assumes 4 days per week for approximately 6 months. Construction workers were assumed to have more significant exposures to surface and subsurface soils, but for a shorter period of time. Given the types of intrusive activities that might occur at the Unnamed Island, it was assumed that a construction worker may be exposed to soils for 125 days per year for 1 year (assumes that construction activities would occur during a single construction season). For the fugitive dust pathway, construction worker exposures were estimated using a particulate emission factor of $1.36 \times 10^9$ $m^3$/kg (USEPA, 2002). Dust inhalation was assumed to occur 8 hours on each day of the construction activities (125 days per year for 1 year).

To evaluate dermal contact with soils for construction workers, the USEPA (2002 and 2004a) default value for skin surface area was used (3,300 square centimeters [$cm^2$]; assumes hands, arms, and head). The USEPA (2002 and 2004a) default exposure factor for skin surface area for adults, based on residential exposures to soil, is 5,700 $cm^2$, which represents head, forearms, hands, and lower legs; this value was used for the adult recreational user. The surface area for the adolescent trespasser (SA = 5,900 $cm^2$) and older child recreational user (SA = 4,400 $cm^2$) represents the head, forearms, hands, lower legs, and feet. The USEPA (2002 and 2004a) default exposure factor for dermal adherence was used to evaluate potential soil exposures for construction workers (0.3 mg/$cm^2$-day). The dermal adherence factor for the construction worker is based on the 95$^{th}$ percentile for construction workers (USEPA, 2004a). The USEPA (2002 and 2004a) default exposure factors for dermal adherence for adults and children, based on residential exposures to soil, are 0.07 mg/$cm^2$-day (based on the 50$^{th}$ percentile for gardeners) and 0.2 mg/$cm^2$-day (based on the 50$^{th}$ percentile for children playing in wet soil), respectively; these values were used for the adolescent trespasser and adult recreational user (0.07 mg/$cm^2$-day) and child recreational user (0.2 mg/$cm^2$-day), respectively.

3.2.3.1.2 Groundwater

The exposure pathway evaluated included exposure of construction workers to shallow groundwater via incidental ingestion and dermal contact during intrusive activities. To evaluate dermal exposure of construction workers to shallow groundwater, a skin surface area of 2,100 $cm^2$ was used (assumes arms and hands). Similar to the evaluation of soil exposures, it was assumed that a construction worker may be exposed to shallow groundwater for 125 days per year for 1 year (assumes that construction activities would be of limited duration).

3.2.3.1.3 Sediment

The exposure pathways evaluated for sediment included current and future exposure of trespassers and recreational users to sediments within the ponds via incidental ingestion and dermal contact. The exposure parameters used for the trespasser and recreational user under a wading scenario were the same as those used to evaluate soil exposures, except for the exposure frequency, surface areas and dermal adherence factor. An exposure frequency of 52 days per year was used, which equals 2 days per week for approximately 6 months. Surface areas used for trespassers, older child recreational users, and adult recreational users were 7,600 $cm^2$, 4,170 $cm^2$, and 7,310 $cm^2$, respectively. A dermal adherence factor of 0.3 $mg/cm^2$-day was used to evaluate sediment exposures; this value represents the $95^{th}$ percentile for children playing in moist soil (USEPA, 2004a).

3.2.3.1.4 Surface Water

The exposure pathways evaluated for surface water included current and future exposure of trespassers and recreational users to surface water within the ponds via dermal contact under a wading scenario. The exposure parameters used to quantitatively evaluate dermal surface-water exposures for the trespasser and recreational user under a wading scenario were the same as those used to evaluate sediment exposures. The skin surface areas used for the trespasser and recreational user (SA = 7,600 and 7,310 $cm^2$, respectively) wading scenario assume hands, feet, forearms, and lower legs.

3.2.3.1.5 Leachate

The exposure pathways evaluated in this HHRA for leachate included current and future exposure of trespassers, recreational users, and construction workers to leachate at the Unnamed Island. This pathway was quantitatively evaluated using surrogate shallow groundwater data collected from the Unnamed Island. Receptors were assumed to be exposed via dermal contact, and the exposure parameters used in the quantification of potential risks/hazards for leachate for the trespasser and recreational user were the same as those used for surface water, except for the skin surface area. Skin surface areas for the trespasser, adult recreational user, and older child recreational user assumed lower legs, feet, and hands (SA = 3,700, 4,500, and 2,700 $cm^2$, respectively). Surface area for the construction worker assumed arms and hands (2,100 $cm^2$). The RME exposure frequency was 52 days per year for the trespasser and recreational user. An exposure frequency of 125 days/year was used for the construction worker.

3.2.3.1.6 Outdoor Air (Trench)

To evaluate potential future exposure of construction workers to ambient air within an excavation trench at the Unnamed Island, trench concentrations (Cbuilding) were estimated from soil and groundwater concentrations using the Johnson & Ettinger model. Construction workers were assumed to be exposed for 8 hours per day for 125 days per year, which was consistent with the exposure frequency used to evaluate potential soil exposures.

3.2.3.1.7 Fraction Ingested from the Site

It was assumed that site media (e.g., soil, sediment, and surface water) account for 100 percent of potential exposures. This value does not consider exposure of these receptors to other larger and potentially more attractive areas in the region.

*3.2.3.2 Central Tendency Exposure*

3.2.3.2.1 Soil

The CTE scenario used USEPA (2002) default values for soil ingestion (50 mg/day for the trespasser and recreational user, and 330 mg/day for the construction worker). The exposure frequencies used to quantitatively evaluate potential soil exposures for trespassers, recreational users, and construction workers were recommended by the USEPA. For the trespasser and recreational user, it was assumed that these receptors are visiting the site 52 days per year, which assumes 2 days per week for approximately 6 months. Construction workers were assumed to have more significant exposures to surface and subsurface soils, but for a shorter period of time. Given the types of intrusive activities that might occur at the Unnamed Island, it was assumed that a construction worker may be exposed to on-site soils for 62 days per year for 1 year (assumes that construction activities would occur during a single construction season). For the fugitive dust pathway, construction worker exposures were estimated using a particulate emission factor of 1.36 x $10^9$ $m^3$/kg (USEPA, 2002). Dust inhalation was assumed to occur 8 hours on each day of the construction activities (62 days per year for 1 year).

The exposure parameters (e.g., adherence factors, skin surface areas) used to evaluate dermal contact with on-site soils for trespassers, recreational users, and construction workers were the same as those used for the RME scenario.

3.2.3.2.2 Groundwater

The exposure pathway evaluated included exposure of construction workers to shallow groundwater via incidental ingestion and dermal contact during intrusive activities. To evaluate dermal exposure of construction workers to shallow groundwater, a skin surface area value of 2,100 $cm^2$ was used. Similar to the evaluation of soil exposures, it was assumed that a construction worker may be exposed to shallow groundwater for 62 days per year for 1 year (assumes that construction activities would be of limited duration).

3.2.3.2.3 Sediment

The exposure pathways evaluated for sediment included current and future exposure of trespassers and recreational users to sediments within the ponds via incidental ingestion and dermal contact. The exposure parameters used to quantitatively evaluate sediment exposures for the trespasser and recreational user under a CTE wading scenario were the same as those used to evaluate soil exposures, except for the exposure frequency, surface areas, and dermal adherence factor. An exposure frequency of 26 days per year was used, which equals 2 days per week for approximately 3 months. Surface areas used for trespassers, older child recreational users, and adult recreational users were 7,600 $cm^2$, 4,170 $cm^2$, and 7,310 $cm^2$, respectively. A dermal adherence factor of 0.3 was used to evaluate sediment exposures; this value represents the $95^{th}$ percentile for children playing in moist soil (USEPA, 2004a).

3.2.3.2.4 Surface Water

The exposure pathways evaluated for surface water included current and future exposure of trespassers and recreational users to surface water within the ponds via dermal contact under a wading scenario. The exposure parameters used to quantitatively evaluate dermal surface-water exposures for the trespasser and recreational user under a wading scenario were the same as those used to evaluate sediment exposures. The skin surface areas used for the trespasser and recreational user (SA = 7,600 and 7,310 $cm^2$, respectively) wading scenario assume hands, feet, forearms, and lower legs.

3.2.3.2.5 Leachate

The exposure pathways evaluated in this HHRA for leachate included current and future exposure of trespassers, recreational users, and construction workers to leachate at the Unnamed Island. This pathway was quantitatively evaluated using surrogate shallow groundwater data collected on the Unnamed Island. Receptors were assumed to be exposed via dermal contact, and the exposure parameters used in the quantification of potential risks/hazards for leachate were the same as those used for surface water, except for the skin surface area. Skin surface areas for the trespasser, adult recreational user, and older child recreational user assumed lower legs, feet, and hands (SA = 3,700, 4,500, and 2,700 $cm^2$, respectively). Surface area for the construction worker assumed arms and hands (2,100 $cm^2$). The CTE exposure frequency was 26 days per year for the trespasser and recreational user. An exposure frequency of 62 days/year was used for the construction worker.

3.2.3.2.6 Outdoor Air (Trench)

To evaluate potential future exposure of construction workers to ambient air within an excavation trench at the Unnamed Island, trench concentrations were estimated from soil and groundwater concentrations using the Johnson & Ettinger model. Construction workers were assumed to be exposed for 8 hours per day for 62 days per year, which was consistent with the exposure frequency used to evaluate potential soil exposures.

3.2.3.2.7 Fraction Ingested from the Site

It was assumed that site media (e.g., soil, sediment, and surface water) account for 100 percent of potential exposures. This value does not consider exposure of these receptors to other larger and potentially more attractive areas in the region.

*3.2.3.3 Outdoor Air (Trench) Modeling*

To estimate potential outdoor (trench) air concentrations resulting from migration of VOCs and SVOCs from soil and/or groundwater, the Johnson & Ettinger (USEPA, 2004b) slab-on-grade model was used. To be conservative, it was assumed that soils at the Unnamed Island primarily consisted of sand. It was assumed that the excavated trench was 8 feet high, 8 feet long, and 3 feet wide. Depth to groundwater was assumed to be 5 feet bgs. The VDEQ (2007) air exchange rate of 2 per hour was used for the trenching scenario. The VDEQ (2007) air exchange rate of 2 per hour is based on measured ventilation rates of buildings. According to the VDEQ (2007), the air exchange rate is dependent on the ratio of trench width (relative to wind direction) to trench depth; if this ratio is equal to or less than 1, a circulation cell(s) will be set up within the trench that limits the degree of gas exchange with the atmosphere. However, if the ratio of trench width to trench depth is greater than 1, the air exchange is not restricted and is assumed to be upwards of 360 per hour (VDEQ, 2007). Therefore, use of the 2 per hour air exchange rate is thought to be conservative.

The Johnson & Ettinger model outputs for the COPC screening are included in Appendix B. Because no COPCs were selected for the groundwater to outdoor (trench) air pathway, no further evaluation of this pathway was conducted. For the soil to outdoor (trench) air pathway, the same model parameters were used to develop EPCs (i.e., Cbuilding concentrations that were used as EPCs in the quantification of potential risks and hazards). To develop EPCs using the model, UCLs were calculated for the soil COPC data using ProUCL; these UCLs were then used in the model to estimate the infinite source building concentrations that were used in the quantitative evaluation of risks and hazards for the outdoor (trench) air pathway.

### 3.2.4 Intakes

Intakes (i.e., average daily doses) for the ingestion and dermal contact exposure pathways are expressed in milligrams per kilogram of body weight per day (mg/kg-day) and were calculated using the EPC and applying the exposure factors that account for ingestion rates, exposure frequency, exposure duration, body weight, and averaging time.

Intakes for the inhalation exposure pathways are expressed in micrograms per cubic meter (ug/$m^3$) and were calculated using the EPC and applying the exposure factors that account for exposure time, exposure frequency, exposure duration, and averaging time.

Intake equations and associated exposure factors used in this HHRA are presented in the Tables 4 series (Tables 4.1 RME through 4.10 CTE). Intakes for individual exposure pathways and receptors are presented in the Table 7 series.

### 3.3 Toxicity Assessment

The toxicity assessment identifies the potential effects that are associated with exposure to a given chemical. The USEPA's guidance evaluates two types of toxic effects: carcinogenic effects and non-carcinogenic effects. To quantify carcinogenic effects, the USEPA has derived slope factors (SFs) for those chemicals found to cause a dose-related, statistically significant increase in tumor incidence in an exposed population relative to the incidence of tumors observed in an unexposed population. These dose-related incidence rates are usually determined in a laboratory study. SFs are typically developed based on oral toxicity studies and are reported as risk per dose in units of $(mg/kg\text{-}day)^{-1}$. The SFs are used to quantify the potential risk of cancer associated with a given exposure. Unit risk factors are based on inhalation studies and are reported in units of $(ug/m^3)^{-1}$. The weight-of-evidence classifications for carcinogenic COPCs for the oral/dermal pathways are presented in Table 6.1. The weight-of-evidence classifications for carcinogenic COPCs for the inhalation pathway are presented in Table 6.2.

To quantify non-carcinogenic effects, the USEPA has derived oral reference doses (RfDs) in units of mg/kg-day that represent a threshold of toxicity. RfDs are intended to represent "an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime" (USEPA, 1989). Reference concentrations were derived for the inhalation pathway and are presented in units of $ug/m^3$. Table 5.1 presents non-cancer toxicity data for the oral/dermal pathways, and Table 5.2 presents non-cancer toxicity data for the inhalation pathway. Consistent with the USEPA Region 1 guidance, surrogate RfDs were used for non-carcinogenic PAHs lacking toxicity values (e.g., naphthalene for 2-methylnaphthalene).

The oral SFs and RfDs described above were used to evaluate both ingestion and dermal contact exposure routes. Because most oral toxicity values are based on an administered dose, these toxicity values were sometimes adjusted (expressed as an absorbed dose) when evaluating dermal exposure scenarios. The USEPA requires this adjustment only when the gastrointestinal absorption of a compound is less than 50 percent (USEPA, 2004a).

Toxicity data presented are from the USEPA Integrated Risk Information System on-line database (USEPA, 2010), the USEPA Superfund Technical Support Center (STSC), the California Environmental Protection Agency (CalEPA), the Agency for Toxic Substances and Disease Registry (ATSDR), and the USEPA (1997b) Health Effects Assessment Summary Tables. The selection of toxicity values was based on the USEPA (2003b) recommended hierarchy for human health toxicity values. The USEPA (2003b) memorandum on human health toxicity values describes a three-tiered hierarchy that consists of: Tier 1 – Integrated Risk Information System (IRIS); Tier 2 – Provisional Peer Reviewed Toxicity Values developed by STSC; and Tier 3 – Other Toxicity Values, including USEPA and non-USEPA sources, such as CalEPA, (ATSDR), and Health Effects Assessment Summary Tables. To assess dioxin toxicity equivalents (TEQs), the oral slope factor developed by USEPA (1985) has been used since the value is publicly-available, transparent as to its derivation, adequately peer-reviewed, and based on all tumors combined.

The quantitative evaluation of potential risks for carcinogens with a mutagenic mode of action (i.e., carcinogenic PAHs, hexavalent chromium) followed the USEPA guidance entitled *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens* (USEPA, 2005). Specifically, the quantification of cancer risks for child receptors involves the use of age-dependent adjustment factors

(ADAFs). An ADAF of 3 was used for exposures occurring between 6 and less than 16 years of age, and an ADAF of 1 was used for exposures occurring after 16 years of age (USEPA, 2005). These ADAFs were used to quantify potential cancer risks for older children and adolescents for all exposure pathways (i.e., ingestion, dermal contact, and inhalation). This approach was used for all carcinogenic PAHs [i.e., all PAHs with a toxic equivalency factor related to benzo(a)pyrene] and total chromium, evaluated as hexavalent chromium. This methodology is further discussed in Section 3.4.2.

## 3.4 Risk Characterization

The risk characterization integrates the results of the data evaluation, toxicity assessment, and exposure assessment to evaluate potential risks associated with exposure to site-related constituents in site soils, shallow groundwater, sediments, surface water, leachate, and outdoor (trench) air. Consistent with the USEPA (1989) guidance, the potential for carcinogenic risks and non-carcinogenic health hazards are evaluated separately.

The RAGS D Table 7 series and the Table 9 series present the cancer and non-cancer intakes, as well as the cancer risks and non-cancer hazards, respectively. The Table 8 series are not presented as part of this supplemental HHRA because radiation risks are not of concern for the site. The Table 10 series which present the media and exposure points with risks and hazards above the risk management criteria (i.e., incremental lifetime cancer risks [ILCRs] greater than $1 \times 10^{-4}$ and target organ hazard indices [HIs] greater than 1) are also not present as part of this supplemental HHRA because none of the cumulative receptor cancer risks calculated exceed the risk management criteria.

### 3.4.1 Non-Carcinogenic Health Hazards

The HI is used to characterize potential non-carcinogenic health hazards associated with exposure to multiple chemicals. This approach assumes that sub-threshold chronic exposures to multiple chemicals are additive. However, HQs should only be summed for constituents with the same target organ. The Table 7 series presents a cumulative HI, while the Table 9 series presents target organ-specific HIs. The HI is calculated as follows:

$$\mathbf{HI = E1/RfD1 + E2/RfD2 + \ldots + Ei/RfDi}$$

where:

HI = Hazard Index

E/RfD = HQ

Ei = Exposure intake for the $i^{th}$ chemical (mg/kg-day)

RfDi = RfD for the $i^{th}$ chemical

An HQ value greater than 1 indicates that a calculated exposure is greater than the RfD for a given constituent and that there may be some potential for health concerns. Similarly, an HI greater than 1 indicates that overall exposure to all chemicals of interest may present a concern (USEPA, 1989).

The quantification of potential non-cancer hazards associated with the water pathways (i.e., surface water and shallow groundwater) followed Exhibit 1-2 in the USEPA (2004a) RAGS Part E guidance. Specifically, if dermal assessment was not recommended in USEPA (2004a) RAGS Part E, no further evaluation of the dermal pathway was conducted for that constituent. Documentation related to the dermal pathway is provided in Appendix E.

Non-carcinogenic health hazards for each receptor are discussed separately below.

##### *3.4.1.1 Current Adolescent Trespasser*

RME and CTE non-cancer hazards for the current adolescent trespasser exposed to surface soil, leachate, surface water, and sediment were less than the USEPA target HI of 1. The total receptor RME HI is 0.3 and the CTE HI is 0.1. Compound-specific HQs and route-specific HIs are presented in Tables 7.1 RME and CTE and Tables 9.1 RME and CTE.

##### *3.4.1.2 Future Recreational User*

RME and CTE non-cancer hazards for the future older child and adult recreational user exposed to surface and subsurface soil, leachate, surface water, and sediment were less than the USEPA target HI of 1. For the adult, the total receptor RME HI is 0.3 and the CTE HI is 0.09. For the older child, the total receptor RME HI is 0.6 and the CTE HI is 0.2. Compound-specific HQs and route-specific HIs are presented in Tables 7.2 RME and CTE for the adult and Tables 7.3 RME and CTE for the older child. The higher of the older child and adult HIs (i.e., the older child HI) is presented on Tables 9.2 RME and CTE.

##### *3.4.1.3 Future Construction Worker*

RME and CTE non-cancer hazards for the future construction worker exposed to surface and subsurface soil, shallow groundwater, leachate, and outdoor (trench) air were less than the USEPA target HI of 1. The total receptor RME HI is 0.7 and the CTE HI is 0.4. Compound-specific HQs and route-specific HIs are presented in Tables 7.4 RME and CTE and Tables 9.3 RME and CTE.

##### *3.4.1.4 Lead Evaluation*

A lead evaluation was conducted for the Unnamed Island. The lead evaluation is presented in Appendix D and summarized briefly here. Specifically, the USEPA (2003c) Adult Lead Model (ALM), as updated in 2009 (USEPA, 2009b), was used to evaluate potential risks associated with exposure of human receptors to lead in site-related media. The lead evaluation identified the construction workers scenario as having estimated lead risks above the USEPA target. Estimated lead risks for future recreational users and current trespassers were less than the USEPA target.

#### 3.4.2 Carcinogenic Risk

Carcinogenic risk is expressed as a probability of developing cancer over the course of a lifetime as a result of a given level of exposure (USEPA, 1989) (also referred to as “excess cancer risk”). The Table 7 series and Table 9 series present cancer risks for individual COPCs for each exposure pathway and receptor. As

stated previously, the Table 8 series is not presented as part of this supplemental HHRA because radiation risks are not of concern for the site.

For a given chemical and exposure route, carcinogenic risk is calculated as follows:

**Risk = E x SF**

where:

E = Exposure Intake (mg/kg-day)

SF = Slope Factor $(mg/kg\text{-}day)^{-1}$

To assess overall cancer risk, risks from various COPCs are assumed to be additive and are summed (USEPA, 1989).

The USEPA uses a range of cancer risks of $1 \times 10^{-4}$ to $1 \times 10^{-6}$ as a "target range within which the Agency strives to manage risks as part of a Superfund cleanup" (USEPA, 1991). The National Contingency Plan states that "for known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between $1 \times 10^{-4}$ to $1 \times 10^{-6}$" (USEPA, 2003d). The RIDEM's target risk range is $1 \times 10^{-5}$ to $1 \times 10^{-6}$.

The quantification of potential cancer risks associated with the water pathways (i.e., surface water and groundwater) followed Exhibit 1-2 in the USEPA (2004a) RAGS Part E guidance. Specifically, if dermal assessment was not recommended in USEPA (2004a) RAGS Part E, no further evaluation of the dermal pathway was conducted for that constituent. Documentation related to the dermal pathway is provided in Appendix E.

For older child and adolescent receptors, the quantification of potential cancer risks for carcinogens with a mutagenic mode of action (i.e., carcinogenic polycyclic aromatic hydrocarbons [PAHs], hexavalent chromium) followed the USEPA guidance entitled *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens* (USEPA, 2005). The quantification of cancer risks for child receptors involves the use of ADAFs. Specifically, an ADAF of 3 was used for exposures occurring between 6 and less than 16 years of age, and an ADAF of 1 was used for exposures occurring after 16 years of age (USEPA, 2005). These ADAFs were used to quantify potential cancer risks for older children and adolescents for all exposure pathways (i.e., ingestion, dermal contact, and inhalation), where applicable. The following general equation demonstrates how ADAFs were incorporated into the risk calculations:

**Risk = Intake (mg/kg-day) x SF $(mg/kg\text{-}day)^{-1}$ x ADAF**

The above equation was used to quantify potential cancer risks for child receptors for carcinogenic PAHs [i.e., all PAHs with a toxic equivalency factor related to benzo(a)pyrene] and hexavalent chromium. The early life cancer risk calculation for the older child recreational user and adolescent trespasser are provided in Appendix F.

Carcinogenic risks for each receptor are discussed separately below.

#### *3.4.2.1 Current Adolescent Trespasser*

RME and CTE cancer risks for the current adolescent trespasser exposed to surface soil, leachate, surface water, and sediment were within the USEPA target risk range of $1 \times 10^{-4}$ to $1 \times 10^{-6}$. The total receptor RME ILCR is $4 \times 10^{-5}$ and the CTE ILCR is $1 \times 10^{-5}$. Compound-specific ILCRs and route-specific ILCRs are presented in Tables 7.1 RME and CTE and Tables 9.1 RME and CTE.

#### *3.4.2.2 Future Recreational User*

RME and CTE cancer risks for the future older child and adult recreational user exposed to surface and subsurface soil, leachate, surface water, and sediment were within the USEPA target risk range of $1 \times 10^{-4}$ to $1 \times 10^{-6}$. For the adult, the total receptor ILCR is $4 \times 10^{-5}$ and the CTE ILCR is $1 \times 10^{-5}$. For the older child, the total receptor RME ILCR is $6 \times 10^{-5}$ and the CTE ILCR is $2 \times 10^{-5}$. The total receptor (older child plus adult) ILCR is $1 \times 10^{-4}$ for the RME scenario and $3 \times 10^{-5}$ for the CTE scenario. Compound-specific ILCRs and route-specific ILCRs are presented in Tables 7.2 RME and CTE for the adult and Tables 7.3 RME and CTE for the older child. The summed ILCRs for the older child and adult are presented on Tables 9.2 RME and CTE.

#### *3.4.2.3 Future Construction Worker*

RME and CTE cancer risks for the future construction worker exposed to surface and subsurface soil, leachate, shallow groundwater, and outdoor (trench) air were within the USEPA target risk range of $1 \times 10^{-4}$ to $1 \times 10^{-6}$. The total receptor RME ILCR is $5 \times 10^{-6}$ and the CTE ILCR is $2 \times 10^{-6}$. Compound-specific ILCRs and route-specific ILCRs are presented in Tables 7.4 RME and CTE and Tables 9.3 RME and CTE.

### 3.4.3 Summary

The following table presents a summary of total risks and hazards (risks/hazards that exceed a cancer risk of $1 \times 10^{-4}$ and a target organ HI of 1 are highlighted):

| Scenario/ Receptor | Exposure Media | RME or CTE | Total Cancer Risks | Total Noncancer Risks | Media > 1E-04 or HI > 1 | Major contributors to risk (> 1E-06, HI > 1) |
|---|---|---|---|---|---|---|
| Current Adolescent Trespasser | surface soil, leachate, surface water, sediment | RME | 4E-05 | 3E-01 | | N/A |
| | | CT | 1E-05 | 1E-01 | | |
| Current/Future Young Child/Adult Rec. User | Surface and subsurface soil, leachate, surface water, sediment | RME | 1E-04 | 6E-01 | | N/A |
| | | CT | 3E-05 | 2E-01 | | |
| Future Adult Construction Worker | surface and subsurface soil, shallow groundwater, outdoor (trench) air | RME | 5E-06 | 7E-01 | | N/A |
| | | CT | 2E-06 | 4E-01 | | |

Notes:
HI - Hazard Index
RME – Reasonable Maximum Exposure
CTE – Central Tendency Exposure
N/A - Not Applicable

### 3.5 Uncertainty Analysis

There are various sources of uncertainty inherent in the risk assessment process. These include uncertainties associated with exposure parameters and toxicity factors for which conservative assumptions are typically used so as not to underestimate risk. The objective of an uncertainty analysis is to present key information regarding assumptions and uncertainties in the risk assessment process to place the quantitative risk estimates in proper perspective (USEPA, 1989).

#### 3.5.1 Exposure Factors

Sources of uncertainty in this HHRA include exposure factors, such as ingestion rates, fraction ingested factors, and exposure frequencies. The majority of the exposure factors used in this HHRA were USEPA-recommended default values that may over-estimate actual site exposure conditions. For example, use of the 330 mg/day soil ingestion rate for construction workers is a conservative approach in that actual exposures are unlikely to be higher and may actually be lower than the default value.

The exposure frequencies used to evaluate soil, sediment, surface water, and leachate exposures for trespassers and recreational users may be overly conservative given the size of the Unnamed Island. Media were assumed to represent 100 percent of potential exposure (i.e., FI = 1), which may be conservative given that trespassers and recreational users may be frequenting other attractive areas within the region rather than just the Unnamed Island itself. The ingestion factors (e.g., soil and sediment) are conservative in that they assume an individual's exposure occurs only at the Unnamed Island, and it does not consider exposure to other environmental media associated with other non-site-related activities (e.g., residential gardening). Using these exposure parameters to estimate potential risk is a conservative

approach, indicating risks are unlikely to be higher and may actually be lower than the risk estimates presented in this supplemental HHRA.

### 3.5.2 Implementation of Supplemental Cancer Guidance

This supplemental HHRA used the *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposures to Carcinogens* (USEPA, 2005) in the quantitative evaluation of carcinogenic risks for PAHs and hexavalent chromium. Specifically, the USEPA requested that ADAFs be applied to increase potential risk estimates for child receptors (i.e., older children and adolescents) exposed to compounds with mutagenic modes of action. The basis for this adjustment, as reported in the USEPA guidance (2005), is a limited number of animal studies in which tumor incidences were reported for both early-life stages and adults as separate experimental groups. To quantify the potential difference in susceptibility between early-life and adult exposure, the USEPA (2005) estimated the ratio of potency from early life exposure to the potency from adult exposure (USEPA, 2005). The resulting ADAFs are primarily based on studies of acute, repeated, and lifetime exposures for six chemicals with a mutagenic mode of action (USEPA, 2005). The ADAF of 3 for children ages 6 to less than 16 years represents a midpoint between 1 (i.e., no adjustment for adult exposure) and 10 (i.e., 10-fold adjustment for first 2 years of life) on a logarithmic scale (USEPA, 2005). These ADAFs are conservative in that many of the chemical-specific ratios were less than 1 (i.e., 45 percent of the ratios used to derive the ADAF of 10 were less than 1 as indicated in Table 8 of the USEPA guidance [2005]). Further, applying these ADAFs to already-conservative upper-bound SFs provides a conservative upper-bound estimate of potency.

### 3.5.3 Data Usability

The 2009 supplemental sampling data for the Unnamed Island were validated and qualified following Region I data validation guidelines, which requires qualification of data as unusable if associated quality control measurements (for both quantitative and qualitative identification) indicate high uncertainty in the results. Less than 1% of the data (66 results of a total of 7891 results reported, or 0.84%) were qualified unusable. The unusable data do not represent a significant data gap.

The majority of rejected data (34 results) were for 1,4-dioxane analysis in soil. Rejection of 1,4-dioxane in soil results may not be considered a major gap for the following reasons:

- Environmental contamination by 1,4-dioxane is usually associated with its use as a stabilizer for chlorinated solvents. The soil data do not indicate a significant release of chlorinated solvents, inferring that 1,4-dioxane is unlikely to also be present in significant concentrations.

- 1,4-dioxane is an environmental concern due to hits high water solubility and faster migration through groundwater relative to the chlorinated solvents it is associated with. However, all of the groundwater samples were non-detect for 1,4-dioxane, implying there was not a nearby source area of 1,4-dioxane. It should be noted that the laboratory analyzed for 1,4-dioxane in the five groundwater samples (four wells plus a field duplicate) using the SVOC method, and data required no qualification.

Seven results for benzaldehyde were rejected. Although this target analyte is present in site soil, with 14 detections in the remaining 31 results considered usable, the highest detection was an estimated 0.33

mg/kg compared to the USEPA risk-based screening level (HQ = 0.1) of 780 mg/kg. Therefore, it is unlikely that benzaldehyde is present in soil at a level of concern.

Three SVOC target analytes (hexachlorocyclopentadiene, 4-chloroaniline, and 3,3'-dichlorobenzidine) were rejected in one sample. There were no detections of these compounds in any other samples, and therefore, the rejection of these data points is unlikely to represent a significant data gap.

There were 22 rejections of pesticide data (12 for 4,4'-DDT, and lesser numbers of four other target analytes). Of data that was not considered unusable, there were no detections above USEPA risk-based screening levels.

Approximately 18% of the data were qualified as estimated (with a J qualifier). Data qualified as estimated are still considered usable. Though the rejection and qualification of data increase the uncertainty of the risk evaluation, overall the data set was considered usable for the risk assessment.

### 3.6 Summary and Conclusions

Results of this HHRA indicate that risks/hazards for soil, sediment, surface water, and leachate for trespassers and recreational users, and soil, shallow groundwater, and outdoor (trench) air for construction workers were within USEPA target levels (i.e., risk range of $1 \times 10^{-4}$ to $1 \times 10^{-6}$; HI of 1).

The lead evaluation identified the construction workers scenario as having estimated lead risks above the USEPA target. Estimated lead risks for future recreational users and current trespassers were less than the USEPA target.

In addition to lead, physical hazards, such as metal debris, tires, and broken glass at the Unnamed Island may also present some risks. These physical hazards will be further considered in the Feasibility Study.

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TABLE 1

SELECTION OF EXPOSURE PATHWAYS

UNNAMED ISLAND
PETERSON-PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Scenario Timeframe | Medium | Exposure Medium | Exposure Point | Receptor Population | Receptor Age (1) | Exposure Route | Type of Analysis | Rationale for Selection or Exclusion of Exposure Pathway |
|---|---|---|---|---|---|---|---|---|
| Current | Soil | Surface Soil | Unnamed Island | Trespasser | Adolescent | Dermal | Quant | Evidence of trespassing exists. Access by boat may occur infrequently. |
| | | | | | | Inhalation | Qual | Dust inhalation likely insignificant due to lack of invasive activities and dust generation while trespassing. |
| | | | | | | Ingestion | Quant | Evidence of trespassing exists. Access by boat may occur infrequently. |
| | Leachate | Leachate | Unnamed Island | Trespasser | Adolescent | Dermal | Quant | Contact with leachate while trespassing may occur. |
| | Surface Water | Surface Water | Unnamed Island | Trespasser | Adolescent | Dermal | Quant | Wading may occur following access via boat. |
| | | | | | | Ingestion | Qual | Wading scenario. Ingestion of surface water unlikely during wading. |
| | Sediment | Sediment | Unnamed Island | Trespasser | Adolescent | Dermal | Quant | Wading may occur following access via boat. |
| | | | | | | Ingestion | Quant | Wading scenario. Ingestion of sediment is likely during wading. |
| Future | Groundwater | Shallow Groundwater | Unnamed Island | Construction Worker | Adult | Dermal | Quant | Contact with shallow groundwater during future excavation may occur. |
| | | | | | | Ingestion | Quant | Incidental ingestion of shallow groundwater may occur during future excavation activites. |
| | Soil | Surface/ Subsurface Soil | Unnamed Island | Recreational User | Adult | Dermal | Quant | Assumes future recreational site use. |
| | | | | | | Inhalation | Qual | Dust inhalation likely insignificant due to lack of invasive activities and dust generation. |
| | | | | | | Ingestion | Quant | Assumes future recreational site use. |
| | | | | | Older Child | Dermal | Quant | Assumes future recreational site use. |
| | | | | | | Inhalation | Qual | Dust inhalation likely insignificant due to lack of invasive activities and dust generation. |
| | | | | | | Ingestion | Quant | Assumes future recreational site use. |
| | | | | Construction Worker | Adult | Dermal | Quant | Future utility/construction work on-site may be necessary during recreational development. |
| | | | | | | Inhalation | Quant | Exposure to fugitive dust likely during trenching activities. |
| | | | | | | Ingestion | Quant | Future utility/construction work on-site may be necessary during recreational development. |

TABLE 1

SELECTION OF EXPOSURE PATHWAYS

UNNAMED ISLAND
PETERSON-PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Scenario Timeframe | Medium | Exposure Medium | Exposure Point | Receptor Population | Receptor Age (1) | Exposure Route | Type of Analysis | Rationale for Selection or Exclusion of Exposure Pathway |
|---|---|---|---|---|---|---|---|---|
| | Soil/ Groundwater | Trench Air | Unnamed Island | Construction Worker | Adult | Inhalation | Quant | Volatile compounds present in soil and groundwater may impact trench air. |
| | Leachate | Leachate | Unnamed Island | Recreational User | Adult | Dermal | Quant | Contact with leachate may occur during recreational use. |
| | | | | | Older Child | Dermal | Quant | Contact with leachate may occur during recreational use. |
| | | | | Construction Worker | Adult | Dermal | Quant | Contact with leachate may occur during future excavation work. |
| | Surface Water | Surface Water | Unnamed Island | Recreational User | Adult | Dermal | Quant | Assumes future recreational site use. |
| | | | | | | Ingestion | Qual | Wading scenario. Ingestion of surface water unlikely during wading. |
| | | | | | Older Child | Dermal | Quant | Assumes future recreational site use. |
| | | | | | | Ingestion | Qual | Wading scenario. Ingestion of surface water unlikely during wading. |
| | Sediment | Sediment | Unnamed Island | Recreational User | Adult | Dermal | Quant | Assumes future recreational site use. |
| | | | | | | Ingestion | Quant | Wading scenario. Ingestion of sediment is likely during wading. |
| | | | | | Older Child | Dermal | Quant | Assumes future recreational site use. |
| | | | | | | Ingestion | Quant | Wading scenario. Ingestion of sediment is likely during wading. |

(1) An adolescent is age 9-18 years old; an older child is age 6-12 years old.

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unnamed Island | | | | | | | | | | | | | | | |
| | 75-35-4 | 1,1-Dichloroethene | 0.005 J | 0.005 J | mg/Kg | SO-007-UI | 1 / 35 | 0.00157 - 0.014 | 0.005 | N/A | 24 n | N/A | N/A | N | BSL |
| | 120-82-1 | 1,2,4-Trichlorobenzene | 0.011 | 0.011 | mg/Kg | SO-W01-UI | 1 / 35 | 0.00157 - 0.014 | 0.011 | N/A | 6.2 n | N/A | N/A | N | BSL |
| | 106-46-7 | 1,4-Dichlorobenzene | 0.003 J | 0.075 | mg/Kg | SO-W01-UI | 2 / 35 | 0.00157 - 0.014 | 0.075 | N/A | 2.4 c | N/A | N/A | N | BSL |
| | 78-93-3 | 2-Butanone | 0.012 | 0.044 | mg/Kg | SO-W01-UI | 2 / 35 | 0.00393 - 0.014 | 0.044 | N/A | 2800 n | N/A | N/A | N | BSL |
| | 67-64-1 | Acetone | 0.00309 J | 0.13 | mg/Kg | SO-W01-UI | 10 / 35 | 0.0052 - 0.051 | 0.13 | N/A | 6100 n | N/A | N/A | N | BSL |
| | 71-43-2 | Benzene | 0.002 J | 0.002 J | mg/Kg | SO-W03-UI | 1 / 35 | 0.00157 - 0.014 | 0.002 | N/A | 1.1 c | N/A | N/A | N | BSL |
| | 75-15-0 | Carbon disulfide | 0.005 J | 0.005 J | mg/Kg | SO-013-UI | 1 / 35 | 0.00157 - 0.014 | 0.005 | N/A | 82 n | N/A | N/A | N | BSL |
| | 56-23-5 | Carbon tetrachloride | 0.004 J | 0.00602 | mg/Kg | SO-209-UI (0-1') | 2 / 35 | 0.00157 - 0.014 | 0.00602 | N/A | 0.25 c | N/A | N/A | N | BSL |
| | 108-90-7 | Chlorobenzene | 0.003 J | 0.005 J | mg/Kg | SO-W01-UI | 2 / 35 | 0.00157 - 0.014 | 0.005 | N/A | 29 n | N/A | N/A | N | BSL |
| | 110-82-7 | Cyclohexane | 0.002 J | 0.002 J | mg/Kg | SO-W01-UI | 1 / 35 | 0.00157 - 0.014 | 0.002 | N/A | 700 n | N/A | N/A | N | BSL |
| | 108-87-2 | Cyclohexane, methyl- | 0.004 J | 0.004 J | mg/Kg | SO-W01-UI | 1 / 35 | 0.00157 - 0.014 | 0.004 | N/A | 700 n | N/A | N/A | N | BSL |
| | 100-41-4 | Ethylbenzene | 0.001 J | 0.001 J | mg/Kg | SO-W01-UI | 1 / 35 | 0.00157 - 0.014 | 0.001 | N/A | 5.4 c | N/A | N/A | N | BSL |
| | 98-82-8 | Isopropylbenzene | 0.006 J | 0.006 J | mg/Kg | SO-W01-UI | 1 / 35 | 0.00157 - 0.014 | 0.006 | N/A | 210 n | N/A | N/A | N | BSL |
| | 79-20-9 | Methyl acetate | 0.00211 J | 0.00825 J | mg/Kg | SO-223F-UI-0-1' | 2 / 35 | 0.00208 - 0.014 | 0.00825 | N/A | 7800 n | N/A | N/A | N | BSL |
| | 75-09-2 | Methylene chloride | 0.004 J | 0.004 J | mg/Kg | SO-200-UI (0-1') | 1 / 35 | 0.00393 - 0.025 | 0.004 | N/A | 11 c | N/A | N/A | N | BSL |
| | 127-18-4 | Tetrachloroethene | 0.00212 J | 0.025 | mg/Kg | SO-W03-UI | 4 / 35 | 0.00157 - 0.014 | 0.025 | N/A | 0.55 c | N/A | N/A | N | BSL |
| | 108-88-3 | Toluene | 0.0008 J | 0.002 J | mg/Kg | SO-FD02 | 6 / 35 | 0.00157 - 0.014 | 0.002 | N/A | 500 n | N/A | N/A | N | BSL |
| | 1330-20-7 | Xylene (Total) | 0.015 | 0.015 | mg/Kg | SO-W01-UI | 1 / 27 | 0.006 - 0.014 | 0.015 | N/A | 63 n | N/A | N/A | N | BSL |
| | | | | | | | | | | | | | | | |
| | 92-52-4 | 1,1'-Biphenyl | 0.027 J | 0.11 J | mg/Kg | SO-015-UI | 6 / 34 | 0.148 - 0.764 | 0.11 | N/A | 390 n | N/A | N/A | N | BSL |
| | 91-57-6 | 2-Methylnaphthalene | 0.0322 | 0.37 J | mg/Kg | SO-015-UI | 19 / 34 | 0.34 - 0.4 | 0.37 | N/A | 31 n | N/A | N/A | N | BSL |
| | 106-44-5 | 4-Methylphenol | 0.059 J | 0.059 J | mg/Kg | SO-W02-UI | 1 / 34 | 0.148 - 0.764 | 0.059 | N/A | 31 n | N/A | N/A | N | BSL |
| | 83-32-9 | Acenaphthene | 0.0248 | 1.3 | mg/Kg | SO-015-UI | 18 / 34 | 0.34 - 0.41 | 1.3 | N/A | 340 n | N/A | N/A | N | BSL |
| | 208-96-8 | Acenaphthylene | 0.024 J | 0.43 | mg/Kg | SO-078-UI | 25 / 34 | 0.34 - 0.4 | 0.43 | N/A | 3.6 c | N/A | N/A | N | BSL |
| | 98-86-2 | Acetophenone | 0.053 J | 0.86 J | mg/Kg | SO-086-UI | 4 / 34 | 0.148 - 0.764 | 0.86 | N/A | 780 n | N/A | N/A | N | BSL |
| | 120-12-7 | Anthracene | 0.037 J | 1.1 | mg/Kg | SO-015-UI | 30 / 34 | 0.35 - 0.38 | 1.1 | N/A | 1700 n | N/A | N/A | N | BSL |
| | 100-52-7 | Benzaldehyde | 0.021 J | 0.33 J | mg/Kg | SO-200-UI (0-1') | 19 / 34 | 0.18 - 0.764 | 0.33 | N/A | 780 n | N/A | N/A | N | BSL |
| | 50-32-8 | Benzo(a)pyrene | 0.085 J | 4 J | mg/Kg | SO-015-UI | 34 / 34 | N/A | 4 | N/A | 0.015 c | N/A | N/A | Y | ASL |
| | 205-99-2 | Benzo(b)fluoranthene | 0.12 J | 6.4 | mg/Kg | SO-015-UI | 31 / 31 | N/A | 6.4 | N/A | 0.15 c | N/A | N/A | Y | ASL |
| | 191-24-2 | Benzo(g,h,i)perylene | 0.043 J | 2.7 | mg/Kg | SO-015-UI | 34 / 34 | N/A | 2.7 | N/A | 3.6 c | N/A | N/A | N | BSL |
| | 207-08-9 | Benzo(k)fluoranthene | 0.036 J | 2.41 | mg/Kg | SO-200-UI (0-1') | 34 / 34 | N/A | 2.41 | N/A | 1.5 c | N/A | N/A | Y | ASL |
| | 56-55-3 | Benzo[a]anthracene | 0.08 J | 4.5 | mg/Kg | SO-015-UI | 34 / 34 | N/A | 4.5 | N/A | 0.15 c | N/A | N/A | Y | ASL |
| | 117-81-7 | bis(2-Ethylhexyl)phthalate | 0.13 J | 260 J | mg/Kg | SO-086-UI | 21 / 34 | 0.34 - 0.64 | 260 | N/A | 35 c | N/A | N/A | Y | ASL |
| | 85-68-7 | Butyl benzyl phthalate | 0.038 J | 0.29 J | mg/Kg | SO-W02-UI | 7 / 34 | 0.148 - 3.4 | 0.29 | N/A | 260 c | N/A | N/A | N | BSL |
| | 86-74-8 | Carbazole | 0.024 J | 0.99 | mg/Kg | SO-015-UI | 18 / 34 | 0.148 - 0.764 | 0.99 | N/A | N/A | N/A | N/A | Y | NSL |
| | 218-01-9 | Chrysene | 0.092 J | 5 | mg/Kg | SO-015-UI | 33 / 34 | 0.37 | 5 | N/A | 15 c | N/A | N/A | N | BSL |
| | 53-70-3 | Dibenz[a,h]anthracene | 0.041 J | 0.75 | mg/Kg | SO-015-UI | 29 / 34 | 0.35 - 3.4 | 0.75 | N/A | 0.015 c | N/A | N/A | Y | ASL |

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 132-64-9 | Dibenzofuran | 0.061 J | 1.1 | mg/Kg | SO-015-UI | 14 / 34 | 0.148 - 0.764 | 1.1 | N/A | N/A | N/A | N/A | Y | NSL |
| | 84-66-2 | Diethylphthalate | 0.56 J | 0.56 J | mg/Kg | SO-W02-UI | 1 / 34 | 0.148 - 0.764 | 0.56 | N/A | 4900 n | N/A | N/A | N | BSL |
| | 84-74-2 | Di-N-Butyl phthalate | 0.023 J | 0.39 J | mg/Kg | SO-W02-UI | 11 / 34 | 0.148 - 0.764 | 0.39 | N/A | 610 n | N/A | N/A | N | BSL |
| | 117-84-0 | Di-N-Octyl phthalate | 0.145 J | 27 J | mg/Kg | SO-W04-UI | 9 / 34 | 0.148 - 3.4 | 27 | N/A | 610 n | N/A | N/A | N | BSL |
| | 206-44-0 | Fluoranthene | 0.14 J | 9 J | mg/Kg | SO-015-UI | 34 / 34 | N/A | 9 | N/A | 230 n | N/A | N/A | N | BSL |
| | 86-73-7 | Fluorene | 0.0327 | 1.1 | mg/Kg | SO-015-UI | 21 / 34 | 0.34 - 0.4 | 1.1 | N/A | 230 n | N/A | N/A | N | BSL |
| | 193-39-5 | Indeno(1,2,3-cd)pyrene | 0.052 J | 2.4 | mg/Kg | SO-015-UI | 34 / 34 | N/A | 2.4 | N/A | 0.15 c | N/A | N/A | Y | ASL |
| | 91-20-3 | Naphthalene | 0.04 J | 0.87 | mg/Kg | SO-015-UI | 26 / 37 | 0.0048 - 0.4 | 0.87 | N/A | 3.6 c | N/A | N/A | N | BSL |
| | 98-95-3 | Nitrobenzene | 0.53 J | 0.53 J | mg/Kg | SO-W02-UI | 1 / 34 | 0.148 - 0.764 | 0.53 | N/A | 4.8 c | N/A | N/A | N | BSL |
| | 86-30-6 | N-Nitrosodiphenylamine | 1.8 | 1.8 | mg/Kg | SO-W01-UI | 1 / 34 | 0.148 - 0.764 | 1.8 | N/A | 99 c | N/A | N/A | N | BSL |
| | 85-01-8 | Phenanthrene | 0.061 J | 13 J | mg/Kg | SO-015-UI | 34 / 34 | N/A | 13 | N/A | 3.6 c | N/A | N/A | Y | ASL |
| | 108-95-2 | Phenol | 0.009 J | 0.647 J | mg/Kg | SO-223F-UI-0-1' | 4 / 34 | 0.148 - 0.764 | 0.647 | N/A | 1800 n | N/A | N/A | N | BSL |
| | 129-00-0 | Pyrene | 0.17 J | 18 | mg/Kg | SO-015-UI | 34 / 34 | N/A | 18 | N/A | 170 n | N/A | N/A | N | BSL |
| | | | | | | | | | | | | | | | |
| | 72-54-8 | 4,4'-DDD | 0.0023 J | 0.0537 | mg/Kg | SO-211-UI (0-1') | 17 / 30 | 0.000336 - 0.0043 | 0.0537 | N/A | 2 c | N/A | N/A | N | BSL |
| | 72-55-9 | 4,4'-DDE | 0.0016 J | 0.07 | mg/Kg | SO-010-UI | 19 / 29 | 0.0035 - 0.042 | 0.07 | N/A | 1.4 c | N/A | N/A | N | BSL |
| | 50-29-3 | 4,4'-DDT | 0.0018 J | 0.025 J | mg/Kg | SO-078-UI | 7 / 23 | 0.0034 - 0.052 | 0.025 | N/A | 1.7 c | N/A | N/A | N | BSL |
| | 319-84-6 | alpha-BHC | 0.00125 | 0.00125 | mg/Kg | SO-209-UI (0-1') | 1 / 34 | 0.00029 - 0.0027 | 0.00125 | N/A | 0.077 c | N/A | N/A | N | BSL |
| | 5103-71-9 | alpha-Chlordane | 0.00129 J | 0.0195 J | mg/Kg | SO-211-UI (0-1') | 18 / 34 | 0.0018 - 0.0024 | 0.0195 | N/A | 1.6 c | N/A | N/A | N | BSL |
| | 60-57-1 | Dieldrin | 0.0031 J | 0.81 | mg/Kg | SO-010-UI | 31 / 34 | 0.0035 - 0.0038 | 0.81 | N/A | 0.03 c | N/A | N/A | Y | ASL |
| | 959-98-8 | Endosulfan I | 0.00412 J | 0.00412 J | mg/Kg | SO-217-UI (0-1') | 1 / 33 | 0.00029 - 0.0027 | 0.00412 | N/A | 37 n | N/A | N/A | N | BSL |
| | 33213-65-9 | Endosulfan II | 0.0061 J | 0.00754 J | mg/Kg | SO-223F-UI-0-1' | 2 / 34 | 0.00029 - 0.0052 | 0.00754 | N/A | 37 n | N/A | N/A | N | BSL |
| | 1031-07-8 | Endosulfan Sulfate | 0.003 J | 0.01 J | mg/Kg | SO-014-UI | 6 / 29 | 0.00029 - 0.052 | 0.01 | N/A | 37 n | N/A | N/A | N | BSL |
| | 7421-36-3 | Endrin Aldehyde | 0.0044 | 0.022 J | mg/Kg | SO-080-UI | 5 / 29 | 0.00029 - 0.0047 | 0.022 | N/A | 1.8 n | N/A | N/A | N | BSL |
| | 53494-70-5 | Endrin Ketone | 0.014 J | 0.014 J | mg/Kg | SO-016-UI | 1 / 32 | 0.00029 - 0.0052 | 0.014 | N/A | 1.8 n | N/A | N/A | N | BSL |
| | 5103-74-2 | Gamma-Chlordane | 0.00135 J | 0.018 J | mg/Kg | SO-010-UI | 9 / 23 | 0.00167 - 0.022 | 0.018 | N/A | 1.6 c | N/A | N/A | N | BSL |
| | 1024-57-3 | Heptachlor Epoxide | 0.013 J | 0.013 J | mg/Kg | SO-083-UI | 1 / 33 | 0.00029 - 0.0027 | 0.013 | N/A | 0.053 c | N/A | N/A | N | BSL |
| | 72-43-5 | Methoxychlor | 0.028 J | 0.028 J | mg/Kg | SO-W02-UI | 2 / 33 | 0.00029 - 0.027 | 0.028 | N/A | 31 n | N/A | N/A | N | BSL |
| | | | | | | | | | | | | | | | |
| | 12767-79-2 | Aroclor 1268 | 0.033 J | 0.196 J | mg/Kg | SO-211-UI (0-1') | 3 / 8 | 0.0186 - 0.0673 | 0.196 | N/A | 0.22 c | N/A | N/A | N | BSL |
| | 53469-21-9 | Aroclor-1242 | 0.24 J | 0.24 J | mg/Kg | SO-208B-UI (0-1') | 1 / 34 | 0.0186 - 0.0767 | 0.24 | N/A | 0.22 c | N/A | N/A | Y | ASL |
| | 11097-69-1 | Aroclor-1254 | 0.077 J | 1.34 J | mg/Kg | SO-211-UI (0-1') | 11 / 34 | 0.034 - 0.0673 | 1.34 | N/A | 0.11 n | N/A | N/A | Y | ASL |
| | 11096-82-5 | Aroclor-1260 | 0.045 | 1.47 J | mg/Kg | SO-217-UI (0-1') | 28 / 34 | 0.035 - 0.038 | 1.47 | N/A | 0.22 c | N/A | N/A | Y | ASL |
| | | | | | | | | | | | | | | | |
| | 1746-01-6 | Dioxin TEQ | 0.0000088 | 0.0000671 | mg/Kg | SO-203-U1-0-1' | 6 / 6 | N/A | 0.0000671 | N/A | 0.0000045 c | N/A | N/A | Y | ASL |
| | | | | | | | | | | | | | | | |
| | 7429-90-5 | Aluminum | 3370 | 11400 | mg/Kg | SO-200-UI (0-1') | 34 / 34 | N/A | 11400 | N/A | 7700 n | N/A | N/A | Y | ASL |
| | 7440-36-0 | Antimony | 0.377 J | 63.6 J | mg/Kg | SO-W01-UI | 14 / 34 | 0.95 - 15 | 63.6 | N/A | 3.1 n | N/A | N/A | Y | ASL |

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7440-38-2 | Arsenic | 2 | 26.1 | mg/Kg | SO-010-UI | 34 / 34 | N/A | 26.1 | N/A | 0.39 c | N/A | N/A | Y | ASL |
| | 7440-39-3 | Barium | 27.5 J | 881 J | mg/Kg | SO-W03-UI | 24 / 34 | 31 - 50 | 881 | N/A | 1500 n | N/A | N/A | N | BSL |
| | 7440-41-7 | Beryllium | 0.15 J | 2.4 | mg/Kg | SO-W02-UI | 30 / 34 | 0.073 - 0.075 | 2.4 | N/A | 16 n | N/A | N/A | N | BSL |
| | 7440-43-9 | Cadmium | 0.31 J | 21.8 | mg/Kg | SO-W03-UI | 31 / 34 | 0.87 - 1.1 | 21.8 | N/A | 7 n | N/A | N/A | Y | ASL |
| | 7440-70-2 | Calcium | 336 J | 11600 J | mg/Kg | SO-W03-UI | 22 / 34 | 770 - 1435 | 11600 | N/A | N/A | N/A | N/A | N | NUT |
| | 7440-47-3 | Chromium | 21.4 J | 471 J | mg/Kg | SO-W02-UI | 34 / 34 | N/A | 471 | N/A | 0.29 c | N/A | N/A | Y | ASL |
| | 7440-48-4 | Cobalt | 2 J | 12.8 | mg/Kg | SO-W04-UI | 21 / 34 | 7.2 - 13 | 12.8 | N/A | 2.3 n | N/A | N/A | Y | ASL |
| | 7440-50-8 | Copper | 15.7 | 1420 J | mg/Kg | SO-W04-UI | 34 / 34 | N/A | 1420 | N/A | 310 n | N/A | N/A | Y | ASL |
| | 57-12-5 | Cyanide | 0.09 | 3.8 | mg/Kg | SO-083-UI | 17 / 34 | 0.066 - 0.55 | 3.8 | N/A | 160 n | N/A | N/A | N | BSL |
| | 7439-89-6 | Iron | 6130 | 69200 J | mg/Kg | SO-W04-UI | 34 / 34 | N/A | 69200 | N/A | 5500 n | N/A | N/A | Y | ASL |
| | 7439-92-1 | Lead | 19.1 J | 2230 J | mg/Kg | SO-W03-UI | 34 / 34 | N/A | 2230 | N/A | 40 n | N/A | N/A | Y | ASL |
| | 7439-95-4 | Magnesium | 1320 J | 3420 | mg/Kg | SO-010-UI | 34 / 34 | N/A | 3420 | N/A | N/A | N/A | N/A | N | NUT |
| | 7439-96-5 | Manganese | 86.1 J | 1680 | mg/Kg | SO-200-UI (0-1') | 32 / 34 | N/A | 1680 | N/A | 180 n | N/A | N/A | Y | ASL |
| | 7439-97-6 | Mercury | 0.037 | 1.8 J | mg/Kg | SO-W02-UI | 34 / 34 | N/A | 1.8 | N/A | 0.78 n | N/A | N/A | Y | ASL |
| | 7440-02-0 | Nickel | 4.6 J | 158 J | mg/Kg | SO-W02-UI | 32 / 34 | 7 - 9 | 158 | N/A | 150 n | N/A | N/A | Y | ASL |
| | 7440-09-7 | Potassium | 359 J | 1360 | mg/Kg | SO-010-UI | 9 / 34 | 720 - 1435 | 1360 | N/A | N/A | N/A | N/A | N | NUT |
| | 7782-49-2 | Selenium | 0.324 J | 1.73 | mg/Kg | SO-200-UI (0-1') | 11 / 30 | 0.29 - 0.77 | 1.73 | N/A | 39 n | N/A | N/A | N | BSL |
| | 7440-22-4 | Silver | 0.584 | 8.5 J | mg/Kg | SO-W04-UI | 23 / 34 | 0.35 - 2.5 | 8.5 | N/A | 39 n | N/A | N/A | N | BSL |
| | 7440-23-5 | Sodium | 39.9 J | 170 | mg/Kg | SO-209-UI (0-1') | 9 / 34 | 720 - 1435 | 170 | N/A | N/A | N/A | N/A | N | NUT |
| | 7440-28-0 | Thallium | 0.059 | 1.2 J | mg/Kg | SO-085-UI | 11 / 34 | 0.29 - 1.1 | 1.2 | N/A | N/A | N/A | N/A | Y | NSL |
| | 7440-62-2 | Vanadium | 8 | 33.3 | mg/Kg | SO-010-UI | 33 / 34 | 12 | 33.3 | N/A | 0.55 n | N/A | N/A | Y | ASL |
| | 7440-66-6 | Zinc | 25.9 | 1570 J | mg/Kg | SO-W03-UI | 34 / 34 | N/A | 1570 | N/A | 2300 n | N/A | N/A | N | BSL |

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Notes:
N/A = Not Applicable or Not Available

[1] **Organic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
**Inorganic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

[2] The maximum concentration was used. Duplicate samples were treated as discrete samples in the identification of maxima. However, duplicate samples will be averaged prior to statistical evaluation (i.e., development of UCLs).

[3] Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment.

[4] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Residential Soil.
c = Carcinogen
n = Noncarcinogen (adjusted to a hazard quotient of 0.1)
The PRG values for noted analytes are as follows:
PRG for cadmium associated with dietary intake.
PRG for chlordane has been used for alpha-chlordane and gamma-chlordane.
PRG for chromium VI used for chromium.
PRG for cyclohexane has been used for methylcyclohexane.
PRG for dibutyl phthalate has been used for di-n-octylphthalate.
PRG for Aroclor-1260 has been used for Aroclor 1268.
PRG for endosulfan has been used for endosulfan I, endosulfan II, and endosulfan sulfate.
PRG for endrin has been used for endrin aldehyde and endrin ketone.
PRG for methyl mercury has been used for mercury.
PRG for naphthalene has been used for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene.

[5] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
No Screening Level (NSL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Subsurface Soil

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unnamed Island | | | | | | | | | | | | | | | |
| | 120-82-1 | 1,2,4-Trichlorobenzene | 0.00426 | 0.00426 | mg/Kg | SO-224A-UI-1-5' | 1 / 22 | 0.00154 - 0.29 | 0.00426 | N/A | 6.2 n | N/A | N/A | N | BSL |
| | 95-50-1 | 1,2-Dichlorobenzene | 0.0017 J | 0.0055 | mg/Kg | SO-224A-UI-1-5' | 2 / 22 | 0.00154 - 0.29 | 0.0055 | N/A | 190 n | N/A | N/A | N | BSL |
| | 106-46-7 | 1,4-Dichlorobenzene | 0.00125 J | 1.25 | mg/Kg | SO-224A-UI-1-5' | 3 / 22 | 0.00154 - 0.29 | 1.25 | N/A | 2.4 c | N/A | N/A | N | BSL |
| | 78-93-3 | 2-Butanone | 0.00456 | 0.525 J | mg/Kg | SO-224A-UI-1-5' | 4 / 22 | 0.0039 - 0.724 | 0.525 | N/A | 2800 n | N/A | N/A | N | BSL |
| | 67-64-1 | Acetone | 0.00285 J | 1.98 J | mg/Kg | SO-224A-UI-1-5' | 11 / 22 | 0.00482 - 0.724 | 1.98 | N/A | 6100 n | N/A | N/A | N | BSL |
| | 71-43-2 | Benzene | 0.013 | 0.0135 J | mg/Kg | SO-208B-UI (1-5') | 2 / 22 | 0.00154 - 0.29 | 0.0135 | N/A | 1.1 c | N/A | N/A | N | BSL |
| | 75-15-0 | Carbon disulfide | 0.00124 J | 0.05 | mg/Kg | SO-224A-UI-1-5' | 5 / 22 | 0.00156 - 0.29 | 0.05 | N/A | 82 n | N/A | N/A | N | BSL |
| | 56-23-5 | Carbon tetrachloride | 0.00144 J | 0.00144 J | mg/Kg | SO-206-UI (2-3') | 1 / 22 | 0.00154 - 0.29 | 0.00144 | N/A | 0.25 c | N/A | N/A | N | BSL |
| | 108-90-7 | Chlorobenzene | 0.0066 | 0.127 | mg/Kg | SO-224A-UI-1-5' | 3 / 22 | 0.00154 - 0.29 | 0.127 | N/A | 29 n | N/A | N/A | N | BSL |
| | 156-59-2 | cis-1,2-Dichloroethene | 0.00196 J | 0.00196 J | mg/Kg | SO-224A-UI-1-5' | 1 / 22 | 0.00154 - 0.29 | 0.00196 | N/A | 78 n | N/A | N/A | N | BSL |
| | 110-82-7 | Cyclohexane | 0.025 | 0.0443 | mg/Kg | SO-224A-UI-1-5' | 2 / 22 | 0.00154 - 0.29 | 0.0443 | N/A | 700 n | N/A | N/A | N | BSL |
| | 108-87-2 | Cyclohexane, methyl- | 0.0847 | 0.229 J | mg/Kg | SO-224A-UI-1-5' | 2 / 22 | 0.00154 - 0.29 | 0.229 | N/A | 700 n | N/A | N/A | N | BSL |
| | 75-71-8 | Dichlorodifluoromethane | 0.00154 J | 0.0209 | mg/Kg | SO-205-UI (2-4') | 3 / 22 | 0.00154 - 0.29 | 0.0209 | N/A | 18 n | N/A | N/A | N | BSL |
| | 100-41-4 | Ethylbenzene | 0.00175 J | 0.0026 J | mg/Kg | SO-224A-UI-1-5' | 2 / 22 | 0.00154 - 0.29 | 0.0026 | N/A | 5.4 c | N/A | N/A | N | BSL |
| | 98-82-8 | Isopropylbenzene | 0.00123 J | 0.0646 | mg/Kg | SO-224A-UI-1-5' | 3 / 22 | 0.00154 - 0.29 | 0.0646 | N/A | 210 n | N/A | N/A | N | BSL |
| | 79-20-9 | Methyl acetate | 0.00238 | 1.11 | mg/Kg | SO-226A-UI-6-8' | 6 / 22 | 0.00156 - 0.234 | 1.11 | N/A | 7800 n | N/A | N/A | N | BSL |
| | 75-09-2 | Methylene chloride | 0.00373 J | 0.00373 J | mg/Kg | SO-222-UI-1-3' | 1 / 22 | 0.00385 - 0.724 | 0.00373 | N/A | 11 c | N/A | N/A | N | BSL |
| | 95-47-6 | o-Xylene | 0.0029 | 0.0125 | mg/Kg | SO-224A-UI-1-5' | 3 / 22 | 0.00154 - 0.29 | 0.0125 | N/A | 380 n | N/A | N/A | N | BSL |
| | 106-42-3/108-38 | p/m-Xylene | 0.00836 | 0.0298 | mg/Kg | SO-224A-UI-1-5' | 2 / 22 | 0.00308 - 0.58 | 0.0298 | N/A | 340 n | N/A | N/A | N | BSL |
| | 100-42-5 | Styrene | 0.00232 J | 0.00232 J | mg/Kg | SO-224A-UI-1-5' | 1 / 22 | 0.00154 - 0.29 | 0.00232 | N/A | 630 n | N/A | N/A | N | BSL |
| | 127-18-4 | Tetrachloroethene | 0.0039 | 0.00794 J | mg/Kg | SO-208B-UI (1-5') | 3 / 22 | 0.00154 - 0.29 | 0.00794 | N/A | 0.55 c | N/A | N/A | N | BSL |
| | 108-88-3 | Toluene | 0.00221 J | 0.608 | mg/Kg | SO-226A-UI-6-8' | 5 / 22 | 0.00154 - 0.234 | 0.608 | N/A | 500 n | N/A | N/A | N | BSL |
| | 79-01-6 | Trichloroethene | 0.00281 | 0.00504 | mg/Kg | SO-224A-UI-1-5' | 2 / 22 | 0.00154 - 0.29 | 0.00504 | N/A | 2.8 c | N/A | N/A | N | BSL |
| | 75-69-4 | Trichlorofluoromethane | 0.00114 J | 0.0056 | mg/Kg | SO-205-UI (2-4') | 2 / 22 | 0.00154 - 0.29 | 0.0056 | N/A | 79 n | N/A | N/A | N | BSL |
| | 92-52-4 | 1,1'-Biphenyl | 0.144 J | 0.34 | mg/Kg | SO-205-UI (2-4') | 5 / 22 | 0.138 - 2.49 | 0.34 | N/A | 390 n | N/A | N/A | N | BSL |
| | 91-57-6 | 2-Methylnaphthalene | 0.00308 J | 2.78 | mg/Kg | SO-224A-UI-1-5' | 20 / 22 | 0.00788 - 0.00864 | 2.78 | N/A | 31 n | N/A | N/A | N | BSL |
| | 106-44-5 | 4-Methylphenol | 0.133 J | 0.395 | mg/Kg | SO-204-UI (2-4') | 3 / 22 | 0.138 - 2.49 | 0.395 | N/A | 31 n | N/A | N/A | N | BSL |
| | 83-32-9 | Acenaphthene | 0.00715 | 2.01 | mg/Kg | SO-226A-UI-6-8' | 19 / 22 | 0.00387 - 0.00864 | 2.01 | N/A | 340 n | N/A | N/A | N | BSL |
| | 208-96-8 | Acenaphthylene | 0.00208 J | 1.14 | mg/Kg | SO-226A-UI-6-8' | 19 / 22 | 0.00428 - 0.00864 | 1.14 | N/A | 3.6 c | N/A | N/A | N | BSL |
| | 98-86-2 | Acetophenone | 0.1 J | 0.188 | mg/Kg | SO-206-UI (2-3') | 2 / 22 | 0.138 - 2.49 | 0.188 | N/A | 780 n | N/A | N/A | N | BSL |
| | 120-12-7 | Anthracene | 0.00385 J | 4.1 | mg/Kg | SO-226A-UI-6-8' | 20 / 22 | 0.00788 - 0.00864 | 4.1 | N/A | 1700 n | N/A | N/A | N | BSL |
| | 100-52-7 | Benzaldehyde | 0.13 | 0.219 J | mg/Kg | SO-204-UI (2-4') | 7 / 15 | 0.138 - 2.49 | 0.219 | N/A | 780 n | N/A | N/A | N | BSL |
| | 50-32-8 | Benzo(a)pyrene | 0.00635 | 17.2 | mg/Kg | SO-226A-UI-6-8' | 20 / 22 | 0.00788 - 0.00864 | 17.2 | N/A | 0.015 c | N/A | N/A | Y | ASL |
| | 205-99-2 | Benzo(b)fluoranthene | 0.01 | 9.63 | mg/Kg | SO-226A-UI-6-8' | 20 / 22 | 0.00788 - 0.00864 | 9.63 | N/A | 0.15 c | N/A | N/A | Y | ASL |
| | 191-24-2 | Benzo(g,h,i)perylene | 0.00608 | 8.44 | mg/Kg | SO-226A-UI-6-8' | 20 / 22 | 0.00788 - 0.00864 | 8.44 | N/A | 3.6 c | N/A | N/A | Y | ASL |
| | 207-08-9 | Benzo(k)fluoranthene | 0.00506 | 6.18 | mg/Kg | SO-226A-UI-6-8' | 20 / 22 | 0.00788 - 0.00864 | 6.18 | N/A | 1.5 c | N/A | N/A | Y | ASL |

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Subsurface Soil

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 56-55-3 | Benzo[a]anthracene | 0.00807 | 14.4 | mg/Kg | SO-226A-UI-6-8' | 20 / 22 | 0.00788 - 0.00864 | 14.4 | N/A | 0.15 c | N/A | N/A | Y | ASL |
| | 117-81-7 | bis(2-Ethylhexyl)phthalate | 0.0846 J | 577 | mg/Kg | SO-206-UI (2-3') | 10 / 22 | 0.139 - 1.51 | 577 | N/A | 35 c | N/A | N/A | Y | ASL |
| | 85-68-7 | Butyl benzyl phthalate | 0.315 J | 0.315 J | mg/Kg | SO-201-UI (4-6') | 1 / 23 | 0.139 - 2.49 | 0.315 | N/A | 260 c | N/A | N/A | N | BSL |
| | 86-74-8 | Carbazole | 0.0821 J | 0.376 | mg/Kg | SO-204-UI (2-4') | 10 / 22 | 0.138 - 2.49 | 0.376 | N/A | N/A | N/A | N/A | Y | NSL |
| | 218-01-9 | Chrysene | 0.00892 | 14.4 | mg/Kg | SO-226A-UI-6-8' | 21 / 23 | 0.00788 - 0.00864 | 14.4 | N/A | 15 c | N/A | N/A | N | BSL |
| | 53-70-3 | Dibenz[a,h]anthracene | 0.0032 J | 1.73 | mg/Kg | SO-226A-UI-6-8' | 18 / 22 | 0.00428 - 0.0667 | 1.73 | N/A | 0.015 c | N/A | N/A | Y | ASL |
| | 132-64-9 | Dibenzofuran | 0.0957 J | 0.591 | mg/Kg | SO-204-UI (2-4') | 8 / 22 | 0.138 - 2.49 | 0.591 | N/A | N/A | N/A | N/A | Y | NSL |
| | 84-66-2 | Diethylphthalate | 2.89 | 2.89 | mg/Kg | SO-224A-UI-1-5' | 1 / 22 | 0.138 - 1.51 | 2.89 | N/A | 4900 n | N/A | N/A | N | BSL |
| | 84-74-2 | Di-N-Butyl phthalate | 2.44 | 2.44 | mg/Kg | SO-201-UI (4-6') | 1 / 22 | 0.138 - 2.49 | 2.44 | N/A | 610 n | N/A | N/A | N | BSL |
| | 117-84-0 | Di-N-Octyl phthalate | 0.957 | 61.2 | mg/Kg | SO-206-UI (2-3') | 4 / 22 | 0.138 - 1.51 | 61.2 | N/A | 610 n | N/A | N/A | N | BSL |
| | 206-44-0 | Fluoranthene | 0.0128 | 37.8 | mg/Kg | SO-226A-UI-6-8' | 20 / 22 | 0.00788 - 0.00864 | 37.8 | N/A | 230 n | N/A | N/A | N | BSL |
| | 86-73-7 | Fluorene | 0.00811 | 2.4 | mg/Kg | SO-226A-UI-6-8' | 18 / 22 | 0.00387 - 0.00864 | 2.4 | N/A | 230 n | N/A | N/A | N | BSL |
| | 193-39-5 | Indeno(1,2,3-cd)pyrene | 0.00454 | 6.21 | mg/Kg | SO-226A-UI-6-8' | 20 / 22 | 0.00788 - 0.00864 | 6.21 | N/A | 0.15 c | N/A | N/A | Y | ASL |
| | 91-20-3 | Naphthalene | 0.089 | 4.75 | mg/Kg | SO-224A-UI-1-5' | 17 / 26 | 0.00387 - 0.139 | 4.75 | N/A | 3.6 c | N/A | N/A | Y | ASL |
| | 86-30-6 | N-Nitrosodiphenylamine | 0.315 | 1.6 J | mg/Kg | SO-224A-UI-1-5' | 2 / 22 | 0.138 - 1.51 | 1.6 | N/A | 99 c | N/A | N/A | N | BSL |
| | 85-01-8 | Phenanthrene | 0.00687 J | 26.7 | mg/Kg | SO-226A-UI-6-8' | 20 / 22 | 0.00788 - 0.00864 | 26.7 | N/A | 3.6 c | N/A | N/A | Y | ASL |
| | 108-95-2 | Phenol | 3.79 | 3.79 | mg/Kg | SO-224A-UI-1-5' | 1 / 22 | 0.138 - 1.51 | 3.79 | N/A | 1800 n | N/A | N/A | N | BSL |
| | 129-00-0 | Pyrene | 0.0128 | 39.5 | mg/Kg | SO-226A-UI-6-8' | 20 / 22 | 0.00788 - 0.00864 | 39.5 | N/A | 170 n | N/A | N/A | N | BSL |
| | 72-54-8 | 4,4'-DDD | 0.000414 | 0.0825 J | mg/Kg | SO-225A-UI-1.5-5' | 14 / 22 | 0.000284 - 0.00484 | 0.0825 | N/A | 2 c | N/A | N/A | N | BSL |
| | 72-55-9 | 4,4'-DDE | 0.00132 | 0.0463 J | mg/Kg | SO-225A-UI-1.5-5' | 6 / 21 | 0.000278 - 0.00484 | 0.0463 | N/A | 1.4 c | N/A | N/A | N | BSL |
| | 50-29-3 | 4,4'-DDT | 0.00158 | 0.0596 J | mg/Kg | SO-206-UI (2-3') | 4 / 18 | 0.000278 - 0.00484 | 0.0596 | N/A | 1.7 c | N/A | N/A | N | BSL |
| | 319-84-6 | alpha-BHC | 0.000607 | 0.00197 | mg/Kg | SO-206-UI (2-3') | 2 / 22 | 0.000284 - 0.00484 | 0.00197 | N/A | 0.077 c | N/A | N/A | N | BSL |
| | 5103-71-9 | alpha-Chlordane | 0.000644 | 0.0964 | mg/Kg | SO-201-UI (4-6') | 12 / 22 | 0.000278 - 0.0006 | 0.0964 | N/A | 1.6 c | N/A | N/A | N | BSL |
| | 319-86-8 | Delta-BHC | 0.00132 J | 0.00132 J | mg/Kg | SO-205-UI (2-4') | 1 / 22 | 0.000278 - 0.00484 | 0.00132 | N/A | 0.077 c | N/A | N/A | N | BSL |
| | 60-57-1 | Dieldrin | 0.000879 J | 0.426 J | mg/Kg | SO-220-UI-1-4.5' | 17 / 22 | 0.000284 - 0.0015 | 0.426 | N/A | 0.03 c | N/A | N/A | Y | ASL |
| | 33213-65-9 | Endosulfan II | 0.000504 | 0.000504 | mg/Kg | SO-223F-UI-11-12' | 1 / 22 | 0.000284 - 0.00484 | 0.000504 | N/A | 37 n | N/A | N/A | N | BSL |
| | 72-20-8 | Endrin | 0.0018 | 0.00337 J | mg/Kg | SO-207B-UI (2-3') | 3 / 21 | 0.000278 - 0.00484 | 0.00337 | N/A | 1.8 n | N/A | N/A | N | BSL |
| | 58-89-9 | Gamma-BHC | 0.000708 J | 0.000739 | mg/Kg | SO-206-UI (2-3') | 2 / 22 | 0.000278 - 0.00484 | 0.000739 | N/A | 0.52 c | N/A | N/A | N | BSL |
| | 5103-74-2 | Gamma-Chlordane | 0.00035 | 0.152 | mg/Kg | SO-201-UI (4-6') | 10 / 22 | 0.000278 - 0.00484 | 0.152 | N/A | 1.6 c | N/A | N/A | N | BSL |
| | 12767-79-2 | Aroclor 1268 | 0.0938 J | 0.147 J | mg/Kg | SO-225A-UI-1.5-5' | 2 / 22 | 0.0111 - 0.0968 | 0.147 | N/A | 0.22 c | N/A | N/A | N | BSL |
| | 53469-21-9 | Aroclor-1242 | 0.0306 | 2.44 J | mg/Kg | SO-224A-UI-1-5' | 4 / 22 | 0.0127 - 0.0845 | 2.44 | N/A | 0.22 c | N/A | N/A | Y | ASL |
| | 11097-69-1 | Aroclor-1254 | 0.0165 J | 5.33 J | mg/Kg | SO-224A-UI-1-5' | 10 / 22 | 0.0128 - 0.0845 | 5.33 | N/A | 0.11 n | N/A | N/A | Y | ASL |
| | 11096-82-5 | Aroclor-1260 | 0.0418 | 4.57 J | mg/Kg | SO-224A-UI-1-5' | 11 / 22 | 0.0111 - 0.0845 | 4.57 | N/A | 0.22 c | N/A | N/A | Y | ASL |
| | 1746-01-6 | Dioxin TEQ | 8.7E-08 | 0.00015 | mg/Kg | SO-205-U1-3-4.5 | 12 / 12 | N/A | 0.00015 | N/A | 4.5E-06 c | N/A | N/A | Y | ASL |

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Subsurface Soil

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | | Maximum Concentration (Qualifier) (1) | | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7429-90-5 | Aluminum | 2420 | | 11800 | | mg/Kg | SO-204-UI (2-4') | 22 / 22 | N/A | 11800 | N/A | 7700 | n | N/A | N/A | Y | ASL |
| | 7440-36-0 | Antimony | 0.0272 | J | 159 | J | mg/Kg | SO-207B-UI (1-2') | 22 / 22 | N/A | 159 | N/A | 3.1 | n | N/A | N/A | Y | ASL |
| | 7440-38-2 | Arsenic | 1.44 | | 57.4 | | mg/Kg | SO-205-UI (2-4') | 22 / 22 | N/A | 57.4 | N/A | 0.39 | c | N/A | N/A | Y | ASL |
| | 7440-39-3 | Barium | 9.3 | J | 1010 | J | mg/Kg | SO-208B-UI (1-5') | 22 / 22 | N/A | 1010 | N/A | 1500 | n | N/A | N/A | N | BSL |
| | 7440-41-7 | Beryllium | 0.129 | | 1.01 | | mg/Kg | SO-204-UI (2-4') | 22 / 22 | N/A | 1.01 | N/A | 16 | n | N/A | N/A | N | BSL |
| | 7440-43-9 | Cadmium | 0.084 | | 12 | | mg/Kg | SO-207B-UI (1-2') | 22 / 22 | N/A | 12 | N/A | 7 | n | N/A | N/A | Y | ASL |
| | 7440-70-2 | Calcium | 298 | J | 29700 | J | mg/Kg | SO-208B-UI (1-5') | 20 / 22 | 941 - 982 | 29700 | N/A | N/A | | N/A | N/A | N | NUT |
| | 7440-47-3 | Chromium | 6.11 | | 776 | | mg/Kg | SO-204-UI (2-4') | 22 / 22 | N/A | 776 | N/A | 0.29 | c | N/A | N/A | Y | ASL |
| | 7440-48-4 | Cobalt | 1.76 | | 18.7 | | mg/Kg | SO-204-UI (2-4') | 22 / 22 | N/A | 18.7 | N/A | 2.3 | n | N/A | N/A | Y | ASL |
| | 7440-50-8 | Copper | 2.9 | | 1650 | | mg/Kg | SO-207B-UI (1-2') | 22 / 22 | N/A | 1650 | N/A | 310 | n | N/A | N/A | Y | ASL |
| | 57-12-5 | Cyanide | 0.14 | | 0.654 | | mg/Kg | SO-224A-UI-1-5' | 4 / 22 | 0.044 - 0.129 | 0.654 | N/A | 160 | n | N/A | N/A | N | BSL |
| | 7439-89-6 | Iron | 5400 | | 92500 | | mg/Kg | SO-223F-UI-11-12' | 22 / 22 | N/A | 92500 | N/A | 5500 | n | N/A | N/A | Y | ASL |
| | 7439-92-1 | Lead | 2.49 | J | 9640 | J | mg/Kg | SO-208B-UI (1-5') | 22 / 22 | N/A | 9640 | N/A | 40 | n | N/A | N/A | Y | ASL |
| | 7439-95-4 | Magnesium | 744 | J | 3090 | J | mg/Kg | SO-226A-UI-6-8' | 22 / 22 | N/A | 3090 | N/A | N/A | | N/A | N/A | N | NUT |
| | 7439-96-5 | Manganese | 71.4 | | 561 | | mg/Kg | SO-224A-UI-1-5' | 22 / 22 | N/A | 561 | N/A | 180 | n | N/A | N/A | Y | ASL |
| | 7439-97-6 | Mercury | 0.0069 | J | 3.43 | J | mg/Kg | SO-226A-UI-6-8' | 20 / 22 | 0.011 - 0.013 | 3.43 | N/A | 0.78 | n | N/A | N/A | Y | ASL |
| | 7440-02-0 | Nickel | 4.44 | | 248 | | mg/Kg | SO-224A-UI-1-5' | 22 / 22 | N/A | 248 | N/A | 150 | n | N/A | N/A | Y | ASL |
| | 7440-09-7 | Potassium | 138 | J | 1710 | | mg/Kg | SO-224A-UI-1-5' | 22 / 22 | N/A | 1710 | N/A | N/A | | N/A | N/A | N | NUT |
| | 7782-49-2 | Selenium | 0.103 | | 2.69 | | mg/Kg | SO-205-UI (2-4') | 21 / 22 | 0.624 | 2.69 | N/A | 39 | n | N/A | N/A | N | BSL |
| | 7440-22-4 | Silver | 0.0272 | J | 16.1 | | mg/Kg | SO-207B-UI (1-2') | 22 / 22 | N/A | 16.1 | N/A | 39 | n | N/A | N/A | N | BSL |
| | 7440-23-5 | Sodium | 21.6 | J | 256 | J | mg/Kg | SO-208B-UI (1-5') | 17 / 22 | 158 - 212 | 256 | N/A | N/A | | N/A | N/A | N | NUT |
| | 7440-28-0 | Thallium | 0.0298 | J | 0.273 | | mg/Kg | SO-204-UI (2-4') | 22 / 22 | N/A | 0.273 | N/A | N/A | | N/A | N/A | Y | NSL |
| | 7440-62-2 | Vanadium | 5.82 | | 49.9 | | mg/Kg | SO-207B-UI (1-2') | 22 / 22 | N/A | 49.9 | N/A | 0.55 | n | N/A | N/A | Y | ASL |
| | 7440-66-6 | Zinc | 28.5 | | 2580 | | mg/Kg | SO-207B-UI (1-2') | 22 / 22 | N/A | 2580 | N/A | 2300 | n | N/A | N/A | Y | ASL |

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Subsurface Soil

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Notes:
N/A = Not Applicable or Not Available
[1] **Organic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
**Inorganic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
[2] The maximum concentration was used. Duplicate samples were treated as discrete samples in the identification of maxima. However, duplicate samples will be averaged prior to statistical evaluation (i.e., development of UCLs).
[3] Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment.
[4] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Residential Soil.
c = Carcinogen
n = Noncarcinogen (adjusted to a hazard quotient of 0.1)
The PRG values for noted analytes are as follows:
PRG for cadmium associated with dietary intake.
PRG for alpha-BHC (most conservative BHC screening level) has been used for delta-BHC.
PRG for chlordane has been used for alpha-chlordane and gamma-chlordane.
PRG for chromium VI used for chromium.
PRG for cyclohexane has been used for methylcyclohexane.
PRG for dibutyl phthalate has been used for di-n-octylphthalate.
PRG for Aroclor-1260 has been used for Aroclor 1268.
PRG for endosulfan has been used for endosulfan I, endosulfan II, and endosulfan sulfate.
PRG for endrin has been used for endrin aldehyde and endrin ketone.
PRG for methyl mercury has been used for mercury.
PRG for naphthalene has been used for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene.
[5] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
No Screening Level (NSL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value | Screening Toxicity Value (N/C) (3) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unnamed Island | | | | | | | | | | | | | | | |
| | 75-34-3 | 1,1-Dichloroethane | 0.75 | 0.83 | ug/L | GW-026-UI | 2 / 14 | 0.5 - 2 | 0.83 | N/A | 2.4 c | N/A | N/A | N | BSL |
| | 95-50-1 | 1,2-Dichlorobenzene | 0.3 J | 0.3 J | ug/L | SEA-608 | 1 / 14 | 0.5 - 2 | 0.3 | N/A | 37 n | 600 | MCL | N | BSL |
| | 106-46-7 | 1,4-Dichlorobenzene | 0.81 | 3.19 | ug/L | GW-224A-UI | 7 / 14 | 0.5 - 2 | 3.19 | N/A | 0.43 c | 75 | MCL | Y | ASL |
| | 71-43-2 | Benzene | 0.72 | 8.3 | ug/L | GW-FD03 | 6 / 14 | 0.5 - 2 | 8.3 | N/A | 0.41 c | 5 | MCL | Y | ASL |
| | 108-90-7 | Chlorobenzene | 2.46 | 28 | ug/L | GW-FD03 | 7 / 14 | 0.5 - 2 | 28 | N/A | 9.1 n | 100 | MCL | Y | ASL |
| | 75-00-3 | Chloroethane | 2.1 J | 2.1 J | ug/L | SEA-608 | 1 / 14 | 0.5 - 2 | 2.1 | N/A | 2100 n | N/A | N/A | N | BSL |
| | 156-59-2 | cis-1,2-Dichloroethene | 0.72 | 0.72 | ug/L | GW-073-UI | 1 / 14 | 0.5 - 2 | 0.72 | N/A | 370 c | 70 | MCL | N | BSL |
| | 110-82-7 | Cyclohexane | 0.41 J | 0.63 | ug/L | SEA-608 | 3 / 14 | 0.5 - 2 | 0.63 | N/A | 1300 n | N/A | N/A | N | BSL |
| | 108-87-2 | Cyclohexane, methyl- | 0.36 J | 1.34 J | ug/L | GW-224A-UI | 2 / 14 | 0.5 - 2 | 1.34 | N/A | 1300 n | N/A | N/A | N | BSL |
| | 98-82-8 | Isopropylbenzene | 0.91 | 5.2 | ug/L | GW-201-UI | 4 / 14 | 0.5 - 2 | 5.2 | N/A | 68 n | N/A | N/A | N | BSL |
| | 1634-04-4 | Methyl tert-butyl ether | 0.27 J | 0.36 J | ug/L | GUI-702 | 2 / 14 | 0.5 - 2 | 0.36 | N/A | 12 c | N/A | N/A | N | BSL |
| | 108-88-3 | Toluene | 0.22 J | 18.7 | ug/L | GW-201-UI | 3 / 14 | 0.5 - 2 | 18.7 | N/A | 230 n | 1000 | MCL | N | BSL |
| | 79-01-6 | Trichloroethene | 0.55 | 0.55 | ug/L | GW-025-UI | 1 / 14 | 0.5 - 2 | 0.55 | N/A | 2 c | 5 | MCL | N | BSL |
| | 106-42-3/108-38 | p/m-Xylene | 2.12 J | 2.12 J | ug/L | GW-224A-UI | 1 / 5 | 4 | 2.12 | N/A | 120 n | 10000 | MCL | N | BSL |
| | 1330-20-7 | Xylene (Total) | 0.68 J | 0.68 J | ug/L | SEA-608 | 1 / 9 | 0.5 - 1.5 | 0.68 | N/A | 200 c | 10000 | MCL | N | BSL |
| | 91-57-6 | 2-Methylnaphthalene | 0.0104 | 0.577 | ug/L | GW-201-UI | 4 / 14 | 0.0104 - 11 | 0.577 | N/A | 15 n | N/A | N/A | N | BSL |
| | 106-44-5 | 4-Methylphenol | 0.37 | 0.526 | ug/L | DUPLICATE-3 | 2 / 14 | 0.515 - 5 | 0.526 | N/A | 18 n | N/A | N/A | N | BSL |
| | 83-32-9 | Acenaphthene | 0.012 | 0.404 | ug/L | DUPLICATE-3 | 9 / 14 | 0.1 - 11 | 0.404 | N/A | 220 n | N/A | N/A | N | BSL |
| | 208-96-8 | Acenaphthylene | 0.0178 | 0.0365 | ug/L | GW-201-UI | 4 / 14 | 0.01 - 11 | 0.0365 | N/A | 0.14 c | N/A | N/A | N | BSL |
| | 98-86-2 | Acetophenone | 0.897 | 0.897 | ug/L | GW-224A-UI | 1 / 14 | 0.52 - 5 | 0.897 | N/A | 370 n | N/A | N/A | N | BSL |
| | 120-12-7 | Anthracene | 0.00545 J | 0.0868 | ug/L | DUPLICATE-3 | 7 / 14 | 0.1 - 11 | 0.0868 | N/A | 1100 n | N/A | N/A | N | BSL |
| | 1912-24-9 | Atrazine | 2.9 J | 3.4 J | ug/L | GW-026-UI | 2 / 14 | 0.515 - 5 | 3.4 | N/A | 0.29 c | 3 | MCL | Y | ASL |
| | 50-32-8 | Benzo(a)pyrene | 0.00756 J | 0.0197 | ug/L | GW-201-UI | 3 / 14 | 0.01 - 11 | 0.0197 | N/A | 0.0029 c | 0.2 | MCL | Y | ASL |
| | 205-99-2 | Benzo(b)fluoranthene | 0.00867 J | 0.0192 | ug/L | GW-201-UI | 5 / 14 | 0.01 - 11 | 0.0192 | N/A | 0.029 c | N/A | N/A | N | BSL |
| | 191-24-2 | Benzo(g,h,i)perylene | 0.00826 J | 0.0143 | ug/L | GW-201-UI | 3 / 14 | 0.01 - 11 | 0.0143 | N/A | 0.14 c | N/A | N/A | N | BSL |
| | 207-08-9 | Benzo(k)fluoranthene | 0.00604 J | 0.0198 | ug/L | GW-201-UI | 4 / 14 | 0.01 - 11 | 0.0198 | N/A | 0.29 c | N/A | N/A | N | BSL |
| | 56-55-3 | Benzo[a]anthracene | 0.0057 J | 0.11 | ug/L | GW-026-UI | 8 / 14 | 0.1 - 11 | 0.11 | N/A | 0.029 c | N/A | N/A | Y | ASL |
| | 117-81-7 | bis(2-Ethylhexyl)phthalate | 0.87 | 5.17 | ug/L | DUPLICATE-3 | 5 / 14 | 0.52 - 5 | 5.17 | N/A | 4.8 c | 6 | MCL | Y | ASL |
| | 218-01-9 | Chrysene | 0.0062 J | 0.0482 | ug/L | DUPLICATE-3 | 5 / 14 | 0.0104 - 11 | 0.0482 | N/A | 2.9 c | N/A | N/A | N | BSL |
| | 132-64-9 | Dibenzofuran | 0.283 | 0.283 | ug/L | GW-201-UI | 1 / 14 | 0.515 - 5 | 0.283 | N/A | N/A | N/A | N/A | Y | NSL |
| | 84-66-2 | Diethylphthalate | 0.283 | 0.897 | ug/L | GW-224A-UI | 3 / 14 | 0.52 - 5 | 0.897 | N/A | 2900 n | N/A | N/A | N | BSL |
| | 84-74-2 | Di-N-Butyl phthalate | 0.434 | 0.522 | ug/L | GW-201-UI | 3 / 14 | 0.515 - 5 | 0.522 | N/A | 370 n | N/A | N/A | N | BSL |
| | 117-84-0 | Di-N-Octyl phthalate | 0.382 J | 0.382 J | ug/L | DUPLICATE-3 | 1 / 14 | 0.515 - 5 | 0.382 | N/A | 370 n | N/A | N/A | N | BSL |
| | 206-44-0 | Fluoranthene | 0.01 | 0.174 | ug/L | DUPLICATE-3 | 8 / 14 | 0.1 - 10 | 0.174 | N/A | 150 n | N/A | N/A | N | BSL |
| | 86-73-7 | Fluorene | 0.011 | 0.446 | ug/L | DUPLICATE-3 | 6 / 14 | 0.0104 - 11 | 0.446 | N/A | 150 n | N/A | N/A | N | BSL |
| | 193-39-5 | Indeno(1,2,3-cd)pyrene | 0.00718 J | 0.0116 | ug/L | GW-201-UI | 3 / 14 | 0.01 - 11 | 0.0116 | N/A | 0.029 c | N/A | N/A | N | BSL |
| | 98-82-8 | Isopropylbenzene | 2.58 J | 2.58 J | ug/L | DUPLICATE-3 | 1 / 1 | N/A | 2.58 | N/A | 68 n | N/A | N/A | N | BSL |
| | 91-20-3 | Naphthalene | 0.00914 J | 3.53 | ug/L | GW-201-UI | 8 / 14 | 0.1 - 11 | 3.53 | N/A | 0.14 c | N/A | N/A | Y | ASL |
| | 86-30-6 | N-Nitrosodiphenylamine | 0.67 | 14.8 | ug/L | GW-201-UI | 5 / 14 | 0.52 - 5 | 14.8 | N/A | 14 c | N/A | N/A | Y | ASL |
| | 85-01-8 | Phenanthrene | 0.01 | 0.92 | ug/L | DUPLICATE-3 | 8 / 14 | 0.1 - 11 | 0.92 | N/A | 0.14 c | N/A | N/A | Y | ASL |

TABLE 2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value | Screening Toxicity Value (N/C) (3) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 129-00-0 | Pyrene | 0.0183 | 0.221 | ug/L | DUPLICATE-3 | 5 / 14 | 0.1 - 11 | 0.221 | N/A | 110 n | N/A | N/A | N | BSL |
| | 72-54-8 | 4,4'-DDD | 0.00282 J | 0.0119 J | ug/L | GW-224A-UI | 2 / 13 | 0.000526 - 0.01 | 0.0119 | N/A | 0.28 c | N/A | N/A | N | BSL |
| | 72-55-9 | 4,4'-DDE | 0.00135 J | 0.00135 J | ug/L | DUPLICATE-3 | 1 / 13 | 0.0005 - 0.01 | 0.00135 | N/A | 0.2 c | N/A | N/A | N | BSL |
| | 309-00-2 | Aldrin | 0.000857 | 0.000857 | ug/L | GW-207B-UI | 1 / 14 | 0.0005 - 0.01 | 0.000857 | N/A | 0.004 c | N/A | N/A | N | BSL |
| | 319-84-6 | alpha-BHC | 0.000988 | 0.000988 | ug/L | GW-208B-UI | 1 / 14 | 0.0005 - 0.01 | 0.000988 | N/A | 0.011 c | N/A | N/A | N | BSL |
| | 5103-71-9 | alpha-Chlordane | 0.000892 | 0.00922 J | ug/L | DUPLICATE-3 | 4 / 14 | 0.000526 - 0.01 | 0.00922 | N/A | 0.19 c | 2 | MCL | N | BSL |
| | 319-85-7 | beta-BHC | 0.00278 | 0.00278 | ug/L | GW-207B-UI | 1 / 14 | 0.0005 - 0.01 | 0.00278 | N/A | 0.037 c | N/A | N/A | N | BSL |
| | 60-57-1 | Dieldrin | 0.00177 | 0.00177 | ug/L | GW-207B-UI | 1 / 14 | 0.0005 - 0.01 | 0.00177 | N/A | 0.0042 c | N/A | N/A | N | BSL |
| | 1031-07-8 | Endosulfan Sulfate | 0.107 | 0.107 | ug/L | DUPLICATE-3 | 1 / 14 | 0.0005 - 0.01 | 0.107 | N/A | 22 n | N/A | N/A | N | BSL |
| | 53469-21-9 | Aroclor-1242 | 0.258 | 0.3 | ug/L | GW-201-UI | 2 / 14 | 0.021 - 0.22 | 0.3 | N/A | 0.034 c | 0.5 | MCL | Y | ASL |
| | 11097-69-1 | Aroclor-1254 | 0.13 | 4.28 | ug/L | GW-224A-UI | 3 / 14 | 0.021 - 0.22 | 4.28 | N/A | 0.034 c | 0.5 | MCL | Y | ASL |
| | 7429-90-5 | Aluminum | 38 | 260 | ug/L | GUI-702 | 10 / 14 | 16 - 200 | 260 | N/A | 3700 n | N/A | N/A | N | BSL |
| | 7440-36-0 | Antimony | 0.62 | 5.7 | ug/L | GW-224A-UI | 5 / 14 | 0.5 - 2 | 5.7 | N/A | 1.5 n | 6 | MCL | Y | ASL |
| | 7440-38-2 | Arsenic | 0.436 J | 8.4 | ug/L | GUI-703 | 14 / 14 | N/A | 8.4 | N/A | 0.045 c | 10 | MCL | Y | ASL |
| | 7440-39-3 | Barium | 21 | 870.6 | ug/L | GW-207B-UI | 10 / 14 | 200 | 870.6 | N/A | 730 n | 2000 | MCL | Y | ASL |
| | 7440-41-7 | Beryllium | 0.18 | 0.18 | ug/L | GUI-702 | 1 / 14 | 0.1 - 0.5 | 0.18 | N/A | 73 c | 4 | MCL | N | BSL |
| | 7440-43-9 | Cadmium | 0.43 J | 27 | ug/L | GUI-702 | 7 / 14 | 0.1 - 0.5 | 27 | N/A | 1.8 n | 5 | MCL | Y | ASL |
| | 7440-70-2 | Calcium | 11000 | 112000 | ug/L | GW-208B-UI | 14 / 14 | N/A | 112000 | N/A | N/A | N/A | N/A | N | NUT |
| | 7440-47-3 | Chromium | 0.58 J | 8 | ug/L | GW-224A-UI | 11 / 14 | 0.6 | 8 | N/A | 0.043 c | 100 | MCL | Y | ASL |
| | 7440-48-4 | Cobalt | 0.77 | 33 | ug/L | GUI-703 | 8 / 14 | 0.1 - 50 | 33 | N/A | 1.1 n | N/A | N/A | Y | ASL |
| | 7440-50-8 | Copper | 1.8 | 69 | ug/L | GW-224A-UI | 7 / 14 | 0.7 - 25 | 69 | N/A | 150 n | 1300 | MCL | N | BSL |
| | 7439-89-6 | Iron | 1500 | 81000 | ug/L | DUPLICATE-3 | 14 / 14 | N/A | 81000 | N/A | 2600 n | N/A | N/A | Y | ASL |
| | 7439-92-1 | Lead | 0.2 | 48 | ug/L | GW-208B-UI | 9 / 14 | 0.7 - 3 | 48 | N/A | 15 n | 15 | MCL | Y | ASL |
| | 7439-95-4 | Magnesium | 2200 J | 19700 | ug/L | GW-208B-UI | 9 / 14 | 5000 | 19700 | N/A | N/A | N/A | N/A | N | NUT |
| | 7439-96-5 | Manganese | 203 J | 1700 | ug/L | GUI-703 | 14 / 14 | N/A | 1700 | N/A | 88 n | N/A | N/A | Y | ASL |
| | 7439-97-6 | Mercury | 0.032 J | 0.032 J | ug/L | GW-224A-UI | 1 / 14 | 0.05 - 0.5 | 0.032 | N/A | 0.37 n | 2 | MCL | N | BSL |
| | 7440-02-0 | Nickel | 2.1 | 115.1 | ug/L | GW-224A-UI | 8 / 14 | 0.5 - 40 | 115.1 | N/A | 73 n | N/A | N/A | Y | ASL |
| | 7440-09-7 | Potassium | 1600 | 3380 | ug/L | GW-207B-UI | 9 / 14 | 5000 | 3380 | N/A | N/A | N/A | N/A | N | NUT |
| | 7782-49-2 | Selenium | 0.66 | 1.1 | ug/L | SEA-608 | 3 / 14 | 0.5 - 5 | 1.1 | N/A | 18 n | 50 | MCL | N | BSL |
| | 7440-22-4 | Silver | 1.5 | 1.5 | ug/L | GW-224A-UI | 1 / 14 | 0.1 - 10 | 1.5 | N/A | 18 n | N/A | N/A | N | BSL |
| | 7440-23-5 | Sodium | 19000 | 44000 | ug/L | GUI-702 | 14 / 14 | N/A | 44000 | N/A | N/A | N/A | N/A | N | NUT |
| | 7440-28-0 | Thallium | 0.15 | 5.8 J | ug/L | GW-073-UI | 2 / 14 | 0.1 - 10 | 5.8 | N/A | N/A | 2 | MCL | Y | ASL |
| | 7440-62-2 | Vanadium | 0.89 J | 2.5 J | ug/L | GW-224A-UI | 6 / 14 | 0.4 - 50 | 2.5 | N/A | 0.26 n | N/A | N/A | Y | ASL |
| | 7440-66-6 | Zinc | 29.4 | 4100 | ug/L | GUI-703 | 8 / 14 | 2 - 20 | 4100 | N/A | 1100 n | N/A | N/A | Y | ASL |

TABLE 2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value | Screening Toxicity Value (N/C) (3) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Notes:
Multiple results from each monitoring well were treated as discrete samples in the selection of COPCs.
N/A = Not Applicable or Not Available
[1] **Organic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
**Inorganic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
[2] The maximum concentration was used. Duplicate samples were treated as discrete samples in the identification of maxima. However, duplicate samples will be averaged prior to statistical evaluation (i.e., development of UCLs).
[3] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Tapwater.
c = Carcinogen
n = Noncarcinogen (adjusted to a hazard quotient of 0.1)
The PRG values for noted analytes are as follows:
PRG for cadmium associated with water intake.
PRG for chromium VI used for chromium.
PRG for cyclohexane has been used for methylcyclohexane.
PRG for endosulfan has been used for endosulfan sulfate.
PRG for naphthalene has been used for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene.
The screening toxicity value for lead is the drinking water criterion protective of blood lead levels in children (USEPA, 2002d).
MCLs - USEPA National Primary Drinking Water Standards - July 1, 2002
[4] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
No Screening Level (NSL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Leachate
Exposure Medium: Leachate

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value | Screening Toxicity Value (N/C) (3) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unnamed Island | | | | | | | | | | | | | | | |
| | 91-57-6 | 2-Methylnaphthalene | 1.6 J | 2.8 J | ug/L | GW-LE3-LF,GW-LE01-UI | 3/7 | 0.1 - 0.45 | 2.8 | N/A | 15 n | N/A | N/A | N | BSL |
| | 83-32-9 | Acenaphthene | 10 J | 19 J | ug/L | GW-LE3-LF | 3/7 | 0.1 - 0.9 | 19 | N/A | 220 n | 670 | AWQC | N | BSL |
| | 208-96-8 | Acenaphthylene | 0.11 | 15 J | ug/L | GW-LE02-UI | 6/7 | 0.1 | 15 | N/A | 0.14 c | N/A | N/A | Y | ASL |
| | 120-12-7 | Anthracene | 0.12 | 2.1 J | ug/L | GW-LE01-UI | 7/7 | N/A | 2.1 | N/A | 1100 n | 8300 | AWQC | N | BSL |
| | 50-32-8 | Benzo(a)pyrene | 0.79 J | 5.6 J | ug/L | GW-LE02-UI | 4/7 | 0.35 - 0.5 | 5.6 | N/A | 0.0029 c | 0.0038 | AWQC | Y | ASL |
| | 205-99-2 | Benzo(b)fluoranthene | 0.36 | 5 J | ug/L | GW-LE02-UI | 7/7 | N/A | 5 | N/A | 0.029 c | 0.0038 | AWQC | Y | ASL |
| | 191-24-2 | Benzo(g,h,i)perylene | 0.24 | 2.9 J | ug/L | GW-LE02-UI | 7/7 | N/A | 2.9 | N/A | 0.14 c | N/A | N/A | Y | ASL |
| | 207-08-9 | Benzo(k)fluoranthene | 0.15 | 3.6 J | ug/L | GW-LE02-UI | 7/7 | N/A | 3.6 | N/A | 0.29 c | 0.0038 | AWQC | Y | ASL |
| | 56-55-3 | Benzo[a]anthracene | 0.31 | 6.8 J | ug/L | GW-LE02-UI | 7/7 | N/A | 6.8 | N/A | 0.029 c | 0.0038 | AWQC | Y | ASL |
| | 218-01-9 | Chrysene | 0.3 | 7.6 J | ug/L | GW-LE02-UI | 7/7 | N/A | 7.6 | N/A | 2.9 c | 0.0038 | AWQC | Y | ASL |
| | 53-70-3 | Dibenz[a,h]anthracene | 0.098 J | 0.75 J | ug/L | GW-LE02-UI | 6/7 | 0.1 | 0.75 | N/A | 0.0029 c | 0.0038 | AWQC | Y | ASL |
| | 206-44-0 | Fluoranthene | 0.31 | 7.4 | ug/L | GW-LE3-LF | 7/7 | N/A | 7.4 | N/A | 150 n | 130 | AWQC | N | BSL |
| | 86-73-7 | Fluorene | 2 J | 7.3 J | ug/L | GW-LE3-LF | 3/7 | 0.12 - 0.32 | 7.3 | N/A | 150 n | 1100 | AWQC | N | BSL |
| | 193-39-5 | Indeno(1,2,3-cd)pyrene | 0.19 | 2.3 J | ug/L | GW-LE02-UI | 7/7 | N/A | 2.3 | N/A | 0.029 c | 0.0038 | AWQC | Y | ASL |
| | 91-20-3 | Naphthalene | 3.3 | 27 J | ug/L | GW-LE01-UI | 4/7 | 0.11 - 1.7 | 27 | N/A | 0.14 c* | N/A | N/A | Y | ASL |
| | 85-01-8 | Phenanthrene | 2.3 J | 11 J | ug/L | GW-LE3-LF | 4/7 | 0.19 - 0.88 | 11 | N/A | 0.14 c* | N/A | N/A | Y | ASL |
| | 129-00-0 | Pyrene | 0.41 | 9.3 J | ug/L | GW-LE02-UI | 7/7 | N/A | 9.3 | N/A | 110 n | 830 | AWQC | N | BSL |
| | | | | | | | | | | | | | | | |
| | 92-52-4 | 1,1'-Biphenyl | 63 | 63 | ug/L | GW-LE6-LF | 1/7 | 5 | 63 | N/A | 180 n | N/A | N/A | N | BSL |
| | 95-95-4 | 2,4,5-Trichlorophenol | 1.4 J | 1.7 J | ug/L | GW-LE01-UI | 2/7 | 20 | 1.7 | N/A | 370 n | 1800 | AWQC | N | BSL |
| | 106-44-5 | 4-Methylphenol | 1.8 J | 110 | ug/L | GW-LE6-LF | 5/7 | 5 | 110 | N/A | 18 n | N/A | N/A | Y | ASL |
| | 1912-24-9 | Atrazine | 8.3 J | 8.3 J | ug/L | GW-LE02-UI | 1/7 | 5 | 8.3 | N/A | 0.29 c | N/A | N/A | Y | ASL |
| | 117-81-7 | bis(2-Ethylhexyl)phthalate | 6.7 | 130 | ug/L | GW-LE3-LF | 5/7 | 5 | 130 | N/A | 4.8 c | 1.2 | AWQC | Y | ASL |
| | 132-64-9 | Dibenzofuran | 2.2 J | 2.7 J | ug/L | GW-LE01-UI | 3/7 | 5 | 2.7 | N/A | N/A | N/A | N/A | Y | NSL |
| | 84-66-2 | Diethylphthalate | 1 J | 9.5 | ug/L | GW-LE5-LF | 5/7 | 5 | 9.5 | N/A | 2900 n | 17000 | AWQC | N | BSL |
| | 84-74-2 | Di-n-butyl phthalate | 1.1 J | 2.7 J | ug/L | GW-LE3-LF | 2/7 | 5 | 2.7 | N/A | 370 n | 2000 | AWQC | N | BSL |
| | 86-30-6 | N-Nitrosodiphenylamine | 5.9 | 7.6 | ug/L | GW-LE3-LF | 3/7 | 5 | 7.6 | N/A | 14 c | 3.3 | AWQC | Y | ASL |
| | 87-86-5 | Pentachlorophenol | 2.3 J | 2.3 J | ug/L | GW-LE6-LF | 1/7 | 5 | 2.3 | N/A | 0.56 c | 0.27 | AWQC | Y | ASL |
| | 108-95-2 | Phenol | 1.5 J | 8.6 | ug/L | GW-LE6-LF | 5/7 | 5 | 8.6 | N/A | 1100 n | 21000 | AWQC | N | BSL |
| | | | | | | | | | | | | | | | |
| | 120-82-1 | 1,2,4-Trichlorobenzene | 0.3 J | 0.3 J | ug/L | GW-LE01-UI | 1/7 | 0.5 | 0.3 | N/A | 0.41 n | 35 | AWQC | N | BSL |
| | 95-50-1 | 1,2-Dichlorobenzene | 0.3 J | 1.1 | ug/L | GW-LE3-LF | 2/7 | 0.5 | 1.1 | N/A | 37 n | 420 | AWQC | N | BSL |
| | 106-46-7 | 1,4-Dichlorobenzene | 1.1 | 7.3 | ug/L | GW-LE3-LF | 6/7 | 0.5 | 7.3 | N/A | 0.43 c | 63 | AWQC | Y | ASL |
| | 78-93-3 | 2-Butanone | 18 J | 19 J | ug/L | GW-LE01-UI | 2/7 | 5 | 19 | N/A | 710 n | N/A | N/A | N | BSL |
| | 67-64-1 | Acetone | 20 J | 25 J | ug/L | GW-LE02-UI | 2/7 | 5 | 25 | N/A | 2200 n | N/A | N/A | N | BSL |
| | 71-43-2 | Benzene | 0.34 J | 15 | ug/L | GW-LE3-LF | 7/7 | N/A | 15 | N/A | 0.41 c | 2.2 | AWQC | Y | ASL |
| | 75-15-0 | Carbon disulfide | 0.37 J | 1.2 | ug/L | GW-LE01-UI | 4/7 | 0.5 | 1.2 | N/A | 100 n | N/A | N/A | N | BSL |

TABLE 2.4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Leachate
Exposure Medium: Leachate

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value | Screening Toxicity Value (N/C) (3) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 108-90-7 | Chlorobenzene | 1.2 | 26 | ug/L | GW-LE3-LF | 7/7 | N/A | 26 | N/A | 9.1 n | 130 | AWQC | Y | ASL |
| | 156-59-2 | cis-1,2-Dichloroethene | 0.79 | 0.8 J | ug/L | GW-FD01 | 2/7 | 0.5 | 0.8 | N/A | 37 n | N/A | N/A | N | BSL |
| | 100-41-4 | Ethylbenzene | 0.38 J | 9.1 | ug/L | GW-LE6-LF | 2/7 | 0.5 | 9.1 | N/A | 1.5 c | 530 | AWQC | Y | ASL |
| | 98-82-8 | Isopropylbenzene | 1.2 | 6.5 | ug/L | GW-LE3-LF | 4/7 | 0.5 | 6.5 | N/A | 68 n | N/A | N/A | N | BSL |
| | 108-88-3 | Toluene | 0.36 J | 13 | ug/L | GW-LE6-LF | 5/7 | 0.5 | 13 | N/A | 230 n | 1300 | AWQC | N | BSL |
| | 1330-20-7 | Xylene (total) | 0.42 J | 21 | ug/L | GW-LE6-LF | 5/7 | 0.5 | 21 | N/A | 20 n | N/A | N/A | Y | ASL |
| | 1336-36-3 | Total PCBs | 0.45 J | 14 | ug/L | GW-LE02-UI | 3/7 | N/A | 14 | N/A | 0.034 c | N/A | N/A | Y | ASL |
| | 72-54-8 | 4,4'-DDD | 0.015 J | 0.08 J | ug/L | GW-LE3-LF | 3/6 | 0.05 - 0.5 | 0.08 | N/A | 0.28 c | 0.00031 | AWQC | Y | ASL |
| | 72-55-9 | 4,4'-DDE | 0.02 J | 0.12 J | ug/L | GW-LE02-UI | 2/7 | 0.05 - 0.5 | 0.12 | N/A | 0.2 c | 0.00022 | AWQC | Y | ASL |
| | 50-29-3 | 4,4'-DDT | 0.056 J | 0.056 J | ug/L | GW-LE01-UI,GW-FD01 | 2/7 | 0.005 - 0.05 | 0.056 | N/A | 0.2 c | 0.00022 | AWQC | Y | ASL |
| | 319-84-6 | alpha-BHC | 0.014 J | 0.014 J | ug/L | GW-LE01-UI | 1/7 | 0.0025 - 0.025 | 0.014 | N/A | 0.011 c | 0.0026 | AWQC | Y | ASL |
| | 5103-71-9 | alpha-Chlordane | 0.0092 J | 0.0092 J | ug/L | GW-LE4-LF | 1/7 | 0.025 | 0.0092 | N/A | 0.19 c | 0.0008 | AWQC | Y | ASL |
| | 60-57-1 | Dieldrin | 0.01 J | 0.068 J | ug/L | GW-LE4-LF | 2/6 | 0.05 - 0.5 | 0.068 | N/A | 0.0042 c | 0.000052 | AWQC | Y | ASL |
| | 1031-07-8 | Endosulfan Sulfate | 0.011 J | 0.11 J | ug/L | GW-LE02-UI | 2/7 | 0.05 | 0.11 | N/A | 22 n | 62 | AWQC | N | BSL |
| | 7421-36-3 | Endrin aldehyde | 0.08 J | 0.08 J | ug/L | GW-LE02-UI | 1/7 | 0.005 - 0.05 | 0.08 | N/A | 1.1 n | 0.29 | AWQC | N | BSL |
| | 53494-70-5 | Endrin ketone | 0.088 | 0.088 | ug/L | GW-LE02-UI | 1/7 | 0.005 - 0.05 | 0.088 | N/A | 1.1 n | N/A | N/A | N | BSL |
| | 5103-74-2 | Gamma-Chlordane | 0.13 J | 0.13 J | ug/L | GW-LE02-UI | 1/7 | 0.025 - 0.25 | 0.13 | N/A | 0.19 c | 0.0008 | AWQC | Y | ASL |
| | 72-43-5 | Methoxychlor | 0.33 | 0.33 | ug/L | GW-LE02-UI | 1/7 | 0.025 - 0.25 | 0.33 | N/A | 18 n | 100 | AWQC | N | BSL |
| | 7429-90-5 | Aluminum | 11100 | 156000 | ug/L | GW-LE02-UI | 7/7 | N/A | 156000 | N/A | 3700 n | N/A | N/A | Y | ASL |
| | 7440-36-0 | Antimony | 4.9 J | 38 | ug/L | GW-LE5-LF | 4/7 | 60 | 38 | N/A | 1.5 n | 5.6 | AWQC | Y | ASL |
| | 7440-38-2 | Arsenic | 27 | 144 | ug/L | GW-LE6-LF | 7/7 | N/A | 144 | N/A | 0.045 c | 0.018 | AWQC | Y | ASL |
| | 7440-39-3 | Barium | 569 | 3700 | ug/L | GW-LE02-UI | 7/7 | N/A | 3700 | N/A | 730 n | 1000 | AWQC | Y | ASL |
| | 7440-41-7 | Beryllium | 0.78 J | 31.6 | ug/L | GW-LE02-UI | 7/7 | N/A | 31.6 | N/A | 7.3 n | N/A | N/A | Y | ASL |
| | 7440-43-9 | Cadmium | 13.9 | 311 | ug/L | GW-LE02-UI | 7/7 | N/A | 311 | N/A | 1.8 n | N/A | N/A | Y | ASL |
| | 7440-70-2 | Calcium | 27700 | 259000 | ug/L | GW-LE02-UI | 7/7 | N/A | 259000 | N/A | N/A | N/A | N/A | N | NUT |
| | 7440-47-3 | Chromium | 58 | 517 | ug/L | GW-LE02-UI | 7/7 | N/A | 517 | N/A | 0.043 c | N/A | N/A | Y | ASL |
| | 7440-48-4 | Cobalt | 20.1 J | 235 | ug/L | GW-LE02-UI | 7/7 | N/A | 235 | N/A | 1.1 n | N/A | N/A | Y | ASL |
| | 7440-50-8 | Copper | 66 | 4230 | ug/L | GW-LE02-UI | 6/7 | 25 | 4230 | N/A | 150 n | 1300 | AWQC | Y | ASL |
| | 57-12-5 | Cyanide | 12.8 | 103 | ug/L | GW-FD01,GW-LE02-UI | 7/7 | N/A | 103 | N/A | 73 n | 140 | AWQC | Y | ASL |
| | 7439-89-6 | Iron | 22200 | 286000 | ug/L | GW-LE02-UI | 7/7 | N/A | 286000 | N/A | 2600 n | 300 | AWQC | Y | ASL |
| | 7439-92-1 | Lead | 723 | 4540 | ug/L | GW-FD01 | 7/7 | N/A | 4540 | N/A | 15 n | N/A | N/A | Y | ASL |
| | 7439-95-4 | Magnesium | 5730 | 15500 | ug/L | GW-LE02-UI | 7/7 | N/A | 15500 | N/A | N/A | N/A | N/A | N | NUT |
| | 7439-96-5 | Manganese | 952 | 8540 | ug/L | GW-LE4-LF | 7/7 | N/A | 8540 | N/A | 88 n | 50 | AWQC | Y | ASL |
| | 7439-97-6 | Mercury | 1.8 | 53.7 J | ug/L | GW-LE01-UI | 7/7 | N/A | 53.7 | N/A | 0.37 n | N/A | N/A | Y | ASL |
| | 7440-02-0 | Nickel | 94 | 2020 | ug/L | GW-LE02-UI | 7/7 | N/A | 2020 | N/A | 73 n | 610 | AWQC | Y | ASL |

TABLE 2.4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Leachate
Exposure Medium: Leachate

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value | Screening Toxicity Value (N/C) (3) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7440-09-7 | Potassium | 5460 J | 17900 J | ug/L | GW-LE3-LF | 5/7 | 5000 | 17900 | N/A | N/A | N/A | N/A | N | NUT |
| | 7440-22-4 | Silver | 22 | 22 | ug/L | GW-LE02-UI | 1/7 | 0.6 - 10 | 22 | N/A | 18 n | N/A | N/A | Y | ASL |
| | 7440-23-5 | Sodium | 19100 J | 72500 J | ug/L | GW-LE4-LF | 7/7 | N/A | 72500 | N/A | N/A | N/A | N/A | N | NUT |
| | 7440-28-0 | Thallium | 7.5 J | 18.1 J | ug/L | GW-LE02-UI | 2/7 | 4 | 18.1 | N/A | N/A | 0.24 | AWQC | Y | ASL |
| | 7440-62-2 | Vanadium | 47.4 J | 310 | ug/L | GW-LE02-UI | 7/7 | N/A | 310 | N/A | 0.26 n | N/A | N/A | Y | ASL |
| | 7440-66-6 | Zinc | 854 | 50900 | ug/L | GW-LE02-UI | 7/7 | N/A | 50900 | N/A | 1100 n | 7400 | AWQC | Y | ASL |

Notes:
Data represent "leachate" data collected from excavation trenches in Landfill and Unnamed Island and are used for COPC screening purposes only.
N/A = Not Applicable or Not Available
[1] **Organic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
**Inorganic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
[2] The maximum concentration was used. Duplicate samples were treated as discrete samples in the identification of maxima. However, duplicate samples will be averaged prior to statistical evaluation (i.e., development of UCLs).
[3] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Tapwater.
c = Carcinogen
n = Noncarcinogen (adjusted to a hazard quotient of 0.1)
The PRG values for noted analytes are as follows:
PRG for cadmium associated with water intake.
PRG for chlordane has been used for alpha-chlordane and gamma-chlordane.
PRG for chromium VI used for chromium.
PRG for endosulfan has been used for endosulfan sulfate.
PRG for endrin has been used for endrin aldehyde and endrin ketone.
PRG for methyl mercury has been used for mercury.
PRG for naphthalene has been used for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene.
The screening toxicity value for lead is the drinking water criterion protective of blood lead levels in children (USEPA, 2002d).
AWQCs - National Recommended Water Quality Criteria for human health consumption of water and organism - 2006
[4] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
No Screening Level (NSL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site-Wide (Excluding Wetlands) | | | | | | | | | | | | | | | |
| | 91-57-6 | 2-Methylnaphthalene | 0.0036 | 0.47 | mg/kg | T05BR-005 | 56/94 | 0.0023 - 0.63 | 0.47 | 0.43 | 31 n | N/A | N/A | N | BSL |
| | 83-32-9 | Acenaphthene | 0.003 | 0.85 | mg/kg | SE-047-BR | 63/94 | 0.0021 - 0.63 | 0.85 | 0.18 | 340 n | N/A | N/A | N | BSL |
| | 208-96-8 | Acenaphthylene | 0.007 | 0.56 | mg/kg | T05BR-005 | 82/94 | 0.0023 - 0.52 | 0.56 | 0.47 | 3.6 c | N/A | N/A | N | BSL |
| | 120-12-7 | Anthracene | 0.0048 | 2.9 | mg/kg | BD062105 | 88/94 | 0.0023 - 0.52 | 2.9 | 0.96 | 1700 n | N/A | N/A | N | BSL |
| | 50-32-8 | Benzo(a)pyrene | 0.0063 | 6.7 | mg/kg | BD062105 | 92/94 | 0.0023 - 0.0037 | 6.7 | 2.7 | 0.015 c | N/A | N/A | Y | ASL |
| | 205-99-2 | Benzo(b)fluoranthene | 0.011 | 4.3 | mg/kg | SE-027-BR | 87/89 | 0.0023 - 0.0037 | 4.3 | 2.6 | 0.15 c | N/A | N/A | Y | ASL |
| | 191-24-2 | Benzo(g,h,i)perylene | 0.0064 | 2.9 | mg/kg | SE-053-WT | 91/94 | 0.0023 - 0.52 | 2.9 | 1.9 | 3.6 c | N/A | N/A | N | BSL |
| | 207-08-9 | Benzo(k)fluoranthene | 0.004 | 3.6 | mg/kg | BD062105 | 91/94 | 0.0023 - 0.004 | 3.6 | 2.4 | 1.5 c | N/A | N/A | Y | ASL |
| | 56-55-3 | Benzo[a]anthracene | 0.0045 | 7.1 | mg/kg | BD062105 | 92/94 | 0.0023 - 0.0037 | 7.1 | 2.8 | 0.15 c | N/A | N/A | Y | ASL |
| | 218-01-9 | Chrysene | 0.0076 | 6.9 | mg/kg | BD062105 | 93/94 | 0.0037 | 6.9 | 2.8 | 15 c | N/A | N/A | N | BSL |
| | 53-70-3 | Dibenz[a,h]anthracene | 0.0058 | 0.92 | mg/kg | BD062105 | 74/94 | 0.0023 - 1.1 | 0.92 | 0.7 | 0.015 c | N/A | N/A | Y | ASL |
| | 206-44-0 | Fluoranthene | 0.008 | 10 | mg/kg | BD062105 | 92/94 | 0.0023 - 0.0037 | 10 | 4.9 | 230 n | N/A | N/A | N | BSL |
| | 86-73-7 | Fluorene | 0.0024 | 0.7 | mg/kg | SE-047-BR | 75/94 | 0.0023 - 0.63 | 0.7 | 0.32 | 230 n | N/A | N/A | N | BSL |
| | 193-39-5 | Indeno(1,2,3-cd)pyrene | 0.0052 | 2.5 | mg/kg | SE-053-WT, T05BR-005 | 91/94 | 0.0023 - 0.52 | 2.5 | 1.8 | 0.15 c | N/A | N/A | Y | ASL |
| | 91-20-3 | Naphthalene | 0.0041 | 0.7 | mg/kg | SE-047-BR | 60/94 | 0.0023 - 0.63 | 0.7 | 0.35 | 3.6 c | N/A | N/A | N | BSL |
| | 85-01-8 | Phenanthrene | 0.0091 | 5.3 | mg/kg | SE-047-BR | 91/94 | 0.0023 - 0.004 | 5.3 | 2.4 | 3.6 c | N/A | N/A | Y | ASL |
| | 129-00-0 | Pyrene | 0.0038 | 13 | mg/kg | BD062105 | 93/94 | 0.0037 | 13 | 4.2 | 170 n | N/A | N/A | N | BSL |
| | 92-52-4 | 1,1'-Biphenyl | 0.042 J | 0.088 J | mg/kg | BD062105 | 6/94 | 0.08 - 0.16 | 0.088 | 0.065 | 390 n | N/A | N/A | N | BSL |
| | 95-48-7 | 2-Methylphenol | 0.0075 | 0.016 | mg/kg | T05PD-002 | 5/94 | 0.0016 - 0.66 | 0.016 | 0.016 | 310 n | N/A | N/A | N | BSL |
| | 106-44-5 | 4-Methylphenol | 0.054 J | 0.068 J | mg/kg | SE-FD-13 | 4/94 | 0.08 - 0.66 | 0.068 | 0.074 | 31 n | N/A | N/A | N | BSL |
| | 100-02-7 | 4-Nitrophenol | 0.26 | 0.26 | mg/kg | T05BR-003 | 1/94 | 0.08 - 1.7 | 0.26 | ND | 24 n | N/A | N/A | N | BSL |
| | 98-86-2 | Acetophenone | 0.044 J | 0.088 J | mg/kg | SE-FD-13 | 4/94 | 0.08 - 0.66 | 0.088 | ND | 780 n | N/A | N/A | N | BSL |
| | 100-52-7 | Benzaldehyde | 0.04 J | 1.7 | mg/kg | SE-FD-13 | 37/94 | 0.08 - 0.63 | 1.7 | 0.48 | 780 n | N/A | N/A | N | BSL |
| | 117-81-7 | bis(2-Ethylhexyl)phthalate | 0.043 J | 58 J | mg/kg | SE-074-LF | 60/94 | 0.1 - 0.75 | 58 | 5.9 | 35 c | N/A | N/A | Y | ASL |
| | 85-68-7 | Butyl benzyl phthalate | 0.064 J | 0.2 J | mg/kg | SE-032-BR | 9/94 | 0.08 - 0.66 | 0.2 | 0.18 | 260 c | N/A | N/A | N | BSL |
| | 86-74-8 | Carbazole | 0.034 J | 0.88 J | mg/kg | SE-025-BR | 51/94 | 0.08 - 0.61 | 0.88 | 0.33 | N/A | N/A | N/A | Y | NSL |
| | 132-64-9 | Dibenzofuran | 0.044 J | 0.5 | mg/kg | SE-047-BR | 27/94 | 0.08 - 0.63 | 0.5 | 0.086 | N/A | N/A | N/A | Y | NSL |
| | 131-11-3 | Dimethylphthalate | 0.062 J | 0.062 J | mg/kg | SE-013-WT | 1/94 | 0.08 - 0.66 | 0.062 | ND | 4900 n | N/A | N/A | N | BSL |
| | 84-74-2 | Di-n-butyl phthalate | 0.043 J | 2.8 | mg/kg | SE-083-BR | 9/94 | 0.08 - 0.63 | 2.8 | ND | 610 n | N/A | N/A | N | BSL |
| | 117-84-0 | Di-n-octyl phthalate | 0.075 J | 11 J | mg/kg | SE-029-BR | 12/94 | 0.08 - 0.66 | 11 | 0.15 | 610 n | N/A | N/A | N | BSL |
| | 86-30-6 | N-Nitrosodiphenylamine | 0.05 J | 1.4 | mg/kg | SE-078-UI | 4/94 | 0.08 - 0.66 | 1.4 | ND | 99 c | N/A | N/A | N | BSL |
| | 87-86-5 | Pentachlorophenol | 0.18 | 0.18 | mg/kg | T05BR-003 | 1/90 | 0.08 - 3 | 0.18 | ND | 3 c | N/A | N/A | N | BSL |
| | 108-95-2 | Phenol | 0.041 J | 1.6 J | mg/kg | T05WB-002 | 11/94 | 0.08 - 0.66 | 1.6 | 0.18 | 1800 n | N/A | N/A | N | BSL |
| | 75-35-4 | 1,1-Dichloroethene | 0.002 J | 0.002 J | mg/kg | SE-019-LF | 1/94 | 0.0013 - 0.046 | 0.002 | 0.002 | 24 n | N/A | N/A | N | BSL |
| | 95-50-1 | 1,2-Dichlorobenzene | 0.001 J | 0.009 J | mg/kg | SE-020-LF | 4/94 | 0.0013 - 0.046 | 0.009 | ND | 190 n | N/A | N/A | N | BSL |

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | | Maximum Concentration (Qualifier) (1) | | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 106-46-7 | 1,4-Dichlorobenzene | 0.00051 | J | 0.02 | | mg/kg | SE-020-LF | 7/94 | 0.0017 - 0.046 | 0.02 | 0.00046 | 2.4 | c | N/A | N/A | N | BSL |
| | 78-93-3 | 2-Butanone | 0.003 | J | 0.75 | J | mg/kg | SE-078-UI | 58/94 | 0.0017 - 0.033 | 0.75 | 0.056 | 2800 | n | N/A | N/A | N | BSL |
| | 108-10-1 | 4-Methyl-2-pentanone | 0.13 | J | 0.13 | J | mg/kg | SE-078-UI | 1/94 | 0.0013 - 0.046 | 0.13 | ND | 530 | n | N/A | N/A | N | BSL |
| | 67-64-1 | Acetone | 0.003 | J | 2.3 | J | mg/kg | SE-078-UI | 47/94 | 0.0049 - 0.04 | 2.3 | 0.15 | 6100 | n | N/A | N/A | N | BSL |
| | 71-43-2 | Benzene | 0.00056 | J | 0.006 | J | mg/kg | SE-078-UI | 2/94 | 0.0013 - 0.046 | 0.006 | ND | 1.1 | c | N/A | N/A | N | BSL |
| | 75-15-0 | Carbon disulfide | 0.00088 | J | 0.044 | J | mg/kg | SE-078-UI | 29/94 | 0.0017 - 0.038 | 0.044 | 0.013 | 82 | n | N/A | N/A | N | BSL |
| | 108-90-7 | Chlorobenzene | 0.00081 | J | 0.053 | J | mg/kg | SE-069-NP | 12/94 | 0.0017 - 0.046 | 0.053 | ND | 29 | n | N/A | N/A | N | BSL |
| | 75-00-3 | Chloroethane | 0.014 | J | 0.014 | J | mg/kg | SE-FD-12 | 1/94 | 0.0013 - 0.046 | 0.014 | ND | 1500 | n | N/A | N/A | N | BSL |
| | 156-59-2 | cis-1,2-Dichloroethene | 0.004 | J | 0.006 | J | mg/kg | SE-032-BR | 2/94 | 0.0013 - 0.046 | 0.006 | ND | 78 | n | N/A | N/A | N | BSL |
| | 110-82-7 | Cyclohexane | 0.001 | J | 0.036 | J | mg/kg | SE-FD-12 | 7/94 | 0.0013 - 0.046 | 0.036 | ND | 700 | n | N/A | N/A | N | BSL |
| | 108-87-2 | Cyclohexane, methyl- | 0.00038 | J | 0.012 | J | mg/kg | SE-020-LF | 2/94 | 0.0017 - 0.046 | 0.012 | ND | 700 | n | N/A | N/A | N | BSL |
| | 100-41-4 | Ethylbenzene | 0.00054 | | 0.0034 | | mg/kg | T05WB-002 | 8/94 | 0.0013 - 0.046 | 0.0034 | 0.0053 | 5.4 | c | N/A | N/A | N | BSL |
| | 98-82-8 | Isopropylbenzene | 0.002 | J | 0.003 | J | mg/kg | SE-020-LF | 2/94 | 0.0013 - 0.046 | 0.003 | ND | 210 | n | N/A | N/A | N | BSL |
| | 79-20-9 | Methyl acetate | 0.001 | J | 0.038 | J | mg/kg | SE-079-UI | 7/94 | 0.0013 - 0.046 | 0.038 | 0.001 | 7800 | n | N/A | N/A | N | BSL |
| | 75-09-2 | Methylene chloride | 0.004 | JEB | 0.061 | J | mg/kg | SE-079-UI | 8/94 | 0.0037 - 0.087 | 0.061 | ND | 11 | c | N/A | N/A | N | BSL |
| | 100-42-5 | Styrene | 0.00061 | | 0.0013 | | mg/kg | T05WB-002 | 2/94 | 0.0013 - 0.046 | 0.0013 | 0.002 | 630 | n | N/A | N/A | N | BSL |
| | 127-18-4 | Tetrachloroethene | 0.008 | J | 0.011 | | mg/kg | SE-032-BR | 2/94 | 0.0013 - 0.046 | 0.011 | ND | 0.55 | c | N/A | N/A | N | BSL |
| | 108-88-3 | Toluene | 0.0005 | J | 0.038 | J | mg/kg | SE-079-UI | 23/94 | 0.0013 - 0.034 | 0.038 | 0.00051 | 500 | n | N/A | N/A | N | BSL |
| | 79-01-6 | Trichloroethene | 0.002 | J | 0.003 | J | mg/kg | SE-032-BR | 2/94 | 0.0013 - 0.046 | 0.003 | 0.0024 | 2.8 | c | N/A | N/A | N | BSL |
| | 75-69-4 | Trichlorofluoromethane | 0.001 | J | 0.002 | J | mg/kg | SE-005-UI, SE-067-BR | 3/94 | 0.0013 - 0.046 | 0.002 | ND | 79 | n | N/A | N/A | N | BSL |
| | 1330-20-7 | Xylene (Total) | 0.001 | J | 0.004 | J | mg/kg | SE-078-UI | 7/94 | 0.004 - 0.046 | 0.004 | 0.001 | 63 | n | N/A | N/A | N | BSL |
| | 53469-21-9 | Aroclor-1242 | 0.25 | J | 0.25 | J | mg/kg | SE-030-BR | 1/92 | 0.0065 - 0.036 | 0.25 | ND | 0.22 | c | N/A | N/A | Y | ASL |
| | 12672-29-6 | Aroclor-1248 | 0.066 | | 0.13 | | mg/kg | T05BR-002 | 2/92 | 0.0066 - 0.036 | 0.13 | ND | 0.22 | c | N/A | N/A | N | BSL |
| | 11097-69-1 | Aroclor-1254 | 0.0094 | J | 2.8 | | mg/kg | SE-026-BR | 19/92 | 0.0065 - 0.03 | 2.8 | 1.4 | 0.11 | n | N/A | N/A | Y | ASL |
| | 11096-82-5 | Aroclor-1260 | 0.0057 | J | 0.76 | | mg/kg | T05BR-005 | 60/93 | 0.0071 - 0.012 | 0.76 | 0.65 | 0.22 | c | N/A | N/A | Y | ASL |
| | 72-54-8 | 4,4'-DDD | 0.00041 | J | 0.035 | J | mg/kg | SE-051-DF | 59/86 | 0.00073 - 0.0081 | 0.035 | 0.018 | 2 | c | N/A | N/A | N | BSL |
| | 72-55-9 | 4,4'-DDE | 0.00045 | J | 0.037 | J | mg/kg | SE-081-BR | 55/79 | 0.00065 - 0.0012 | 0.037 | 0.016 | 1.4 | c | N/A | N/A | N | BSL |
| | 50-29-3 | 4,4'-DDT | 0.00072 | J | 0.005 | J | mg/kg | SE-010-WT | 13/64 | 0.00059 - 0.0093 | 0.005 | 0.0027 | 1.7 | c | N/A | N/A | N | BSL |
| | 309-00-2 | Aldrin | 0.0014 | J | 0.0014 | J | mg/kg | SE-008-BR | 1/91 | 0.00034 - 0.0009 | 0.0014 | ND | 0.029 | c | N/A | N/A | N | BSL |
| | 5103-71-9 | Alpha-chlordane | 0.00029 | J | 0.039 | J | mg/kg | SE-079-UI | 40/86 | 0.00034 - 0.00082 | 0.039 | 0.0063 | 1.6 | c | N/A | N/A | N | BSL |
| | 319-85-7 | Beta-BHC | 0.00051 | J | 0.0029 | | mg/kg | SE-016-WT | 2/89 | 0.00034 - 0.0009 | 0.0029 | ND | 0.27 | c | N/A | N/A | N | BSL |
| | 319-86-8 | Delta-BHC | 0.00097 | | 0.0016 | | mg/kg | T05BR-005 | 2/92 | 0.00034 - 0.0009 | 0.0016 | 0.0017 | 0.077 | c | N/A | N/A | N | BSL |
| | 60-57-1 | Dieldrin | 0.0004 | J | 0.074 | J | mg/kg | SE-051-DF | 37/84 | 0.00066 - 0.0081 | 0.074 | 0.017 | 0.03 | c | N/A | N/A | Y | ASL |
| | 33213-65-9 | Endosulfan II | 0.0014 | | 0.0014 | | mg/kg | SE-064-BR | 1/91 | 0.00059 - 0.0013 | 0.0014 | ND | 37 | n | N/A | N/A | N | BSL |
| | 1031-07-8 | Endosulfan sulfate | 0.001 | J | 0.01 | J | mg/kg | SE-080-UI | 16/80 | 0.00059 - 0.0093 | 0.01 | 0.013 | 37 | n | N/A | N/A | N | BSL |
| | 72-20-8 | Endrin | 0.0086 | J | 0.0086 | J | mg/kg | SE-087-UI | 1/91 | 0.00059 - 0.0013 | 0.0086 | ND | 1.8 | n | N/A | N/A | N | BSL |
| | 7421-36-3 | Endrin aldehyde | 0.0012 | J | 0.0095 | | mg/kg | SE-081-BR | 13/77 | 0.00059 - 0.0045 | 0.0095 | 0.0027 | 1.8 | n | N/A | N/A | N | BSL |
| | 53494-70-5 | Endrin ketone | 0.00075 | J | 0.0021 | J | mg/kg | T05BR-006 | 9/69 | 0.00059 - 0.0093 | 0.0021 | 0.02 | 1.8 | n | N/A | N/A | N | BSL |

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5103-74-2 | Gamma-Chlordane | 0.00034 J | 0.035 J | mg/kg | SE-FD-13 | 31/67 | 0.00034 - 0.0042 | 0.035 | 0.0065 | 1.6 c | N/A | N/A | N | BSL |
| | 1024-57-3 | Heptachlor epoxide | 0.027 J | 0.027 J | mg/kg | SE-080-UI | 1/92 | 0.00034 - 0.0009 | 0.027 | ND | 0.053 c | N/A | N/A | N | BSL |
| | 72-43-5 | Methoxychlor | 0.0045 J | 0.016 J | mg/kg | SE-051-DF | 8/88 | 0.00059 - 0.0066 | 0.016 | ND | 31 n | N/A | N/A | N | BSL |
| | 7429-90-5 | Aluminum | 1800 | 36500 | mg/kg | SE-055-WT | 94/94 | N/A | 36500 | 12 | 7700 n | N/A | N/A | Y | ASL |
| | 7440-36-0 | Antimony | 0.2 | 18.9 | mg/kg | SE-001-UI | 44/94 | 0.1 - 58 | 18.9 | 0.00076 | 3.1 n | N/A | N/A | Y | ASL |
| | 7440-38-2 | Arsenic | 1.1 | 92.3 | mg/kg | SE-041-BR | 93/94 | 0.44 | 92.3 | 0.012 | 0.39 c | N/A | N/A | Y | ASL |
| | 7440-39-3 | Barium | 8.7 | 617 | mg/kg | SE-001-UI | 62/94 | 0.15 - 76 | 617 | 0.14 | 1500 n | N/A | N/A | N | BSL |
| | 7440-41-7 | Beryllium | 0.081 | 1.7 | mg/kg | SE-079-UI | 53/94 | 0.063 - 1.9 | 1.7 | 0.00088 | 16 n | N/A | N/A | N | BSL |
| | 7440-43-9 | Cadmium | 0.09 | 30.2 | mg/kg | SE-069-NP | 85/94 | 0.043 - 0.071 | 30.2 | 0.012 | 7 n | N/A | N/A | Y | ASL |
| | 7440-70-2 | Calcium | 240 | 8310 | mg/kg | SE-055-WT | 71/94 | 990 - 1900 | 8310 | 3.3 | N/A | N/A | N/A | N | NUT |
| | 7440-47-3 | Chromium | 3.7 | 354 | mg/kg | SE-078-UI | 94/94 | N/A | 354 | 0.12 | 0.29 c | N/A | N/A | Y | ASL |
| | 7440-48-4 | Cobalt | 1.1 | 32.5 | mg/kg | SE-055-WT | 48/94 | 9 - 19 | 32.5 | 0.012 | 2.3 n | N/A | N/A | Y | ASL |
| | 7440-50-8 | Copper | 5.7 | 653 | mg/kg | SE-001-UI | 92/94 | 5.5 - 5.8 | 653 | 0.18 | 310 n | N/A | N/A | Y | ASL |
| | 57-12-5 | Cyanide | 0.17 | 5.7 | mg/kg | SE-085-UI | 18/78 | 0.16 - 0.84 | 5.7 | ND | 160 n | N/A | N/A | N | BSL |
| | 7439-89-6 | Iron | 3600 | 57000 | mg/kg | T05WD-003 | 94/94 | N/A | 57000 | 25 | 5500 n | N/A | N/A | Y | ASL |
| | 7439-92-1 | Lead | 3 | 1760 | mg/kg | SE-078-UI | 94/94 | N/A | 1760 | 0.45 | 40 n | N/A | N/A | Y | ASL |
| | 7439-95-4 | Magnesium | 680 | 27400 | mg/kg | SE-055-WT | 81/94 | 996 - 1900 | 27400 | 4.1 | N/A | N/A | N/A | N | NUT |
| | 7439-96-5 | Manganese | 30 | 1900 | mg/kg | SE-055-WT | 94/94 | N/A | 1900 | 0.3 | 180 n | N/A | N/A | Y | ASL |
| | 7439-97-6 | Mercury | 0.016 | 1.1 | mg/kg | SE-087-UI | 62/94 | 0.045 - 0.088 | 1.1 | 0.00054 | 0.78 n | N/A | N/A | Y | ASL |
| | 7440-02-0 | Nickel | 3 | 82.7 | mg/kg | SE-055-WT | 66/94 | 7.3 - 15 | 82.7 | 0.052 | 150 n | N/A | N/A | N | BSL |
| | 7440-09-7 | Potassium | 310 | 13500 | mg/kg | SE-055-WT | 34/94 | 920 - 1904 | 13500 | 1.5 | N/A | N/A | N/A | N | NUT |
| | 7782-49-2 | Selenium | 0.22 | 31.2 | mg/kg | SE-026-BR | 69/94 | 0.6 - 1.9 | 31.2 | 0.0025 | 39 n | N/A | N/A | N | BSL |
| | 7440-22-4 | Silver | 0.08 | 23.3 | mg/kg | SE-079-UI | 91/94 | 2.3 - 3.7 | 23.3 | 0.0052 | 39 n | N/A | N/A | N | BSL |
| | 7440-23-5 | Sodium | 28 | 290 | mg/kg | T05WB-002 | 16/94 | 860 - 1904 | 290 | 2.5 | N/A | N/A | N/A | N | NUT |
| | 7440-28-0 | Thallium | 0.023 | 1.3 | mg/kg | SE-041-BR | 25/94 | 0.35 - 1.1 | 1.3 | 0.0004 | N/A | N/A | N/A | Y | NSL |
| | 7440-62-2 | Vanadium | 3.4 | 86.6 | mg/kg | SE-055-WT | 71/94 | 9.9 - 19 | 86.6 | 0.031 | 0.55 n | N/A | N/A | Y | ASL |
| | 7440-66-6 | Zinc | 20 | 1470 | mg/kg | SE-004-UI | 94/94 | N/A | 1470 | 0.68 | 2300 n | N/A | N/A | N | BSL |

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Notes:
N/A = Not Applicable or Not Available
[1] **Organic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
B = The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
E = The compound was quantitated above the calibration range.
**Inorganic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
[2] The maximum concentration was used. Duplicate samples were treated as discrete samples in the identification of maxima. However, duplicate samples will be averaged prior to statistical evaluation (i.e., development of UCLs).
[3] Values represent maximum background concentrations. Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment. ND = Non-detect.
[4] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Residential Soil.
c = Carcinogen
n = Noncarcinogen (adjusted to a hazard quotient of 0.1)
The PRG values for noted analytes are as follows:
PRG for beta-hexachlorocyclohexane has been used for delta-BHC.
PRG for cadmium associated with water intake.
PRG for chlordane has been used for alpha-chlordane and gamma-chlordane.
PRG for chromium VI used for chromium.
PRG for cyclohexane has been used for methylcyclohexane.
PRG for dibutyl phthalate has been used for di-n-octylphthalate.
PRG for diethylphthalate has been used for dimethylphthalate.
PRG for endosulfan has been used for endosulfan II and endosulfan sulfate.
PRG for endrin has been used for endrin aldehyde and endrin ketone.
PRG for methyl mercury has been used for mercury.
PRG for naphthalene has been used for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene.
PRG for p-nitrotoluene has been used for 4-nitrophenol.
[5] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
No Screening Level (NSL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.6
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site-Wide (Excluding Wetlands) | | | | | | | | | | | | | | | |
| | 83-32-9 | Acenaphthene | 0.0062 J | 0.0062 J | ug/L | SW-3 Pratt, SW-4 Pratt | 2/2 | N/A | 0.0062 | 0.0058 | 220 n | 670 | AWQC | N | BSL |
| | 208-96-8 | Acenaphthylene | 0.01 J | 0.013 | ug/L | SW-4 Pratt | 2/2 | N/A | 0.013 | 0.01 | 0.14 c | N/A | N/A | N | BSL |
| | 120-12-7 | Anthracene | 0.013 | 0.19 J | ug/L | SW-052-WT | 4/66 | 0.1 | 0.19 | 0.014 | 1100 n | 8300 | AWQC | N | BSL |
| | 50-32-8 | Benzo(a)pyrene | 0.11 | 0.34 J | ug/L | SW-020-LF | 6/64 | 0.1 | 0.34 | 0.067 | 0.0029 c | 0.0038 | AWQC | Y | ASL |
| | 205-99-2 | Benzo(b)fluoranthene | 0.1 | 0.36 | ug/L | SW-020-LF | 8/64 | 0.1 | 0.36 | 0.086 | 0.029 c | 0.0038 | AWQC | Y | ASL |
| | 191-24-2 | Benzo(g,h,i)perylene | 0.1 | 0.23 | ug/L | SW-020-LF | 4/64 | 0.1 | 0.23 | 0.13 | 0.14 c | N/A | N/A | Y | ASL |
| | 207-08-9 | Benzo(k)fluoranthene | 0.1 | 0.26 | ug/L | SW-020-LF | 2/64 | 0.1 | 0.26 | 0.069 | 0.29 c | 0.0038 | AWQC | Y | ASL |
| | 56-55-3 | Benzo[a]anthracene | 0.1 | 0.2 | ug/L | SW-020-LF | 5/64 | 0.1 | 0.2 | 0.044 | 0.029 c | 0.0038 | AWQC | Y | ASL |
| | 218-01-9 | Chrysene | 0.072 | 0.3 | ug/L | SW-020-LF | 8/66 | 0.05 | 0.3 | 0.074 | 2.9 c | 0.0038 | AWQC | Y | ASL |
| | 206-44-0 | Fluoranthene | 0.059 J | 0.39 | ug/L | SW-020-LF | 12/66 | 0.1 | 0.39 | 0.083 | 150 n | 130 | AWQC | N | BSL |
| | 86-73-7 | Fluorene | 0.0068 J | 0.0076 J | ug/L | SW-3 Pratt | 2/2 | N/A | 0.0076 | 0.0064 | 150 n | 1100 | AWQC | N | BSL |
| | 193-39-5 | Indeno(1,2,3-cd)pyrene | 0.1 | 0.19 | ug/L | SW-020-LF | 3/64 | 0.1 | 0.19 | 0.13 | 0.029 c | 0.0038 | AWQC | Y | ASL |
| | 91-20-3 | Naphthalene | 0.0067 J | 0.19 | ug/L | SW-007-UI | 4/66 | 0.1 - 0.13 | 0.19 | 0.0084 | 0.14 c | N/A | N/A | Y | ASL |
| | 85-01-8 | Phenanthrene | 0.041 | 0.21 | ug/L | SW-075-UI | 16/66 | 0.1 | 0.21 | 0.045 | 0.14 c | N/A | N/A | Y | ASL |
| | 129-00-0 | Pyrene | 0.071 | 0.42 | ug/L | SW-020-LF | 14/66 | 0.1 | 0.42 | 0.087 | 110 n | 830 | AWQC | N | BSL |
| | 117-81-7 | bis(2-Ethylhexyl)phthalate | 1.3 J | 10 | ug/L | SW-051-DF | 4/63 | 5 | 10 | ND | 4.8 c | 1.2 | AWQC | Y | ASL |
| | 84-74-2 | Di-n-butyl phthalate | 1.1 J | 1.8 J | ug/L | SW-047-BR | 2/63 | 5 | 1.8 | ND | 370 n | 2000 | AWQC | N | BSL |
| | 86-30-6 | N-Nitrosodiphenylamine | 1.6 J | 1.6 J | ug/L | SW-001-UI | 1/63 | 5 | 1.6 | ND | 14 c | 3.3 | AWQC | N | BSL |
| | 106-46-7 | 1,4-Dichlorobenzene | 0.54 | 0.54 | ug/L | SW-020-LF | 1/64 | 0.5 | 0.54 | ND | 0.43 c | 63 | AWQC | Y | ASL |
| | 67-64-1 | Acetone | 12 J | 12 J | ug/L | SW-024-BR | 1/64 | 5 - 11 | 12 | ND | 2200 n | N/A | N/A | N | BSL |
| | 71-43-2 | Benzene | 0.34 J | 2.4 | ug/L | SW-021-NP | 3/64 | 0.5 | 2.4 | ND | 0.41 c | 2.2 | AWQC | Y | ASL |
| | 75-27-4 | Bromodichloromethane | 0.31 J | 0.31 J | ug/L | SW-029-BR | 1/64 | 0.5 | 0.31 | ND | 0.12 c | 0.55 | AWQC | Y | ASL |
| | 75-25-2 | Bromoform | 0.5 | 0.5 | ug/L | SW-027-BR | 1/64 | 0.5 | 0.5 | ND | 8.5 c | 4.3 | AWQC | N | BSL |
| | 108-90-7 | Chlorobenzene | 1.5 | 3.5 | ug/L | SW-021-NP | 2/64 | 0.5 | 3.5 | ND | 9.1 n | 130 | AWQC | N | BSL |
| | 74-87-3 | Chloromethane | 0.33 J | 0.67 | ug/L | SW-016-WT | 12/64 | 0.32 - 0.57 | 0.67 | 0.37 | 19 n | N/A | N/A | N | BSL |
| | 1634-04-4 | Methyl tert-butyl ether | 0.73 J | 0.73 J | ug/L | SW-026-BR | 1/64 | 0.5 | 0.73 | ND | 12 c | N/A | N/A | N | BSL |
| | 108-88-3 | Toluene | 0.6 | 2.6 | ug/L | SW-078-UI | 2/64 | 0.5 | 2.6 | ND | 230 n | 1300 | AWQC | N | BSL |
| | 11096-82-5 | Aroclor-1260 | 0.12 J | 0.3 J | ug/L | SW-020-LF | 2/66 | 0.023 - 0.056 | 0.3 | ND | 0.034 c | 0.000064 | AWQC | Y | ASL |
| | 72-54-8 | 4,4'-DDD | 0.0047 J | 0.025 J | ug/L | SW-020-LF | 5/66 | 0.0011 - 0.0056 | 0.025 | ND | 0.28 c | 0.00031 | AWQC | Y | ASL |
| | 72-55-9 | 4,4'-DDE | 0.0014 | 0.015 J | ug/L | SW-020-LF | 2/66 | 0.0012 - 0.0056 | 0.015 | 0.0014 | 0.2 c | 0.00022 | AWQC | Y | ASL |
| | 50-29-3 | 4,4'-DDT | 0.0017 | 0.0092 J | ug/L | SW-077-UI | 2/66 | 0.0012 - 0.0056 | 0.0092 | ND | 0.2 c | 0.00022 | AWQC | Y | ASL |
| | 319-84-6 | alpha-BHC | 0.0021 J | 0.0026 J | ug/L | SW-4 Pratt | 2/66 | 0.0012 - 0.0028 | 0.0026 | 0.0029 | 0.011 c | 0.0026 | AWQC | N | BSL |
| | 5103-71-9 | alpha-Chlordane | 0.0033 J | 0.0044 J | ug/L | SW-051-DF | 2/66 | 0.0011 - 0.0028 | 0.0044 | ND | 0.19 c | 0.0008 | AWQC | Y | ASL |
| | 319-85-7 | beta-BHC | 0.0036 J | 0.01 J | ug/L | SW-017-WT | 3/64 | 0.0011 - 0.0028 | 0.01 | ND | 0.037 c | 0.0091 | AWQC | Y | ASL |

TABLE 2.6
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 60-57-1 | Dieldrin | 0.0013 | 0.014 J | ug/L | SW-020-LF | 6/66 | 0.005 - 0.0056 | 0.014 | 0.0014 | 0.0042 c | 0.000052 | AWQC | Y | ASL |
| | 1031-07-8 | Endosulfan Sulfate | 0.011 J | 0.013 | ug/L | SW-011-WT | 2/63 | 0.0011 - 0.0056 | 0.013 | ND | 22 n | 62 | AWQC | N | BSL |
| | 53494-70-5 | Endrin Ketone | 0.006 J | 0.006 J | ug/L | SW-021-NP | 1/66 | 0.0011 - 0.0056 | 0.006 | ND | 1.1 n | N/A | N/A | N | BSL |
| | 58-89-9 | Gamma-BHC | 0.0043 J | 0.0043 J | ug/L | SW-077-UI | 1/66 | 0.0011 - 0.0028 | 0.0043 | ND | 0.061 c | N/A | N/A | N | BSL |
| | 5103-74-2 | Gamma-Chlordane | 0.0027 J | 0.0094 | ug/L | SW-077-UI | 3/65 | 0.0011 - 0.0028 | 0.0094 | ND | 0.19 c | 0.0008 | AWQC | Y | ASL |
| | 1024-57-3 | Heptachlor Epoxide | 0.0029 J | 0.0051 J | ug/L | SW-077-UI | 3/65 | 0.0011 - 0.0028 | 0.0051 | ND | 0.0074 c | 0.000039 | AWQC | Y | ASL |
| | | **Metals (Total)** | | | | | | | | | | | | | |
| | 7429-90-5 | Aluminum | 23.9 J | 20800 | ug/L | SW-020-LF | 51/66 | 200 | 20800 | 360 | 3700 n | N/A | N/A | Y | ASL |
| | 7440-38-2 | Arsenic | 0.29 | 17.5 | ug/L | SW-020-LF | 66/66 | N/A | 17.5 | 2.29 | 0.045 c | 0.018 | AWQC | Y | ASL |
| | 7440-39-3 | Barium | 23 | 598 J | ug/L | SW-020-LF | 15/66 | 27.7 - 200 | 598 | 25 | 730 n | 1000 | AWQC | N | BSL |
| | 7440-41-7 | Beryllium | 0.37 J | 1.6 J | ug/L | SW-020-LF | 2/66 | 0.14 - 0.3 | 1.6 | ND | 7.3 n | N/A | N/A | N | BSL |
| | 7440-43-9 | Cadmium | 0.23 J | 19.9 | ug/L | SW-020-LF | 26/66 | 0.2 - 1.2 | 19.9 | 0.82 | 1.8 n | N/A | N/A | Y | ASL |
| | 7440-70-2 | Calcium | 6800 | 60600 | ug/L | SW-052-WT | 66/66 | N/A | 60600 | 18100 | N/A | N/A | N/A | N | NUT |
| | 7440-47-3 | Chromium | 0.43 J | 260 | ug/L | SW-020-LF | 37/66 | 0.4 - 2.1 | 260 | 2.8 | 0.043 c | N/A | N/A | Y | ASL |
| | 7440-48-4 | Cobalt | 0.51 | 9.2 J | ug/L | SW-020-LF | 17/66 | 0.37 - 50 | 9.2 | 0.54 | 1.1 n | N/A | N/A | Y | ASL |
| | 7440-50-8 | Copper | 7.7 | 428 | ug/L | SW-020-LF | 4/66 | 0.8 - 25 | 428 | 10 | 150 n | 1300 | AWQC | Y | ASL |
| | 57-12-5 | Cyanide | 3.2 J | 179 J | ug/L | SW-017-WT | 7/64 | 3 - 10 | 179 | ND | 73 n | 140 | AWQC | Y | ASL |
| | 7439-89-6 | Iron | 407 J | 54700 J | ug/L | SW-020-LF | 55/66 | 368 - 1940 | 54700 | 840 | 2600 n | 300 | AWQC | Y | ASL |
| | 7439-92-1 | Lead | 1.1 J | 330 | ug/L | SW-020-LF | 38/66 | 0.8 - 2 | 330 | 11 | 15 n | N/A | N/A | Y | ASL |
| | 7439-95-4 | Magnesium | 1400 | 16900 J | ug/L | SW-020-LF | 28/66 | 5000 | 16900 | 3280 | N/A | N/A | N/A | N | NUT |
| | 7439-96-5 | Manganese | 15.4 J | 1200 J | ug/L | SW-020-LF | 66/66 | N/A | 1200 | 126 | 88 n | 50 | AWQC | Y | ASL |
| | 7439-97-6 | Mercury | 0.014 | 0.46 J | ug/L | SW-043-BR | 4/66 | 0.12 - 0.17 | 0.46 | 0.019 | 0.37 n | N/A | N/A | Y | ASL |
| | 7440-02-0 | Nickel | 1.8 J,J | 44.1 | ug/L | SW-020-LF | 16/66 | 0.5 - 40 | 44.1 | 4.1 | 73 n | 610 | AWQC | N | BSL |
| | 7440-09-7 | Potassium | 1800 | 26200 | ug/L | SW-020-LF | 33/66 | 5000 | 26200 | 5640 | N/A | N/A | N/A | N | NUT |
| | 7782-49-2 | Selenium | 0.65 | 0.65 | ug/L | SW-3 Pratt Cumberland | 1/30 | 0.5 - 3 | 0.65 | 3.7 | 18 n | 170 | AWQC | N | BSL |
| | 7440-22-4 | Silver | 2.1 J | 15.2 J | ug/L | SW-020-LF | 4/66 | 0.13 - 10 | 15.2 | ND | 18 n | N/A | N/A | N | BSL |
| | 7440-23-5 | Sodium | 8110 | 84200 J | ug/L | SW-020-LF | 66/66 | N/A | 84200 | 59700 | N/A | N/A | N/A | N | NUT |
| | 7440-62-2 | Vanadium | 0.41 J | 60.4 | ug/L | SW-020-LF | 49/66 | 0.4 - 50 | 60.4 | 2.1 | 0.26 n | N/A | N/A | Y | ASL |
| | 7440-66-6 | Zinc | 17.7 J | 751 | ug/L | SW-020-LF | 20/66 | 3 - 20 | 751 | 20.8 | 1100 n | 7400 | AWQC | N | BSL |
| | | **Metals (Dissolved)** | | | | | | | | | | | | | |
| | 7429-90-5 | Aluminum | 56 | 58 | ug/L | SW-3 Pratt Cumberland | 2/6 | 6 | 58 | 64 | 3700 n | N/A | N/A | N | BSL |
| | 7440-36-0 | Antimony | 0.53 | 0.53 | ug/L | SW-3 Pratt Cumberland | 1/6 | 0.5 - 3 | 0.53 | ND | 1.5 n | 5.6 | AWQC | N | BSL |
| | 7440-38-2 | Arsenic | 0.655 | 1.87 | ug/L | SW-026-BR | 6/6 | N/A | 1.87 | 1.69 | 0.045 c | 0.018 | AWQC | Y | ASL |
| | 7440-39-3 | Barium | 18 | 18 | ug/L | SW-3 Pratt Cumberland, SW-4 Pratt Lincoln | 2/6 | 200 | 18 | 19 | 730 n | 1000 | AWQC | N | BSL |

TABLE 2.6
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Background Value (3) | Screening Toxicity Value (N/C) (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7440-43-9 | Cadmium | 0.33 | 0.34 | ug/L | SW-3 Pratt Cumberland | 2/6 | 0.2 | 0.34 | 0.37 | 1.8 n | N/A | N/A | N | BSL |
| | 7440-70-2 | Calcium | 7000 | 14200 | ug/L | SW-030-BR | 6/6 | N/A | 14200 | 13800 | N/A | N/A | N/A | N | NUT |
| | 7440-47-3 | Chromium | 0.42 J | 0.52 J | ug/L | SW-026-BR | 2/6 | 0.4 - 2 | 0.52 | ND | 0.043 c | N/A | N/A | Y | ASL |
| | 7440-48-4 | Cobalt | 0.73 J | 0.73 J | ug/L | SW-030-BR | 1/6 | 0.5 | 0.73 | ND | 1.1 n | N/A | N/A | N | BSL |
| | 7440-50-8 | Copper | 3.8 | 3.9 | ug/L | SW-4 Pratt Lincoln | 2/6 | 25 | 3.9 | 3.9 | 150 n | 1300 | AWQC | N | BSL |
| | 7439-89-6 | Iron | 210 | 395 | ug/L | SW-030-BR | 6/6 | N/A | 395 | 291 | 2600 n | 300 | AWQC | Y | ASL |
| | 7439-92-1 | Lead | 0.61 | 2.9 J | ug/L | SW-011-WT | 6/6 | N/A | 2.9 | 4.5 | 15 n | N/A | N/A | N | BSL |
| | 7439-95-4 | Magnesium | 1200 | 2900 J | ug/L | SW-030-BR | 3/6 | 5000 | 2900 | 1300 | N/A | N/A | N/A | N | NUT |
| | 7439-96-5 | Manganese | 62 | 242 | ug/L | SW-002-UI | 5/6 | 15 | 242 | 63 | 88 n | 50 | AWQC | Y | ASL |
| | 7440-02-0 | Nickel | 2.2 | 3.9 J | ug/L | SW-030-BR | 4/6 | 40 | 3.9 | 3.5 | 73 n | 610 | AWQC | N | BSL |
| | 7440-09-7 | Potassium | 1700 | 1700 | ug/L | SW-3 Pratt Cumberland, SW-4 Pratt Lincoln | 2/6 | 5000 | 1700 | 1800 | N/A | N/A | N/A | N | NUT |
| | 7440-23-5 | Sodium | 22900 | 49600 J | ug/L | SW-026-BR | 6/6 | N/A | 49600 | 48900 | N/A | N/A | N/A | N | NUT |
| | 7440-62-2 | Vanadium | 0.55 J | 1.4 | ug/L | SW-4 Pratt Lincoln | 3/6 | 0.4 | 1.4 | 1.4 | 0.26 n | N/A | N/A | Y | ASL |
| | 7440-66-6 | Zinc | 14.4 J | 22 | ug/L | SW-4 Pratt Lincoln | 4/6 | 20 | 22 | 24 | 1100 n | 7400 | AWQC | N | BSL |

Notes:
N/A = Not Applicable or Not Available
[1] **Organic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
**Inorganic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
[2] The maximum concentration was used. Duplicate samples were treated as discrete samples in the identification of maxima. However, duplicate samples will be averaged prior to statistical evaluation (i.e., development of UCLs).
[3] Values represent maximum background concentrations. Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment. ND = Non-detect.
[4] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Tapwater.
c = Carcinogen
n = Noncarcinogen (adjusted to a hazard quotient of 0.1)
The PRG values for noted analytes are as follows:
PRG for cadmium associated with water intake.
PRG for chlordane has been used for alpha-chlordane and gamma-chlordane.
PRG for chromium VI used for chromium.
PRG for endosulfan has been used for endosulfan sulfate.
PRG for endrin has been used for endrin ketone.
PRG for methyl mercury has been used for mercury.
PRG for naphthalene has been used for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene.
The screening toxicity value for lead is the drinking water criterion protective of blood lead levels in children (USEPA, 2002d).
AWQCs - National Recommended Water Quality Criteria for human health consumption of water and organism - 2006
[5] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
No Screening Level (NSL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.7
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Outdoor (Trench) Air

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | | Maximum Concentration (Qualifier) (1) | | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Units | Screening Toxicity Value (N/C) (3) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unnamed Island | | | | | | | | | | | | | | | | | | |
| | 75-35-4 | 1,1-Dichloroethene | 0.005 | J | 0.005 | J | mg/Kg | SO-007-UI | 1 / 57 | 0.00154 - 0.29 | 22 | ug/m3 | 21 | n | N/A | N/A | Y | ASL |
| | 120-82-1 | 1,2,4-Trichlorobenzene | 0.00426 | | 0.011 | | mg/Kg | SO-W01-UI | 2 / 57 | 0.00154 - 0.29 | 0.033 | ug/m3 | 0.21 | n | N/A | N/A | N | BSL |
| | 95-50-1 | 1,2-Dichlorobenzene | 0.0017 | J | 0.0055 | | mg/Kg | SO-224A-UI-1-5' | 2 / 57 | 0.00154 - 0.29 | 0.18 | ug/m3 | 21 | n | N/A | N/A | N | BSL |
| | 106-46-7 | 1,4-Dichlorobenzene | 0.00125 | J | 1.25 | | mg/Kg | SO-224A-UI-1-5' | 5 / 57 | 0.00154 - 0.29 | 54 | ug/m3 | 0.22 | c | N/A | N/A | Y | ASL |
| | 78-93-3 | 2-Butanone | 0.00456 | | 0.525 | J | mg/Kg | SO-224A-UI-1-5' | 6 / 57 | 0.0039 - 0.724 | 28 | ug/m3 | 520 | n | N/A | N/A | N | BSL |
| | 67-64-1 | Acetone | 0.00285 | J | 1.98 | J | mg/Kg | SO-224A-UI-1-5' | 21 / 57 | 0.00482 - 0.724 | 133 | ug/m3 | 3200 | n | N/A | N/A | N | BSL |
| | 71-43-2 | Benzene | 0.002 | J | 0.0135 | J | mg/Kg | SO-208B-UI (1-5') | 3 / 57 | 0.00154 - 0.29 | 17 | ug/m3 | 0.31 | c | N/A | N/A | Y | ASL |
| | 75-15-0 | Carbon disulfide | 0.00124 | J | 0.05 | | mg/Kg | SO-224A-UI-1-5' | 6 / 57 | 0.00156 - 0.29 | 306 | ug/m3 | 73 | n | N/A | N/A | Y | ASL |
| | 56-23-5 | Carbon tetrachloride | 0.00144 | J | 0.00602 | | mg/Kg | SO-209-UI (0-1') | 3 / 57 | 0.00154 - 0.29 | 106 | ug/m3 | 0.16 | c | N/A | N/A | Y | ASL |
| | 108-90-7 | Chlorobenzene | 0.003 | J | 0.127 | | mg/Kg | SO-224A-UI-1-5' | 5 / 57 | 0.00154 - 0.29 | 27 | ug/m3 | 5.2 | n | N/A | N/A | Y | ASL |
| | 156-59-2 | cis-1,2-Dichloroethene | 0.00196 | J | 0.00196 | J | mg/Kg | SO-224A-UI-1-5' | 1 / 57 | 0.00154 - 0.29 | 2.2 | ug/m3 | 6.3 | n | N/A | N/A | N | BSL |
| | 110-82-7 | Cyclohexane | 0.002 | J | 0.0443 | | mg/Kg | SO-224A-UI-1-5' | 3 / 57 | 0.00154 - 0.29 | 208 | ug/m3 | 630 | n | N/A | N/A | N | BSL |
| | 108-87-2 | Cyclohexane, methyl- | 0.004 | J | 0.229 | J | mg/Kg | SO-224A-UI-1-5' | 3 / 57 | 0.00154 - 0.29 | 1250 | ug/m3 | 630 | n | N/A | N/A | Y | ASL |
| | 75-71-8 | Dichlorodifluoromethane | 0.00154 | J | 0.0209 | | mg/Kg | SO-205-UI (2-4') | 3 / 57 | 0.00154 - 0.29 | 89 | ug/m3 | 21 | n | N/A | N/A | Y | ASL |
| | 100-41-4 | Ethylbenzene | 0.001 | J | 0.0026 | J | mg/Kg | SO-224A-UI-1-5' | 3 / 57 | 0.00154 - 0.29 | 0.72 | ug/m3 | 0.97 | c | N/A | N/A | N | BSL |
| | 98-82-8 | Isopropylbenzene | 0.00123 | J | 0.0646 | | mg/Kg | SO-224A-UI-1-5' | 4 / 57 | 0.00154 - 0.29 | 17 | ug/m3 | 42 | n | N/A | N/A | N | BSL |
| | 79-20-9 | Methyl acetate | 0.00211 | J | 1.11 | | mg/Kg | SO-226A-UI-6-8' | 8 / 57 | 0.00156 - 0.234 | 158 | ug/m3 | 21 | n | N/A | N/A | Y | ASL |
| | 75-09-2 | Methylene chloride | 0.00373 | J | 0.004 | J | mg/Kg | SO-200-UI (0-1') | 2 / 57 | 0.00385 - 0.724 | 6.7 | ug/m3 | 5.2 | c | N/A | N/A | Y | ASL |
| | 100-42-5 | Styrene | 0.00232 | J | 0.00232 | J | mg/Kg | SO-224A-UI-1-5' | 1 / 57 | 0.00154 - 0.29 | 0.10 | ug/m3 | 100 | n | N/A | N/A | N | BSL |
| | 127-18-4 | Tetrachloroethene | 0.00212 | J | 0.025 | | mg/Kg | SO-W03-UI | 7 / 57 | 0.00154 - 0.29 | 32 | ug/m3 | 0.41 | c | N/A | N/A | Y | ASL |
| | 108-88-3 | Toluene | 0.0008 | J | 0.608 | | mg/Kg | SO-226A-UI-6-8' | 11 / 57 | 0.00154 - 0.234 | 339 | ug/m3 | 520 | n | N/A | N/A | N | BSL |
| | 79-01-6 | Trichloroethene | 0.00281 | | 0.00504 | | mg/Kg | SO-224A-UI-1-5' | 2 / 57 | 0.00154 - 0.29 | 4.3 | ug/m3 | 1.2 | c | N/A | N/A | Y | ASL |
| | 75-69-4 | Trichlorofluoromethane | 0.00114 | J | 0.0056 | | mg/Kg | SO-205-UI (2-4') | 2 / 57 | 0.00154 - 0.29 | 17 | ug/m3 | 73 | n | N/A | N/A | N | BSL |
| | 1330-20-7 | Xylene (Total) | 0.0085 | | 0.0423 | | mg/Kg | SO-224A-UI-1-5' | 4 / 57 | 0.00462 - 0.87 | 10.9 | ug/m3 | 10 | n | N/A | N/A | Y | ASL |
| | 92-52-4 | 1,1'-Biphenyl | 0.027 | J | 0.34 | | mg/Kg | SO-205-UI (2-4') | 11 / 56 | 0.138 - 2.49 | 0.12 | ug/m3 | N/A | | N/A | N/A | Y | NSL |
| | 91-57-6 | 2-Methylnaphthalene | 0.00308 | J | 2.78 | | mg/Kg | SO-224A-UI-1-5' | 39 / 56 | 0.00788 - 0.4 | 2.8 | ug/m3 | 0.072 | c | N/A | N/A | Y | ASL |
| | 106-44-5 | 4-Methylphenol | 0.059 | J | 0.395 | | mg/Kg | SO-204-UI (2-4') | 4 / 56 | 0.138 - 2.49 | NV | | | | | | | |
| | 83-32-9 | Acenaphthene | 0.00715 | | 2.01 | | mg/Kg | SO-226A-UI-6-8' | 37 / 56 | 0.00387 - 0.41 | 0.19 | ug/m3 | 0.072 | c | N/A | N/A | Y | ASL |
| | 208-96-8 | Acenaphthylene | 0.00208 | J | 1.14 | | mg/Kg | SO-226A-UI-6-8' | 44 / 56 | 0.00428 - 0.4 | 0.42 | ug/m3 | 0.072 | c | N/A | N/A | Y | ASL |
| | 98-86-2 | Acetophenone | 0.053 | J | 0.86 | J | mg/Kg | SO-086-UI | 6 / 56 | 0.138 - 2.49 | 0.91 | ug/m3 | 0.0031 | n | N/A | N/A | Y | ASL |
| | 120-12-7 | Anthracene | 0.00385 | J | 4.1 | | mg/Kg | SO-226A-UI-6-8' | 50 / 56 | 0.00788 - 0.38 | 0.015 | ug/m3 | 0.072 | c | N/A | N/A | N | BSL |
| | 100-52-7 | Benzaldehyde | 0.021 | J | 0.33 | | mg/Kg | SO-200-UI (0-1') | 26 / 49 | 0.138 - 2.49 | 1.2 | ug/m3 | N/A | | N/A | N/A | Y | NSL |
| | 50-32-8 | Benzo(a)pyrene | 0.00635 | | 17.2 | | mg/Kg | SO-226A-UI-6-8' | 54 / 56 | 0.00788 - 0.00864 | NV | | | | | | | |
| | 205-99-2 | Benzo(b)fluoranthene | 0.01 | | 9.63 | | mg/Kg | SO-226A-UI-6-8' | 51 / 53 | 0.00788 - 0.00864 | NV | | | | | | | |
| | 191-24-2 | Benzo(g,h,i)perylene | 0.00608 | | 8.44 | | mg/Kg | SO-226A-UI-6-8' | 54 / 56 | 0.00788 - 0.00864 | NV | | | | | | | |
| | 207-08-9 | Benzo(k)fluoranthene | 0.00506 | | 6.18 | | mg/Kg | SO-226A-UI-6-8' | 54 / 56 | 0.00788 - 0.00864 | NV | | | | | | | |

TABLE 2.7
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Outdoor (Trench) Air

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Units | Screening Toxicity Value (N/C) (3) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 56-55-3 | Benzo[a]anthracene | 0.00807 | 14.4 | mg/Kg | SO-226A-UI-6-8' | 54 / 56 | 0.00788 - 0.00864 | NV | | | | | | |
| | 117-81-7 | bis(2-Ethylhexyl)phthalate | 0.0846 J | 577 | mg/Kg | SO-206-UI (2-3') | 31 / 56 | 0.139 - 1.51 | NV | | | | | | |
| | 85-68-7 | Butyl benzyl phthalate | 0.038 J | 0.315 | mg/Kg | SO-201-UI (4-6') | 8 / 56 | 0.138 - 3.4 | NV | | | | | | |
| | 86-74-8 | Carbazole | 0.024 J | 0.99 | mg/Kg | SO-015-UI | 28 / 56 | 0.138 - 2.49 | NV | | | | | | |
| | 218-01-9 | Chrysene | 0.00892 | 14.4 | mg/Kg | SO-226A-UI-6-8' | 54 / 57 | 0.00788 - 0.37 | NV | | | | | | |
| | 53-70-3 | Dibenz[a,h]anthracene | 0.0032 J | 1.73 | mg/Kg | SO-226A-UI-6-8' | 47 / 56 | 0.00428 - 3.4 | NV | | | | | | |
| | 132-64-9 | Dibenzofuran | 0.061 J | 1.1 | mg/Kg | SO-015-UI | 22 / 56 | 0.138 - 2.49 | NV | | | | | | |
| | 84-66-2 | Diethylphthalate | 0.56 J | 2.89 | mg/Kg | SO-224A-UI-1-5' | 2 / 56 | 0.138 - 1.51 | NV | | | | | | |
| | 84-74-2 | Di-N-Butyl phthalate | 0.023 J | 2.44 | mg/Kg | SO-201-UI (4-6') | 12 / 56 | 0.138 - 2.49 | NV | | | | | | |
| | 117-84-0 | Di-N-Octyl phthalate | 0.145 | 61.2 | mg/Kg | SO-206-UI (2-3') | 13 / 56 | 0.138 - 3.4 | NV | | | | | | |
| | 206-44-0 | Fluoranthene | 0.0128 | 37.8 | mg/Kg | SO-226A-UI-6-8' | 54 / 56 | 0.00788 - 0.00864 | NV | | | | | | |
| | 86-73-7 | Fluorene | 0.00811 | 2.4 | mg/Kg | SO-226A-UI-6-8' | 39 / 56 | 0.00387 - 0.4 | 0.040 | ug/m3 | 0.072 c | N/A | N/A | N | BSL |
| | 193-39-5 | Indeno(1,2,3-cd)pyrene | 0.00454 | 6.21 | mg/Kg | SO-226A-UI-6-8' | 54 / 56 | 0.00788 - 0.00864 | NV | | | | | | |
| | 91-20-3 | Naphthalene | 0.04 J | 4.75 | mg/Kg | SO-224A-UI-1-5' | 43 / 63 | 0.00387 - 0.4 | 1.1 | ug/m3 | 0.072 c | N/A | N/A | Y | ASL |
| | 98-95-3 | Nitrobenzene | 0.53 J | 0.53 J | mg/Kg | SO-W02-UI | 1 / 56 | 0.138 - 2.49 | 1.7 | ug/m3 | 0.061 c | N/A | N/A | Y | ASL |
| | 86-30-6 | N-Nitrosodiphenylamine | 0.315 | 1.8 | mg/Kg | SO-W01-UI | 3 / 56 | 0.138 - 1.51 | NV | | | | | | |
| | 85-01-8 | Phenanthrene | 0.00687 J | 26.7 | mg/Kg | SO-226A-UI-6-8' | 54 / 56 | 0.00788 - 0.00864 | 0.74 | ug/m3 | 0.072 c | N/A | N/A | Y | ASL |
| | 108-95-2 | Phenol | 0.009 J | 3.79 | mg/Kg | SO-224A-UI-1-5' | 5 / 56 | 0.138 - 1.51 | NV | | | | | | |
| | 129-00-0 | Pyrene | 0.0128 | 39.5 | mg/Kg | SO-226A-UI-6-8' | 54 / 56 | 0.00788 - 0.00864 | 0.0071 | ug/m3 | 0.072 c | N/A | N/A | N | BSL |
| | | | | | | | | | | | | | | | |
| | 72-54-8 | 4,4'-DDD | 0.000414 | 0.0825 J | mg/Kg | SO-225A-UI-1.5-5' | 31 / 52 | 0.000284 - 0.00484 | NV | | | | | | |
| | 72-55-9 | 4,4'-DDE | 0.00132 | 0.07 | mg/Kg | SO-010-UI | 25 / 50 | 0.000278 - 0.042 | NV | | | | | | |
| | 50-29-3 | 4,4'-DDT | 0.00158 | 0.0596 J | mg/Kg | SO-206-UI (2-3') | 11 / 41 | 0.000278 - 0.052 | NV | | | | | | |
| | 319-84-6 | alpha-BHC | 0.000607 | 0.00197 | mg/Kg | SO-206-UI (2-3') | 3 / 56 | 0.000284 - 0.00484 | NV | | | | | | |
| | 5103-71-9 | alpha-Chlordane | 0.000644 | 0.0964 | mg/Kg | SO-201-UI (4-6') | 30 / 56 | 0.000278 - 0.0024 | NV | | | | | | |
| | 319-84-6 | Delta-BHC | 0.00132 | 0.00132 J | mg/Kg | SO-205-UI (2-4') | 1 / 56 | 0.000278 - 0.00484 | NV | | | | | | |
| | 60-57-1 | Dieldrin | 0.000879 | 0.81 | mg/Kg | SO-010-UI | 48 / 56 | 0.000284 - 0.0038 | NV | | | | | | |
| | 959-98-8 | Endosulfan I | 0.00412 J | 0.00412 J | mg/Kg | SO-217-UI (0-1') | 1 / 55 | 0.000278 - 0.00484 | NV | | | | | | |
| | 33213-65-9 | Endosulfan II | 0.000504 | 0.00754 J | mg/Kg | SO-223F-UI-0-1' | 3 / 56 | 0.000284 - 0.0052 | NV | | | | | | |
| | 1031-07-8 | Endosulfan Sulfate | 0.003 J | 0.01 J | mg/Kg | SO-014-UI | 6 / 51 | 0.000278 - 0.052 | NV | | | | | | |
| | 72-20-8 | Endrin | 0.0018 | 0.00337 J | mg/Kg | SO-207B-UI (2-3') | 3 / 55 | 0.000278 - 0.0052 | NV | | | | | | |
| | 7421-36-3 | Endrin Aldehyde | 0.0044 | 0.022 J | mg/Kg | SO-080-UI | 5 / 51 | 0.000278 - 0.00484 | NV | | | | | | |
| | 53494-70-5 | Endrin Ketone | 0.014 J | 0.014 J | mg/Kg | SO-016-UI | 1 / 54 | 0.000278 - 0.0052 | NV | | | | | | |
| | 58-89-9 | Gamma-BHC | 0.000708 J | 0.000739 | mg/Kg | SO-206-UI (2-3') | 2 / 56 | 0.000278 - 0.00484 | NV | | | | | | |
| | 5103-74-2 | Gamma-Chlordane | 0.00035 | 0.152 | mg/Kg | SO-201-UI (4-6') | 19 / 45 | 0.000278 - 0.022 | NV | | | | | | |
| | 1024-57-3 | Heptachlor Epoxide | 0.013 J | 0.013 J | mg/Kg | SO-083-UI | 1 / 55 | 0.000278 - 0.00484 | NV | | | | | | |
| | 72-43-5 | Methoxychlor | 0.028 J | 0.028 J | mg/Kg | SO-W02-UI | 2 / 55 | 0.000278 - 0.027 | NV | | | | | | |

TABLE 2.7
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Outdoor (Trench) Air

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Units | Screening Toxicity Value (N/C) (3) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12767-79-2 | Aroclor 1268 | 0.033 J | 0.196 J | mg/Kg | SO-211-UI (0-1') | 5 / 30 | 0.0111 - 0.0968 | NV | | | | | | |
| | 53469-21-9 | Aroclor-1242 | 0.0306 | 2.44 J | mg/Kg | SO-224A-UI-1-5' | 5 / 56 | 0.0127 - 0.0845 | NV | | | | | | |
| | 11097-69-1 | Aroclor-1254 | 0.0165 J | 5.33 J | mg/Kg | SO-224A-UI-1-5' | 21 / 56 | 0.0128 - 0.0845 | NV | | | | | | |
| | 11096-82-5 | Aroclor-1260 | 0.0418 | 4.57 J | mg/Kg | SO-224A-UI-1-5' | 39 / 56 | 0.0111 - 0.0845 | NV | | | | | | |
| | 1746-01-6 | Dioxin TEQ | 8.7E-08 | 0.00015 | mg/Kg | SO-205-U1-3-4.5 | 18 / 18 | N/A | NV | | | | | | |

Notes:
Only includes soils data collected from Unnamed Island.
N/A = Not Applicable or Not Available

[1] **Organic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
**Inorganic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

[2] The maximum concentration was used to estimate possible indoor air concentrations (Cbuilding) using the Johnson-Ettinger (slab-on-grade) model (see Appendix B).
NV = Not Volatile (molecular weight > 200 g/mol or Henry's law constant < 1E-05 atm-m3/mol)

[3] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Residential Air.
c = Carcinogen
n = Noncarcinogen (adjusted to a hazard quotient of 0.1)
The PRG values for noted analytes are as follows:
PRG for cyclohexane has been used for methylcyclohexane.
PRG for vinyl acetate has been used for methyl acetate.
PRG for trans-1,2-dichloroethene has been used for cis-1,2-dichloroethene.
PRG for 2-chloroacetophenone has been used for acetophenone.
PRG for naphthalene has been used for 2-methylnaphthalene, acenaphthene, anthracene, fluorene, and pyrene.

[4] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
No Screening Level (NSL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.8
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Shallow Groundwater
Exposure Medium: Outdoor (Trench) Air

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Units | Screening Toxicity Value (N/C) (3) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unnamed Island | | | | | | | | | | | | | | | |
| | 75-34-3 | 1,1-Dichloroethane | 0.75 | 0.83 | ug/L | GW-026-UI | 2 / 14 | 0.5 - 2 | 0.016 | ug/m3 | 1.5 c | N/A | N/A | N | BSL |
| | 95-50-1 | 1,2-Dichlorobenzene | 0.3 J | 0.3 J | ug/L | SEA-608 | 1 / 14 | 0.5 - 2 | 0.0013 | ug/m3 | 21 n | N/A | N/A | N | BSL |
| | 106-46-7 | 1,4-Dichlorobenzene | 0.81 | 3.19 | ug/L | GW-224A-UI | 7 / 14 | 0.5 - 2 | 0.018 | ug/m3 | 0.22 c | N/A | N/A | N | BSL |
| | 71-43-2 | Benzene | 0.72 | 8.3 | ug/L | GW-FD03 | 6 / 14 | 0.5 - 2 | 0.18 | ug/m3 | 0.31 c | N/A | N/A | N | BSL |
| | 108-90-7 | Chlorobenzene | 2.46 | 28 | ug/L | GW-FD03 | 7 / 14 | 0.5 - 2 | 0.29 | ug/m3 | 5.2 n | N/A | N/A | N | BSL |
| | 75-00-3 | Chloroethane | 2.1 J | 2.1 J | ug/L | SEA-608 | 1 / 14 | 0.5 - 2 | 0.27 | ug/m3 | 1000 n | N/A | N/A | N | BSL |
| | 156-59-2 | cis-1,2-Dichloroethene | 0.72 | 0.72 | ug/L | GW-073-UI | 1 / 14 | 0.5 - 2 | 0.01 | ug/m3 | 6.3 n | N/A | N/A | N | BSL |
| | 110-82-7 | Cyclohexane | 0.41 J | 0.63 | ug/L | SEA-608 | 3 / 14 | 0.5 - 2 | 0.22 | ug/m3 | 630 n | N/A | N/A | N | BSL |
| | 108-87-2 | Cyclohexane, methyl- | 0.36 J | 1.34 J | ug/L | GW-224A-UI | 2 / 14 | 0.5 - 2 | 0.43 | ug/m3 | 630 n | N/A | N/A | N | BSL |
| | 98-82-8 | Isopropylbenzene | 0.91 | 5.2 | ug/L | GW-201-UI | 4 / 14 | 0.5 - 2 | 0.15 | ug/m3 | 42 n | N/A | N/A | N | BSL |
| | 1634-04-4 | Methyl tert-butyl ether | 0.27 J | 0.36 J | ug/L | GUI-702 | 2 / 14 | 0.5 - 2 | 0.0012 | ug/m3 | 0.94 n | N/A | N/A | N | BSL |
| | 108-88-3 | Toluene | 0.22 J | 18.7 | ug/L | GW-201-UI | 3 / 14 | 0.5 - 2 | 0.44 | ug/m3 | 520 n | N/A | N/A | N | BSL |
| | 79-01-6 | Trichloroethene | 0.55 | 0.55 | ug/L | GW-025-UI | 1 / 14 | 0.5 - 2 | 0.019 | ug/m3 | 1.2 c | N/A | N/A | N | BSL |
| | 106-42-3/108-38 | p/m-Xylene | 2.12 J | 2.12 J | ug/L | GW-224A-UI | 1 / 5 | 4 | 0.046 | ug/m3 | 73 n | N/A | N/A | N | BSL |
| | 1330-20-7 | Xylene (Total) | 0.68 J | 0.68 J | ug/L | SEA-608 | 1 / 9 | 0.5 - 1.5 | 0.015 | ug/m3 | 10 n | N/A | N/A | N | BSL |
| | | | | | | | | | | | | | | | |
| | 91-57-6 | 2-Methylnaphthalene | 0.0104 | 0.577 | ug/L | GW-201-UI | 4 / 14 | 0.0104 - 11 | 0.00041 | ug/m3 | 0.072 c | N/A | N/A | N | BSL |
| | 106-44-5 | 4-Methylphenol | 0.37 | 0.526 | ug/L | DUPLICATE-3 | 2 / 14 | 0.515 - 5 | NV | | | | | | |
| | 83-32-9 | Acenaphthene | 0.012 | 0.404 | ug/L | DUPLICATE-3 | 9 / 14 | 0.1 - 11 | 0.0001 | ug/m3 | 0.072 c | N/A | N/A | N | BSL |
| | 208-96-8 | Acenaphthylene | 0.0178 | 0.0365 | ug/L | GW-201-UI | 4 / 14 | 0.01 - 11 | 0.000021 | ug/m3 | 0.072 c | N/A | N/A | N | BSL |
| | 98-86-2 | Acetophenone | 0.897 | 0.897 | ug/L | GW-224A-UI | 1 / 14 | 0.52 - 5 | 0.000049 | ug/m3 | 0.0031 n | N/A | N/A | N | BSL |
| | 120-12-7 | Anthracene | 0.00545 J | 0.0868 | ug/L | DUPLICATE-3 | 7 / 14 | 0.1 - 11 | 0.0000088 | ug/m3 | 0.072 c | N/A | N/A | N | BSL |
| | 1912-24-9 | Atrazine | 2.9 J | 3.4 J | ug/L | GW-026-UI | 2 / 14 | 0.515 - 5 | NV | | | | | | |
| | 50-32-8 | Benzo(a)pyrene | 0.00756 J | 0.0197 | ug/L | GW-201-UI | 3 / 14 | 0.01 - 11 | NV | | | | | | |
| | 205-99-2 | Benzo(b)fluoranthene | 0.00867 J | 0.0192 | ug/L | GW-201-UI | 5 / 14 | 0.01 - 11 | NV | | | | | | |
| | 191-24-2 | Benzo(g,h,i)perylene | 0.00826 J | 0.0143 | ug/L | GW-201-UI | 3 / 14 | 0.01 - 11 | NV | | | | | | |
| | 207-08-9 | Benzo(k)fluoranthene | 0.00604 J | 0.0198 | ug/L | GW-201-UI | 4 / 14 | 0.01 - 11 | NV | | | | | | |
| | 56-55-3 | Benzo[a]anthracene | 0.0057 J | 0.11 | ug/L | GW-026-UI | 8 / 14 | 0.1 - 11 | NV | | | | | | |
| | 117-81-7 | bis(2-Ethylhexyl)phthalate | 0.87 | 5.17 | ug/L | DUPLICATE-3 | 5 / 14 | 0.52 - 5 | NV | | | | | | |
| | 218-01-9 | Chrysene | 0.0062 J | 0.0482 | ug/L | DUPLICATE-3 | 5 / 14 | 0.0104 - 11 | NV | | | | | | |
| | 132-64-9 | Dibenzofuran | 0.283 | 0.283 | ug/L | GW-201-UI | 1 / 14 | 0.515 - 5 | NV | | | | | | |
| | 84-66-2 | Diethylphthalate | 0.283 | 0.897 | ug/L | GW-224A-UI | 3 / 14 | 0.52 - 5 | NV | | | | | | |
| | 84-74-2 | Di-N-Butyl phthalate | 0.434 | 0.522 | ug/L | GW-201-UI | 3 / 14 | 0.515 - 5 | NV | | | | | | |
| | 117-84-0 | Di-N-Octyl phthalate | 0.382 J | 0.382 J | ug/L | DUPLICATE-3 | 1 / 14 | 0.515 - 5 | NV | | | | | | |
| | 206-44-0 | Fluoranthene | 0.01 | 0.174 | ug/L | DUPLICATE-3 | 8 / 14 | 0.1 - 10 | NV | | | | | | |
| | 86-73-7 | Fluorene | 0.011 | 0.446 | ug/L | DUPLICATE-3 | 6 / 14 | 0.0104 - 11 | 0.000055 | ug/m3 | 0.072 c | N/A | N/A | N | BSL |
| | 193-39-5 | Indeno(1,2,3-cd)pyrene | 0.00718 J | 0.0116 | ug/L | GW-201-UI | 3 / 14 | 0.01 - 11 | NV | | | | | | |

TABLE 2.8
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Shallow Groundwater
Exposure Medium: Outdoor (Trench) Air

| Exposure Point | CAS Number | Chemical | Minimum Concentration (Qualifier) (1) | Maximum Concentration (Qualifier) (1) | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (2) | Units | Screening Toxicity Value (N/C) (3) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag (Y/N) | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 91-20-3 | Naphthalene | 0.00914 J | 3.53 | ug/L | GW-201-UI | 8 / 14 | 0.1 - 11 | 0.0034 | ug/m3 | 0.072 c | N/A | N/A | N | BSL |
| | 86-30-6 | N-Nitrosodiphenylamine | 0.67 | 14.8 | ug/L | GW-201-UI | 5 / 14 | 0.52 - 5 | NV | | | | | | |
| | 85-01-8 | Phenanthrene | 0.01 | 0.92 | ug/L | DUPLICATE-3 | 8 / 14 | 0.1 - 11 | 0.00021 | ug/m3 | 0.072 c | N/A | N/A | N | BSL |
| | 129-00-0 | Pyrene | 0.0183 | 0.221 | ug/L | DUPLICATE-3 | 5 / 14 | 0.1 - 11 | 0.0000036 | ug/m3 | 0.072 c | N/A | N/A | N | BSL |
| | 72-54-8 | 4,4'-DDD | 0.00282 J | 0.0119 J | ug/L | GW-224A-UI | 2 / 13 | 0.000526 - 0.01 | NV | | | | | | |
| | 72-55-9 | 4,4'-DDE | 0.00135 J | 0.00135 J | ug/L | DUPLICATE-3 | 1 / 13 | 0.0005 - 0.01 | NV | | | | | | |
| | 309-00-2 | Aldrin | 0.000857 | 0.000857 | ug/L | GW-207B-UI | 1 / 14 | 0.0005 - 0.01 | NV | | | | | | |
| | 319-84-6 | alpha-BHC | 0.000988 | 0.000988 | ug/L | GW-208B-UI | 1 / 14 | 0.0005 - 0.01 | NV | | | | | | |
| | 5103-71-9 | alpha-Chlordane | 0.000892 | 0.00922 J | ug/L | DUPLICATE-3 | 4 / 14 | 0.000526 - 0.01 | NV | | | | | | |
| | 319-85-7 | beta-BHC | 0.00278 | 0.00278 | ug/L | GW-207B-UI | 1 / 14 | 0.0005 - 0.01 | NV | | | | | | |
| | 60-57-1 | Dieldrin | 0.00177 | 0.00177 | ug/L | GW-207B-UI | 1 / 14 | 0.0005 - 0.01 | NV | | | | | | |
| | 1031-07-8 | Endosulfan Sulfate | 0.107 | 0.107 | ug/L | DUPLICATE-3 | 1 / 14 | 0.0005 - 0.01 | NV | | | | | | |
| | 53469-21-9 | Aroclor-1242 | 0.258 | 0.3 | ug/L | GW-201-UI | 2 / 14 | 0.021 - 0.22 | NV | | | | | | |
| | 11097-69-1 | Aroclor-1254 | 0.13 | 4.28 | ug/L | GW-224A-UI | 3 / 14 | 0.021 - 0.22 | NV | | | | | | |

Notes:
Only includes shallow groundwater data collected from Unnamed Island.
N/A = Not Applicable or Not Available

[1] **Organic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
**Inorganic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

[2] The maximum concentration was used to estimate possible indoor air concentrations (Cbuilding) using the Johnson-Ettinger (slab-on-grade) model (see Appendix B).
NV = Not Volatile (molecular weight > 200 g/mol or Henry's law constant < 1E-05 atm-m3/mol)

[3] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Residential Air.
c = Carcinogen
n = Noncarcinogen (adjusted to a hazard quotient of 0.1)
The PRG values for noted analytes are as follows:
PRG for cyclohexane has been used for methylcyclohexane.
PRG for trans-1,2-dichloroethene has been used for cis-1,2-dichloroethene.
PRG for 2-chloroacetophenone has been used for acetophenone.
PRG for naphthalene has been used for 2-methylnaphthalene, acenaphthene, anthracene, fluorene, and pyrene.

[4] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
No Screening Level (NSL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 3.1.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface Soil

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| Unnamed Island | | | | | | | | | |
| | Benzo(a)anthracene | mg/kg | 1.1E+00 | 1.5E+00 (G) | 4.5E+00 | 1.5E+00 | mg/kg | 95% Approximate Gamma UCL | |
| | Benzo(a)pyrene | mg/kg | 1.0E+00 | 1.3E+00 (G) | 4.0E+00 (J) | 1.3E+00 | mg/kg | 95% Approximate Gamma UCL | |
| | Benzo(b)fluoranthene | mg/kg | 1.5E+00 | 2.0E+00 (G) | 6.4E+00 | 2.0E+00 | mg/kg | 95% Approximate Gamma UCL | |
| | Benzo(k)fluoranthene | mg/kg | 6.4E-01 | 8.7E-01 (G) | 2.4E+00 | 8.7E-01 | mg/kg | 95% Approximate Gamma UCL | |
| | bis(2-Ethylhexyl)phthalate | mg/kg | 1.7E+01 | 3.7E+01 (NP) | 2.6E+02 (J) | 3.7E+01 | mg/kg | 95% KM (BCA) UCL | |
| | Carbazole | mg/kg | 1.9E-01 | 2.4E-01 (NP) | 9.9E-01 | 2.4E-01 | mg/kg | 95% KM (t) UCL | |
| | Dibenz(a,h)anthracene | mg/kg | 2.6E-01 | 2.6E-01 (NP) | 7.5E-01 | 2.6E-01 | mg/kg | 95% KM (BCA) UCL | |
| | Dibenzofuran | mg/kg | 1.8E-01 | 2.2E-01 (NP) | 1.1E+00 | 2.2E-01 | mg/kg | 95% KM (t) UCL | |
| | Indeno(1,2,3-cd)pyrene | mg/kg | 6.1E-01 | 8.1E-01 (G) | 2.4E+00 | 8.1E-01 | mg/kg | 95% Approximate Gamma UCL | |
| | Phenanthrene | mg/kg | 1.5E+00 | 2.2E+00 (G) | 1.3E+01 (J) | 2.2E+00 | mg/kg | 95% Approximate Gamma UCL | |
| | Aroclor-1242 | mg/kg | 2.7E-02 | NC | 2.4E-01 (J) | 2.4E-01 | mg/kg | Maximum Concentration | (b) |
| | Aroclor-1254 | mg/kg | 2.1E-01 | 3.7E-01 (NP) | 1.3E+00 (J) | 3.7E-01 | mg/kg | 95% KM (t) UCL | |
| | Aroclor-1260 | mg/kg | 2.5E-01 | 5.2E-01 (NP) | 1.5E+00 (J) | 5.2E-01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Dieldrin | mg/kg | 8.8E-02 | 2.6E-01 (NP) | 8.1E-01 | 2.6E-01 | mg/kg | 97.5% KM (Chebyshev) UCL | |
| | Dioxin TEQ | mg/kg | 3.5E-05 | 5.1E-05 (N) | 6.7E-05 | 5.1E-05 | mg/kg | 95% Student's-t UCL | |
| | Aluminum | mg/kg | 5.9E+03 | 6.6E+03 (N) | 1.1E+04 | 6.6E+03 | mg/kg | 95% Modified-t UCL | |
| | Antimony | mg/kg | 6.8E+00 | 9.5E+00 (NP) | 6.4E+01 (J) | 9.5E+00 | mg/kg | 95% KM (t) UCL | |
| | Arsenic | mg/kg | 9.3E+00 | 1.2E+01 (G) | 2.6E+01 | 1.2E+01 | mg/kg | 95% Approximate Gamma UCL | |
| | Cadmium | mg/kg | 3.6E+00 | 6.9E+00 (NP) | 2.2E+01 | 6.9E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Chromium | mg/kg | 1.1E+02 | 1.4E+02 (LN) | 4.7E+02 (J) | 1.4E+02 | mg/kg | 95% H-UCL | |
| | Cobalt | mg/kg | 4.9E+00 | 5.6E+00 (NP) | 1.3E+01 | 5.6E+00 | mg/kg | 95% KM (Percentile Bootstrap) UCL | |
| | Copper | mg/kg | 2.0E+02 | 3.3E+02 (LN) | 1.3E+03 | 3.3E+02 | mg/kg | 95% H-UCL | |
| | Iron | mg/kg | 1.6E+04 | 2.4E+04 (NP) | 5.6E+04 (J) | 2.4E+04 | mg/kg | 95% Chebyshev (Mean, Sd) UCL | |
| | Lead | mg/kg | 3.6E+02 | 1.4E+03 (NP) | 2.2E+03 (J) | See Appendix D | | | |
| | Manganese | mg/kg | 2.7E+02 | 3.4E+02 (G) | 1.7E+03 | 3.4E+02 | mg/kg | 95% Approximate Gamma UCL | |
| | Mercury | mg/kg | 4.2E-01 | 5.5E-01 (G) | 1.8E+00 (J) | 5.5E-01 | mg/kg | 95% Approximate Gamma UCL | |
| | Nickel | mg/kg | 2.0E+01 | 4.2E+01 (NP) | 1.6E+02 (J) | 4.2E+01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Thallium | mg/kg | 3.6E-01 | 3.0E-01 (NP) | 1.2E+00 (J) | 3.0E-01 | mg/kg | 95% KM (BCA) UCL | |
| | Vanadium | mg/kg | 1.5E+01 | 1.7E+01 (NP) | 3.3E+01 | 1.7E+01 | mg/kg | 95% KM (BCA) UCL | |

TABLE 3.1.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current

Medium: Soil

Exposure Medium: Surface Soil

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |

Notes:

(1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. Note that Dioxin TEQ had all detections. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.1.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current

Medium: Soil

Exposure Medium: Surface Soil

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| Unnamed Island | | | | | | | | | |
| | Benzo(a)anthracene | mg/kg | 1.1E+00 | 1.5E+00 (G) | 4.5E+00 | 1.5E+00 | mg/kg | 95% Approximate Gamma UCL | |
| | Benzo(a)pyrene | mg/kg | 1.0E+00 | 1.3E+00 (G) | 4.0E+00 (J) | 1.3E+00 | mg/kg | 95% Approximate Gamma UCL | |
| | Benzo(b)fluoranthene | mg/kg | 1.5E+00 | 2.0E+00 (G) | 6.4E+00 | 2.0E+00 | mg/kg | 95% Approximate Gamma UCL | |
| | Benzo(k)fluoranthene | mg/kg | 6.4E-01 | 8.7E-01 (G) | 2.4E+00 | 8.7E-01 | mg/kg | 95% Approximate Gamma UCL | |
| | bis(2-Ethylhexyl)phthalate | mg/kg | 1.7E+01 | 3.7E+01 (NP) | 2.6E+02 (J) | 3.7E+01 | mg/kg | 95% KM (BCA) UCL | |
| | Carbazole | mg/kg | 1.9E-01 | 2.4E-01 (NP) | 9.9E-01 | 2.4E-01 | mg/kg | 95% KM (t) UCL | |
| | Dibenz(a,h)anthracene | mg/kg | 2.6E-01 | 2.6E-01 (NP) | 7.5E-01 | 2.6E-01 | mg/kg | 95% KM (BCA) UCL | |
| | Dibenzofuran | mg/kg | 1.8E-01 | 2.2E-01 (NP) | 1.1E+00 | 2.2E-01 | mg/kg | 95% KM (t) UCL | |
| | Indeno(1,2,3-cd)pyrene | mg/kg | 6.1E-01 | 8.1E-01 (G) | 2.4E+00 | 8.1E-01 | mg/kg | 95% Approximate Gamma UCL | |
| | Phenanthrene | mg/kg | 1.5E+00 | 2.2E+00 (G) | 1.3E+01 (J) | 2.2E+00 | mg/kg | 95% Approximate Gamma UCL | |
| | Aroclor-1242 | mg/kg | 2.7E-02 | NC | 2.4E-01 (J) | 2.7E-02 | mg/kg | Arithmetic Mean | (e) |
| | Aroclor-1254 | mg/kg | 2.1E-01 | 3.7E-01 (NP) | 1.3E+00 (J) | 3.7E-01 | mg/kg | 95% KM (t) UCL | |
| | Aroclor-1260 | mg/kg | 2.5E-01 | 5.2E-01 (NP) | 1.5E+00 (J) | 5.2E-01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Dieldrin | mg/kg | 8.8E-02 | 2.6E-01 (NP) | 8.1E-01 | 2.6E-01 | mg/kg | 97.5% KM (Chebyshev) UCL | |
| | Dioxin TEQ | mg/kg | 3.5E-05 | 5.1E-05 (N) | 6.7E-05 | 5.1E-05 | mg/kg | 95% Student's-t UCL | |
| | Aluminum | mg/kg | 5.9E+03 | 6.6E+03 (N) | 1.1E+04 | 6.6E+03 | mg/kg | 95% Modified-t UCL | |
| | Antimony | mg/kg | 6.8E+00 | 9.5E+00 (NP) | 6.4E+01 (J) | 9.5E+00 | mg/kg | 95% KM (t) UCL | |
| | Arsenic | mg/kg | 9.3E+00 | 1.2E+01 (G) | 2.6E+01 | 1.2E+01 | mg/kg | 95% Approximate Gamma UCL | |
| | Cadmium | mg/kg | 3.6E+00 | 6.9E+00 (NP) | 2.2E+01 | 6.9E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Chromium | mg/kg | 1.1E+02 | 1.4E+02 (LN) | 4.7E+02 (J) | 1.4E+02 | mg/kg | 95% H-UCL | |
| | Cobalt | mg/kg | 4.9E+00 | 5.6E+00 (NP) | 1.3E+01 | 5.6E+00 | mg/kg | 95% KM (Percentile Bootstrap) UCL | |
| | Copper | mg/kg | 2.0E+02 | 3.3E+02 (LN) | 1.3E+03 | 3.3E+02 | mg/kg | 95% H-UCL | |
| | Iron | mg/kg | 1.6E+04 | 2.4E+04 (NP) | 5.6E+04 (J) | 2.4E+04 | mg/kg | 95% Chebyshev (Mean, Sd) UCL | |
| | Lead | mg/kg | 3.6E+02 | 1.4E+03 (NP) | 2.2E+03 (J) | See Appendix D | | | |
| | Manganese | mg/kg | 2.7E+02 | 3.4E+02 (G) | 1.7E+03 | 3.4E+02 | mg/kg | 95% Approximate Gamma UCL | |
| | Mercury | mg/kg | 4.2E-01 | 5.5E-01 (G) | 1.8E+00 (J) | 5.5E-01 | mg/kg | 95% Approximate Gamma UCL | |
| | Nickel | mg/kg | 2.0E+01 | 4.2E+01 (NP) | 1.6E+02 (J) | 4.2E+01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Thallium | mg/kg | 3.6E-01 | 3.0E-01 (NP) | 1.2E+00 (J) | 3.0E-01 | mg/kg | 95% KM (BCA) UCL | |
| | Vanadium | mg/kg | 1.5E+01 | 1.7E+01 (NP) | 3.3E+01 | 1.7E+01 | mg/kg | 95% KM (BCA) UCL | |

TABLE 3.1.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current

Medium: Soil

Exposure Medium: Surface Soil

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |

Notes:

(1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. Note that Dioxin TEQ had all detections. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.2.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Surface + Subsurface Soil

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| Unnamed Island | | | | | | | | | |
| | Benzo(a)anthracene | mg/kg | 1.7E+00 | 3.2E+00 (NP) | 1.4E+01 | 3.2E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Benzo(a)pyrene | mg/kg | 1.6E+00 | 3.1E+00 (NP) | 1.7E+01 | 3.1E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Benzo(b)fluoranthene | mg/kg | 1.8E+00 | 3.0E+00 (NP) | 9.6E+00 | 3.0E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Benzo(g,h,i)perylene | mg/kg | 9.5E-01 | 1.7E+00 (NP) | 8.4E+00 | 1.7E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Benzo(k)fluoranthene | mg/kg | 9.3E-01 | 1.7E+00 (NP) | 6.2E+00 | 1.7E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | bis(2-Ethylhexyl)phthalate | mg/kg | 2.5E+01 | 1.5E+02 (NP) | 5.8E+02 | 1.5E+02 | mg/kg | 99% KM (Chebyshev) UCL | |
| | Carbazole | mg/kg | 2.1E-01 | 2.0E-01 (NP) | 9.9E-01 | 2.0E-01 | mg/kg | 95% KM (t) UCL | |
| | Dibenz(a,h)anthracene | mg/kg | 2.9E-01 | 4.5E-01 (NP) | 1.7E+00 | 4.5E-01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Dibenzofuran | mg/kg | 2.1E-01 | 2.0E-01 (NP) | 1.1E+00 | 2.0E-01 | mg/kg | 95% KM (t) UCL | |
| | Indeno(1,2,3-cd)pyrene | mg/kg | 7.8E-01 | 1.4E+00 (NP) | 6.2E+00 | 1.4E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Naphthalene | mg/kg | 3.3E-01 | 7.5E-01 (NP) | 4.8E+00 | 7.5E-01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Phenanthrene | mg/kg | 2.2E+00 | 4.6E+00 (NP) | 2.7E+01 | 4.6E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Aroclor-1242 | mg/kg | 7.0E-02 | 1.7E-01 (NP) | 2.4E+00 (J) | 1.7E-01 | mg/kg | 95% KM (t) UCL | |
| | Aroclor-1254 | mg/kg | 3.1E-01 | 5.0E-01 (NP) | 5.3E+00 (J) | 5.0E-01 | mg/kg | 95% KM (t) UCL | |
| | Aroclor-1260 | mg/kg | 3.0E-01 | 7.1E-01 (NP) | 4.6E+00 (J) | 7.1E-01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Dieldrin | mg/kg | 7.3E-02 | 1.6E-01 (NP) | 8.1E-01 | 1.6E-01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Dioxin TEQ | mg/kg | 3.4E-05 | 6.2E-05 (G) | 1.5E-04 | 6.2E-05 | mg/kg | 95% Approximate Gamma UCL | |
| | Aluminum | mg/kg | 6.2E+03 | 6.8E+03 (G) | 1.2E+04 | 6.8E+03 | mg/kg | 95% Approximate Gamma UCL | |
| | Antimony | mg/kg | 8.9E+00 | 4.2E+01 (NP) | 1.6E+02 (J) | 4.2E+01 | mg/kg | 99% KM (Chebyshev) UCL | |
| | Arsenic | mg/kg | 1.1E+01 | 1.4E+01 (G) | 5.7E+01 | 1.4E+01 | mg/kg | 95% Approximate Gamma UCL | |
| | Cadmium | mg/kg | 3.2E+00 | 5.5E+00 (NP) | 2.2E+01 | 5.5E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Chromium | mg/kg | 1.4E+02 | 2.1E+02 (LN) | 7.8E+02 | 2.1E+02 | mg/kg | 95% H-UCL | |
| | Cobalt | mg/kg | 5.2E+00 | 6.0E+00 (NP) | 1.9E+01 | 6.0E+00 | mg/kg | 95% KM (BCA) UCL | |
| | Copper | mg/kg | 2.4E+02 | 4.1E+02 (LN) | 1.7E+03 | 4.1E+02 | mg/kg | 95% H-UCL | |
| | Iron | mg/kg | 1.9E+04 | 2.9E+04 (NP) | 9.3E+04 | 2.9E+04 | mg/kg | 95% Chebyshev (Mean, Sd) UCL | |
| | Lead | mg/kg | 5.4E+02 | 1.2E+03 (LN) | 9.6E+03 (J) | See Appendix D | | | |
| | Manganese | mg/kg | 2.4E+02 | 3.8E+02 (NP) | 1.7E+03 | 3.8E+02 | mg/kg | 95% Chebyshev (Mean, Sd) UCL | |
| | Mercury | mg/kg | 6.1E-01 | 1.1E+00 (NP) | 3.4E+00 (J) | 1.1E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Nickel | mg/kg | 2.5E+01 | 4.9E+01 (NP) | 2.5E+02 | 4.9E+01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Thallium | mg/kg | 2.6E-01 | 2.2E-01 (NP) | 1.2E+00 (J) | 2.2E-01 | mg/kg | 95% KM (t) UCL | |
| | Vanadium | mg/kg | 1.6E+01 | 1.8E+01 (NP) | 5.0E+01 | 1.8E+01 | mg/kg | 95% KM (BCA) UCL | |
| | Zinc | mg/kg | 4.1E+02 | 9.4E+02 (NP) | 2.6E+03 | 9.4E+02 | mg/kg | 97.5% Chebyshev (Mean, Sd) UCL | |

TABLE 3.2.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Surface + Subsurface Soil

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |

Notes:

(1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. Note that Dioxin TEQ had all detections. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.2.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Surface + Subsurface Soil

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| Unnamed Island | | | | | | | | | |
| | Benzo(a)anthracene | mg/kg | 1.7E+00 | 3.2E+00 (NP) | 1.4E+01 | 3.2E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Benzo(a)pyrene | mg/kg | 1.6E+00 | 3.1E+00 (NP) | 1.7E+01 | 3.1E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Benzo(b)fluoranthene | mg/kg | 1.8E+00 | 3.0E+00 (NP) | 9.6E+00 | 3.0E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Benzo(g,h,i)perylene | mg/kg | 9.5E-01 | 1.7E+00 (NP) | 8.4E+00 | 1.7E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Benzo(k)fluoranthene | mg/kg | 9.3E-01 | 1.7E+00 (NP) | 6.2E+00 | 1.7E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | bis(2-Ethylhexyl)phthalate | mg/kg | 2.5E+01 | 1.5E+02 (NP) | 5.8E+02 | 1.5E+02 | mg/kg | 99% KM (Chebyshev) UCL | |
| | Carbazole | mg/kg | 2.1E-01 | 2.0E-01 (NP) | 9.9E-01 | 2.0E-01 | mg/kg | 95% KM (t) UCL | |
| | Dibenz(a,h)anthracene | mg/kg | 2.9E-01 | 4.5E-01 (NP) | 1.7E+00 | 4.5E-01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Dibenzofuran | mg/kg | 2.1E-01 | 2.0E-01 (NP) | 1.1E+00 | 2.0E-01 | mg/kg | 95% KM (t) UCL | |
| | Indeno(1,2,3-cd)pyrene | mg/kg | 7.8E-01 | 1.4E+00 (NP) | 6.2E+00 | 1.4E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Naphthalene | mg/kg | 3.3E-01 | 7.5E-01 (NP) | 4.8E+00 | 7.5E-01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Phenanthrene | mg/kg | 2.2E+00 | 4.6E+00 (NP) | 2.7E+01 | 4.6E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Aroclor-1242 | mg/kg | 7.0E-02 | 1.7E-01 (NP) | 2.4E+00 (J) | 1.7E-01 | mg/kg | 95% KM (t) UCL | |
| | Aroclor-1254 | mg/kg | 3.1E-01 | 5.0E-01 (NP) | 5.3E+00 (J) | 5.0E-01 | mg/kg | 95% KM (t) UCL | |
| | Aroclor-1260 | mg/kg | 3.0E-01 | 7.1E-01 (NP) | 4.6E+00 (J) | 7.1E-01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Dieldrin | mg/kg | 7.3E-02 | 1.6E-01 (NP) | 8.1E-01 | 1.6E-01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Dioxin TEQ | mg/kg | 3.4E-05 | 6.2E-05 (G) | 1.5E-04 | 6.2E-05 | mg/kg | 95% Approximate Gamma UCL | |
| | Aluminum | mg/kg | 6.2E+03 | 6.8E+03 (G) | 1.2E+04 | 6.8E+03 | mg/kg | 95% Approximate Gamma UCL | |
| | Antimony | mg/kg | 8.9E+00 | 4.2E+01 (NP) | 1.6E+02 (J) | 4.2E+01 | mg/kg | 99% KM (Chebyshev) UCL | |
| | Arsenic | mg/kg | 1.1E+01 | 1.4E+01 (G) | 5.7E+01 | 1.4E+01 | mg/kg | 95% Approximate Gamma UCL | |
| | Cadmium | mg/kg | 3.2E+00 | 5.5E+00 (NP) | 2.2E+01 | 5.5E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Chromium | mg/kg | 1.4E+02 | 2.1E+02 (LN) | 7.8E+02 | 2.1E+02 | mg/kg | 95% H-UCL | |
| | Cobalt | mg/kg | 5.2E+00 | 6.0E+00 (NP) | 1.9E+01 | 6.0E+00 | mg/kg | 95% KM (BCA) UCL | |
| | Copper | mg/kg | 2.4E+02 | 4.1E+02 (LN) | 1.7E+03 | 4.1E+02 | mg/kg | 95% H-UCL | |
| | Iron | mg/kg | 1.9E+04 | 2.9E+04 (NP) | 9.3E+04 | 2.9E+04 | mg/kg | 95% Chebyshev (Mean, Sd) UCL | |
| | Lead | mg/kg | 5.4E+02 | 1.2E+03 (LN) | 9.6E+03 (J) | See Appendix D | | | |
| | Manganese | mg/kg | 2.4E+02 | 3.8E+02 (NP) | 1.7E+03 | 3.8E+02 | mg/kg | 95% Chebyshev (Mean, Sd) UCL | |
| | Mercury | mg/kg | 6.1E-01 | 1.1E+00 (NP) | 3.4E+00 (J) | 1.1E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Nickel | mg/kg | 2.5E+01 | 4.9E+01 (NP) | 2.5E+02 | 4.9E+01 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Thallium | mg/kg | 2.6E-01 | 2.2E-01 (NP) | 1.2E+00 (J) | 2.2E-01 | mg/kg | 95% KM (t) UCL | |
| | Vanadium | mg/kg | 1.6E+01 | 1.8E+01 (NP) | 5.0E+01 | 1.8E+01 | mg/kg | 95% KM (BCA) UCL | |
| | Zinc | mg/kg | 4.1E+02 | 9.4E+02 (NP) | 2.6E+03 | 9.4E+02 | mg/kg | 97.5% Chebyshev (Mean, Sd) UCL | |

TABLE 3.2.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Surface + Subsurface Soil

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |

Notes:

(1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. Note that Dioxin TEQ had all detections. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.3.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| Unnamed Island | | | | | | | | | |
| | Atrazine | ug/L | 1.1E+00 | NC | 3.2E+00 (J) | 3.2E+00 | ug/L | Maximum Concentration | (b) |
| | Benzo(a)anthracene | ug/L | 9.0E-01 | 4.5E-02 (NP) | 8.0E-02 (J) | 4.5E-02 | ug/L | 95% KM (t) UCL | |
| | Benzo(a)pyrene | ug/L | 1.7E+00 | 1.7E-02 (NP) | 1.9E-02 | 1.7E-02 | ug/L | 95% KM (t) UCL | |
| | bis(2-Ethylhexyl)phthalate | ug/L | 1.8E+00 | 2.8E+00 (NP) | 4.8E+00 | 2.8E+00 | ug/L | 95% KM (t) UCL | |
| | Dibenzofuran | ug/L | 1.0E+00 | NC | 2.8E-01 (J) | 2.8E-01 | ug/L | Maximum Concentration | (b) |
| | Naphthalene | ug/L | 8.4E-01 | 9.2E-01 (NP) | 3.3E+00 | 9.2E-01 | ug/L | 95% KM (BCA) UCL | |
| | N-Nitrosodiphenylamine | ug/L | 2.4E+00 | 4.7E+00 (NP) | 1.4E+01 | 4.7E+00 | ug/L | 95% KM (t) UCL | |
| | Phenanthrene | ug/L | 5.7E-01 | 2.7E-01 (NP) | 8.9E-01 | 2.7E-01 | ug/L | 95% KM (BCA) UCL | |
| | 1,4-Dichlorobenzene | ug/L | 1.1E+00 | 1.8E+00 (NP) | 3.2E+00 | 1.8E+00 | ug/L | 95% KM (t) UCL | |
| | Benzene | ug/L | 2.1E+00 | 3.9E+00 (NP) | 7.9E+00 | 3.9E+00 | ug/L | 95% KM (t) UCL | |
| | Chlorobenzene | ug/L | 5.9E+00 | 1.2E+01 (NP) | 2.8E+01 | 1.2E+01 | ug/L | 95% KM (t) UCL | |
| | Aroclor-1242 | ug/L | 7.2E-02 | NC | 2.8E-01 | 2.8E-01 | ug/L | Maximum Concentration | (b) |
| | Aroclor-1254 | ug/L | 4.1E-01 | 5.1E+00 (NP) | 4.3E+00 | 4.3E+00 | ug/L | Maximum Concentration | (d) |
| | Antimony | ug/L | 1.2E+00 | 2.0E+00 (NP) | 5.7E+00 | 2.0E+00 | ug/L | 95% KM (t) UCL | |
| | Arsenic | ug/L | 2.7E+00 | 4.1E+00 (G) | 8.4E+00 | 4.1E+00 | ug/L | 95% Approximate Gamma UCL | |
| | Barium | ug/L | 2.7E+02 | 6.7E+02 (NP) | 8.7E+02 | 6.7E+02 | ug/L | 95% KM (Chebyshev) UCL | |
| | Cadmium | ug/L | 3.7E+00 | 8.3E+00 (NP) | 2.7E+01 | 8.3E+00 | ug/L | 95% KM (t) UCL | |
| | Chromium | ug/L | 2.0E+00 | 5.1E+00 (NP) | 8.0E+00 | 5.1E+00 | ug/L | 95% KM (Chebyshev) UCL | |
| | Cobalt | ug/L | 1.1E+01 | 1.3E+01 (NP) | 3.3E+01 | 1.3E+01 | ug/L | 95% KM (BCA) UCL | |
| | Iron | ug/L | 2.0E+04 | 4.3E+04 (G) | 7.8E+04 | 4.3E+04 | ug/L | 95% Approximate Gamma UCL | |
| | Lead | ug/L | 9.7E+00 | 1.8E+01 (NP) | 4.8E+01 | See Appendix D | | | |
| | Manganese | ug/L | 8.1E+02 | 1.1E+03 (N) | 1.7E+03 | 1.1E+03 | ug/L | 95% Student's-t UCL | |
| | Nickel | ug/L | 2.5E+01 | 4.1E+01 (NP) | 1.2E+02 | 4.1E+01 | ug/L | 95% KM (BCA) UCL | |
| | Thallium | ug/L | 1.1E+00 | 7.6E+00 (NP) | 5.8E+00 (J) | 5.8E+00 | ug/L | Maximum Concentration | (d) |
| | Vanadium | ug/L | 3.5E+00 | 1.8E+00 (NP) | 2.5E+00 (J) | 1.8E+00 | ug/L | 95% KM (t) UCL | |
| | Zinc | ug/L | 5.3E+02 | 1.3E+03 (NP) | 4.1E+03 | 1.3E+03 | ug/L | 95% KM (BCA) UCL | |

TABLE 3.3.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future

Medium: Groundwater

Exposure Medium: Shallow Groundwater

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |

Notes:

(1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only except for the following analytes: 2-chlorophenol, 4-chloroaniline, atrazine, benzaldehyde, benzo(g,h,i)perylene, carbazole, 1,2,4-trichlorobenzene, 1,3-dichlorobenzene, 2-butanone, chloroethane, aroclor-1248, 4,4'-DDD, 4,4'-DDT, aldrin, alpha-BHC, and heptachlor, where means were calculated using one-half the laboratory detection limit for non-detects. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.3.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| Unnamed Island | | | | | | | | | |
| | Atrazine | ug/L | 1.1E+00 | NC | 3.2E+00 (J) | 1.1E+00 | ug/L | Arithmetic mean | (e) |
| | Benzo(a)anthracene | ug/L | 9.0E-01 | 4.5E-02 (NP) | 8.0E-02 (J) | 4.5E-02 | ug/L | 95% KM (t) UCL | |
| | Benzo(a)pyrene | ug/L | 1.7E+00 | 1.7E-02 (NP) | 1.9E-02 | 1.7E-02 | ug/L | 95% KM (t) UCL | |
| | bis(2-Ethylhexyl)phthalate | ug/L | 1.8E+00 | 2.8E+00 (NP) | 4.8E+00 | 2.8E+00 | ug/L | 95% KM (t) UCL | |
| | Dibenzofuran | ug/L | 1.0E+00 | NC | 2.8E-01 (J) | 2.8E-01 | ug/L | Maximum Concentration | (f) |
| | Naphthalene | ug/L | 8.4E-01 | 9.2E-01 (NP) | 3.3E+00 | 9.2E-01 | ug/L | 95% KM (BCA) UCL | |
| | N-Nitrosodiphenylamine | ug/L | 2.4E+00 | 4.7E+00 (NP) | 1.4E+01 | 4.7E+00 | ug/L | 95% KM (t) UCL | |
| | Phenanthrene | ug/L | 5.7E-01 | 2.7E-01 (NP) | 8.9E-01 | 2.7E-01 | ug/L | 95% KM (BCA) UCL | |
| | 1,4-Dichlorobenzene | ug/L | 1.1E+00 | 1.8E+00 (NP) | 3.2E+00 | 1.8E+00 | ug/L | 95% KM (t) UCL | |
| | Benzene | ug/L | 2.1E+00 | 3.9E+00 (NP) | 7.9E+00 | 3.9E+00 | ug/L | 95% KM (t) UCL | |
| | Chlorobenzene | ug/L | 5.9E+00 | 1.2E+01 (NP) | 2.8E+01 | 1.2E+01 | ug/L | 95% KM (t) UCL | |
| | Aroclor-1242 | ug/L | 7.2E-02 | NC | 2.8E-01 | 7.2E-02 | ug/L | Arithmetic mean | (e) |
| | Aroclor-1254 | ug/L | 4.1E-01 | 5.1E+00 (NP) | 4.3E+00 | 4.1E-01 | ug/L | Arithmetic mean | (e) |
| | Antimony | ug/L | 1.2E+00 | 2.0E+00 (NP) | 5.7E+00 | 2.0E+00 | ug/L | 95% KM (t) UCL | |
| | Arsenic | ug/L | 2.7E+00 | 4.1E+00 (G) | 8.4E+00 | 4.1E+00 | ug/L | 95% Approximate Gamma UCL | |
| | Barium | ug/L | 2.7E+02 | 6.7E+02 (NP) | 8.7E+02 | 6.7E+02 | ug/L | 95% KM (Chebyshev) UCL | |
| | Cadmium | ug/L | 3.7E+00 | 8.3E+00 (NP) | 2.7E+01 | 8.3E+00 | ug/L | 95% KM (t) UCL | |
| | Chromium | ug/L | 2.0E+00 | 5.1E+00 (NP) | 8.0E+00 | 5.1E+00 | ug/L | 95% KM (Chebyshev) UCL | |
| | Cobalt | ug/L | 1.1E+01 | 1.3E+01 (NP) | 3.3E+01 | 1.3E+01 | ug/L | 95% KM (BCA) UCL | |
| | Iron | ug/L | 2.0E+04 | 4.3E+04 (G) | 7.8E+04 | 4.3E+04 | ug/L | 95% Approximate Gamma UCL | |
| | Lead | ug/L | 9.7E+00 | 1.8E+01 (NP) | 4.8E+01 | See Appendix D | | | |
| | Manganese | ug/L | 8.1E+02 | 1.1E+03 (N) | 1.7E+03 | 1.1E+03 | ug/L | 95% Student's-t UCL | |
| | Nickel | ug/L | 2.5E+01 | 4.1E+01 (NP) | 1.2E+02 | 4.1E+01 | ug/L | 95% KM (BCA) UCL | |
| | Thallium | ug/L | 1.1E+00 | 7.6E+00 (NP) | 5.8E+00 (J) | 1.1E+00 | ug/L | Arithmetic mean | (e) |
| | Vanadium | ug/L | 3.5E+00 | 1.8E+00 (NP) | 2.5E+00 (J) | 1.8E+00 | ug/L | 95% KM (t) UCL | |
| | Zinc | ug/L | 5.3E+02 | 1.3E+03 (NP) | 4.1E+03 | 1.3E+03 | ug/L | 95% KM (BCA) UCL | |

TABLE 3.3.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future

Medium: Groundwater

Exposure Medium: Shallow Groundwater

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |

Notes:

(1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only except for the following analytes: 2-chlorophenol, 4-chloroaniline, atrazine, benzaldehyde, benzo(g,h,i)perylene, carbazole, 1,2,4-trichlorobenzene, 1,3-dichlorobenzene, 2-butanone, chloroethane, aroclor-1248, 4,4'-DDD, 4,4'-DDT, aldrin, alpha-BHC, and heptachlor, where means were calculated using one-half the laboratory detection limit for non-detects. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.4.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Leachate
Exposure Medium: Leachate

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| Unnamed Island | | | | | | | | | |
| | 4-Methylphenol | ug/L | 1.0E+00 | NC | 4.5E-01 (J) | 4.5E-01 | ug/L | Maximum concentration | (b) |
| | Acenaphthylene | ug/L | 1.3E+00 | 2.6E-02 (NP) | 3.2E-02 | 2.6E-02 | ug/L | 95% KM (t) UCL | |
| | Atrazine | ug/L | 1.1E+00 | NC | 3.2E+00 (J) | 3.2E+00 | ug/L | Maximum concentration | (b) |
| | Benzo(a)anthracene | ug/L | 9.0E-01 | 4.5E-02 (NP) | 8.0E-02 (J) | 4.5E-02 | ug/L | 95% KM (t) UCL | |
| | Benzo(a)pyrene | ug/L | 1.7E+00 | 1.7E-02 (NP) | 1.9E-02 | 1.7E-02 | ug/L | 95% KM (t) UCL | |
| | Benzo(b)fluoranthene | ug/L | 1.3E+00 | 1.5E-02 (NP) | 1.8E-02 | 1.5E-02 | ug/L | 95% KM (t) UCL | |
| | Benzo(g,h,i)perylene | ug/L | 1.7E+00 | 1.3E-02 (NP) | 1.4E-02 | 1.3E-02 | ug/L | 95% KM (t) UCL | |
| | Benzo(k)fluoranthene | ug/L | 1.7E+00 | 1.6E-02 (NP) | 1.9E-02 | 1.6E-02 | ug/L | 95% KM (t) UCL | |
| | bis(2-Ethylhexyl)phthalate | ug/L | 1.8E+00 | 2.8E+00 (NP) | 4.8E+00 | 2.8E+00 | ug/L | 95% KM (t) UCL | |
| | Chrysene | ug/L | 1.3E+00 | 3.4E-02 (NP) | 4.8E-02 | 3.4E-02 | ug/L | 95% KM (t) UCL | |
| | Dibenz(a,h)anthracene | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Dibenzofuran | ug/L | 1.0E+00 | NC | 2.8E-01 (J) | 2.8E-01 | ug/L | Maximum concentration | (b) |
| | Indeno(1,2,3-cd)pyrene | ug/L | 1.7E+00 | 1.1E-02 (NP) | 1.2E-02 | 1.1E-02 | ug/L | 95% KM (t) UCL | |
| | Naphthalene | ug/L | 8.4E-01 | 9.2E-01 (NP) | 3.3E+00 | 9.2E-01 | ug/L | 95% KM (BCA) UCL | |
| | N-Nitrosodiphenylamine | ug/L | 2.4E+00 | 4.7E+00 (NP) | 1.4E+01 | 4.7E+00 | ug/L | 95% KM (t) UCL | |
| | Pentachlorophenol | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Phenanthrene | ug/L | 5.7E-01 | 2.7E-01 (NP) | 8.9E-01 | 2.7E-01 | ug/L | 95% KM (BCA) UCL | |
| | 1,4-Dichlorobenzene | ug/L | 1.1E+00 | 1.8E+00 (NP) | 3.2E+00 | 1.8E+00 | ug/L | 95% KM (t) UCL | |
| | Benzene | ug/L | 2.1E+00 | 3.9E+00 (NP) | 7.9E+00 | 3.9E+00 | ug/L | 95% KM (t) UCL | |
| | Chlorobenzene | ug/L | 5.9E+00 | 1.2E+01 (NP) | 2.8E+01 | 1.2E+01 | ug/L | 95% KM (t) UCL | |
| | Ethylbenzene | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Xylene (total) | ug/L | 1.0E+00 | 1.2E+00 (NP) | 2.1E+00 | 1.2E+00 | ug/L | 95% KM (t) UCL | |
| | Total PCBs | ug/L | 4.4E-01 | 3.5E+00 (NP) | 4.3E+00 | 3.5E+00 | ug/L | 97.5% KM (Chebyshev) UCL | |
| | 4,4'-DDD | ug/L | 3.6E-03 | 1.2E-02 (NP) | 1.2E-02 (J) | 1.2E-02 | ug/L | 95% KM (BCA) UCL | |
| | 4,4'-DDE | ug/L | 2.5E-03 | NC | 1.4E-03 (J) | 1.4E-03 | ug/L | Maximum concentration | (b) |
| | 4,4'-DDT | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | alpha-BHC | ug/L | 2.0E-03 | NC | 9.9E-04 | 9.9E-04 | ug/L | Maximum concentration | (b) |
| | alpha-Chlordane | ug/L | 3.0E-03 | 3.8E-03 (NP) | 7.2E-03 (J) | 3.8E-03 | ug/L | 95% KM (t) UCL | |
| | Dieldrin | ug/L | 2.5E-03 | NC | 1.8E-03 (J) | 1.8E-03 | ug/L | Maximum concentration | (b) |
| | Gamma-Chlordane | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Aluminum | ug/L | 9.9E+01 | 1.4E+02 (NP) | 2.6E+02 | 1.4E+02 | ug/L | 95% KM (t) UCL | |
| | Antimony | ug/L | 1.2E+00 | 2.0E+00 (NP) | 5.7E+00 | 2.0E+00 | ug/L | 95% KM (t) UCL | |

TABLE 3.4.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Leachate
Exposure Medium: Leachate

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| | Arsenic | ug/L | 2.7E+00 | 4.1E+00 (G) | 8.4E+00 | 4.1E+00 | ug/L | 95% Approximate Gamma UCL | |
| | Barium | ug/L | 2.7E+02 | 6.7E+02 (NP) | 8.7E+02 | 6.7E+02 | ug/L | 95% KM (Chebyshev) UCL | |
| | Beryllium | ug/L | 1.5E-01 | NC | 1.8E-01 | 1.8E-01 | ug/L | Maximum concentration | (b) |
| | Cadmium | ug/L | 3.7E+00 | 8.3E+00 (NP) | 2.7E+01 | 8.3E+00 | ug/L | 95% KM (t) UCL | |
| | Chromium | ug/L | 2.0E+00 | 5.1E+00 (NP) | 8.0E+00 | 5.1E+00 | ug/L | 95% KM (Chebyshev) UCL | |
| | Cobalt | ug/L | 1.1E+01 | 1.3E+01 (NP) | 3.3E+01 | 1.3E+01 | ug/L | 95% KM (BCA) UCL | |
| | Copper | ug/L | 1.1E+01 | 1.9E+01 (NP) | 6.9E+01 | 1.9E+01 | ug/L | 95% KM (t) UCL | |
| | Cyanide | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Iron | ug/L | 2.0E+04 | 4.3E+04 (G) | 7.8E+04 | 4.3E+04 | ug/L | 95% Approximate Gamma UCL | |
| | Lead | ug/L | 9.7E+00 | 1.8E+01 (NP) | 4.8E+01 | See Appendix D | | | |
| | Manganese | ug/L | 8.1E+02 | 1.1E+03 (N) | 1.7E+03 | 1.1E+03 | ug/L | 95% Student's-t UCL | |
| | Mercury | ug/L | 9.0E-02 | NC | 3.2E-02 (J) | 3.2E-02 | ug/L | Maximum concentration | (b) |
| | Nickel | ug/L | 2.5E+01 | 4.1E+01 (NP) | 1.2E+02 | 4.1E+01 | ug/L | 95% KM (BCA) UCL | |
| | Silver | ug/L | 1.9E+00 | NC | 1.5E+00 | 1.5E+00 | ug/L | Maximum concentration | (b) |
| | Thallium | ug/L | 1.1E+00 | 7.6E+00 (NP) | 5.8E+00 (J) | 5.8E+00 | ug/L | Maximum concentration | (d) |
| | Vanadium | ug/L | 3.5E+00 | 1.8E+00 (NP) | 2.5E+00 (J) | 1.8E+00 | ug/L | 95% KM (t) UCL | |
| | Zinc | ug/L | 5.3E+02 | 1.3E+03 (NP) | 4.1E+03 | 1.3E+03 | ug/L | 95% KM (BCA) UCL | |

TABLE 3.4.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future

Medium: Leachate

Exposure Medium: Leachate

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |

Notes:

Because there are no "true" leachate data for the site, groundwater data are used as a surrogate to evaluate potential leachate exposures. COPCs selected on Table 2.10 were used to evaluate data from a subset of groundwater data (see Appendix A for list of samples).

(1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only, except for 4,4'-DDD (calculated using one-half the laboratory detection limit for non-detects. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.4.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Leachate
Exposure Medium: Leachate

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| Unnamed Island | | | | | | | | | |
| | 4-Methylphenol | ug/L | 1.0E+00 | NC | 4.5E-01 (J) | 4.5E-01 | ug/L | Maximum concentration | (f) |
| | Acenaphthylene | ug/L | 1.3E+00 | 2.6E-02 (NP) | 3.2E-02 | 2.6E-02 | ug/L | 95% KM (t) UCL | |
| | Atrazine | ug/L | 1.1E+00 | NC | 3.2E+00 (J) | 1.1E+00 | ug/L | Arithmetic mean | (e) |
| | Benzo(a)anthracene | ug/L | 9.0E-01 | 4.5E-02 (NP) | 8.0E-02 (J) | 4.5E-02 | ug/L | 95% KM (t) UCL | |
| | Benzo(a)pyrene | ug/L | 1.7E+00 | 1.7E-02 (NP) | 1.9E-02 | 1.7E-02 | ug/L | 95% KM (t) UCL | |
| | Benzo(b)fluoranthene | ug/L | 1.3E+00 | 1.5E-02 (NP) | 1.8E-02 | 1.5E-02 | ug/L | 95% KM (t) UCL | |
| | Benzo(g,h,i)perylene | ug/L | 1.7E+00 | 1.3E-02 (NP) | 1.4E-02 | 1.3E-02 | ug/L | 95% KM (t) UCL | |
| | Benzo(k)fluoranthene | ug/L | 1.7E+00 | 1.6E-02 (NP) | 1.9E-02 | 1.6E-02 | ug/L | 95% KM (t) UCL | |
| | bis(2-Ethylhexyl)phthalate | ug/L | 1.8E+00 | 2.8E+00 (NP) | 4.8E+00 | 2.8E+00 | ug/L | 95% KM (t) UCL | |
| | Chrysene | ug/L | 1.3E+00 | 3.4E-02 (NP) | 4.8E-02 | 3.4E-02 | ug/L | 95% KM (t) UCL | |
| | Dibenz(a,h)anthracene | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Dibenzofuran | ug/L | 1.0E+00 | NC | 2.8E-01 (J) | 2.8E-01 | ug/L | Maximum concentration | (f) |
| | Indeno(1,2,3-cd)pyrene | ug/L | 1.7E+00 | 1.1E-02 (NP) | 1.2E-02 | 1.1E-02 | ug/L | 95% KM (t) UCL | |
| | Naphthalene | ug/L | 8.4E-01 | 9.2E-01 (NP) | 3.3E+00 | 9.2E-01 | ug/L | 95% KM (BCA) UCL | |
| | N-Nitrosodiphenylamine | ug/L | 2.4E+00 | 4.7E+00 (NP) | 1.4E+01 | 4.7E+00 | ug/L | 95% KM (t) UCL | |
| | Pentachlorophenol | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Phenanthrene | ug/L | 5.7E-01 | 2.7E-01 (NP) | 8.9E-01 | 2.7E-01 | ug/L | 95% KM (BCA) UCL | |
| | 1,4-Dichlorobenzene | ug/L | 1.1E+00 | 1.8E+00 (NP) | 3.2E+00 | 1.8E+00 | ug/L | 95% KM (t) UCL | |
| | Benzene | ug/L | 2.1E+00 | 3.9E+00 (NP) | 7.9E+00 | 3.9E+00 | ug/L | 95% KM (t) UCL | |
| | Chlorobenzene | ug/L | 5.9E+00 | 1.2E+01 (NP) | 2.8E+01 | 1.2E+01 | ug/L | 95% KM (t) UCL | |
| | Ethylbenzene | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Xylene (total) | ug/L | 1.0E+00 | 1.2E+00 (NP) | 2.1E+00 | 1.2E+00 | ug/L | 95% KM (t) UCL | |
| | Total PCBs | ug/L | 4.4E-01 | 3.5E+00 (NP) | 4.3E+00 | 3.5E+00 | ug/L | 97.5% KM (Chebyshev) UCL | |
| | 4,4'-DDD | ug/L | 3.6E-03 | 1.2E-02 (NP) | 1.2E-02 (J) | 1.2E-02 | ug/L | 95% KM (BCA) UCL | |
| | 4,4'-DDE | ug/L | 2.5E-03 | NC | 1.4E-03 (J) | 1.4E-03 | ug/L | Maximum concentration | (f) |
| | 4,4'-DDT | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | alpha-BHC | ug/L | 2.0E-03 | NC | 9.9E-04 | 9.9E-04 | ug/L | Maximum concentration | (f) |
| | alpha-Chlordane | ug/L | 3.0E-03 | 3.8E-03 (NP) | 7.2E-03 (J) | 3.8E-03 | ug/L | 95% KM (t) UCL | |
| | Dieldrin | ug/L | 2.5E-03 | NC | 1.8E-03 (J) | 1.8E-03 | ug/L | Maximum concentration | (f) |
| | Gamma-Chlordane | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Aluminum | ug/L | 9.9E+01 | 1.4E+02 (NP) | 2.6E+02 | 1.4E+02 | ug/L | 95% KM (t) UCL | |
| | Antimony | ug/L | 1.2E+00 | 2.0E+00 (NP) | 5.7E+00 | 2.0E+00 | ug/L | 95% KM (t) UCL | |

TABLE 3.4.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Leachate
Exposure Medium: Leachate

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| | Arsenic | ug/L | 2.7E+00 | 4.1E+00 (G) | 8.4E+00 | 4.1E+00 | ug/L | 95% Approximate Gamma UCL | |
| | Barium | ug/L | 2.7E+02 | 6.7E+02 (NP) | 8.7E+02 | 6.7E+02 | ug/L | 95% KM (Chebyshev) UCL | |
| | Beryllium | ug/L | 1.5E-01 | NC | 1.8E-01 | 1.5E-01 | ug/L | Arithmetic mean | (e) |
| | Cadmium | ug/L | 3.7E+00 | 8.3E+00 (NP) | 2.7E+01 | 8.3E+00 | ug/L | 95% KM (t) UCL | |
| | Chromium | ug/L | 2.0E+00 | 5.1E+00 (NP) | 8.0E+00 | 5.1E+00 | ug/L | 95% KM (Chebyshev) UCL | |
| | Cobalt | ug/L | 1.1E+01 | 1.3E+01 (NP) | 3.3E+01 | 1.3E+01 | ug/L | 95% KM (BCA) UCL | |
| | Copper | ug/L | 1.1E+01 | 1.9E+01 (NP) | 6.9E+01 | 1.9E+01 | ug/L | 95% KM (t) UCL | |
| | Cyanide | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Iron | ug/L | 2.0E+04 | 4.3E+04 (G) | 7.8E+04 | 4.3E+04 | ug/L | 95% Approximate Gamma UCL | |
| | Lead | ug/L | 9.7E+00 | 1.8E+01 (NP) | 4.8E+01 | See Appendix D | | | |
| | Manganese | ug/L | 8.1E+02 | 1.1E+03 (N) | 1.7E+03 | 1.1E+03 | ug/L | 95% Student's-t UCL | |
| | Mercury | ug/L | 9.0E-02 | NC | 3.2E-02 (J) | 3.2E-02 | ug/L | Maximum concentration | (f) |
| | Nickel | ug/L | 2.5E+01 | 4.1E+01 (NP) | 1.2E+02 | 4.1E+01 | ug/L | 95% KM (BCA) UCL | |
| | Silver | ug/L | 1.9E+00 | NC | 1.5E+00 | 1.5E+00 | ug/L | Maximum concentration | (f) |
| | Thallium | ug/L | 1.1E+00 | 7.6E+00 (NP) | 5.8E+00 (J) | 1.1E+00 | ug/L | Arithmetic mean | (e) |
| | Vanadium | ug/L | 3.5E+00 | 1.8E+00 (NP) | 2.5E+00 (J) | 1.8E+00 | ug/L | 95% KM (t) UCL | |
| | Zinc | ug/L | 5.3E+02 | 1.3E+03 (NP) | 4.1E+03 | 1.3E+03 | ug/L | 95% KM (BCA) UCL | |

TABLE 3.4.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future

Medium: Leachate

Exposure Medium: Leachate

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |

Notes:

Because there are no "true" leachate data for the site, groundwater data are used as a surrogate to evaluate potential leachate exposures. COPCs selected on Table 2.10 were used to evaluate data from a subset of groundwater data (see Appendix A for list of samples).

(1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only, except for 4,4'-DDD (calculated using one-half the laboratory detection limit for non-detects. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.5.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| Unnamed Island Ponds | | | | | | | | | |
| | Benzo(a)anthracene | mg/kg | 1.2E+00 | 2.3E+00 (NP) | 4.0E+00 (J) | 2.3E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Benzo(a)pyrene | mg/kg | 1.3E+00 | 2.4E+00 (NP) | 4.0E+00 (J) | 2.4E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Benzo(b)fluoranthene | mg/kg | 1.3E+00 | 1.8E+00 (NP) | 3.2E+00 | 1.8E+00 | mg/kg | 95% KM (t) UCL | |
| | Benzo(k)fluoranthene | mg/kg | 7.3E-01 | 1.4E+00 (NP) | 2.2E+00 (J) | 1.4E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | bis(2-Ethylhexyl)phthalate | mg/kg | 2.9E+00 | 1.6E+01 (NP) | 2.0E+01 | 1.6E+01 | mg/kg | 99% KM (Chebyshev) UCL | |
| | Carbazole | mg/kg | 1.4E-01 | 1.4E-01 (NP) | 2.0E-01 | 1.4E-01 | mg/kg | 95% KM (t) UCL | |
| | Dibenz(a,h)anthracene | mg/kg | 2.1E-01 | 2.8E-01 (NP) | 5.8E-01 (J) | 2.8E-01 | mg/kg | 95% KM (BCA) UCL | |
| | Dibenzofuran | mg/kg | 1.5E-01 | 9.0E-02 (NP) | 1.0E-01 (J) | 9.0E-02 | mg/kg | 95% KM (t) UCL | |
| | Indeno(1,2,3-cd)pyrene | mg/kg | 5.7E-01 | 1.1E+00 (NP) | 1.4E+00 | 1.1E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Phenanthrene | mg/kg | 1.0E+00 | 1.4E+00 (NP) | 2.8E+00 (J) | 1.4E+00 | mg/kg | 95% KM (t) UCL | |
| | Aroclor-1242 | mg/kg | ND | ND | ND | ND | mg/kg | NA | |
| | Aroclor-1254 | mg/kg | 7.6E-02 | 1.6E-01 (NP) | 4.2E-01 (J) | 1.6E-01 | mg/kg | 95% KM (t) UCL | |
| | Aroclor-1260 | mg/kg | 1.2E-01 | 2.2E-01 (NP) | 5.5E-01 | 2.2E-01 | mg/kg | 95% KM (BCA) UCL | |
| | Dieldrin | mg/kg | 4.8E-03 | 9.0E-03 (NP) | 2.1E-02 (J) | 9.0E-03 | mg/kg | 95% KM (t) UCL | |
| | Aluminum | mg/kg | 5.9E+03 | 7.3E+03 (N) | 1.2E+04 | 7.3E+03 | mg/kg | 95% Student's-t UCL | |
| | Antimony | mg/kg | 2.2E+00 | 9.1E+00 (NP) | 1.9E+01 (J) | 9.1E+00 | mg/kg | 97.5% KM (Chebyshev) UCL | |
| | Arsenic | mg/kg | 9.2E+00 | 1.2E+01 (NP) | 2.2E+01 | 1.2E+01 | mg/kg | 95% KM (t) UCL | |
| | Cadmium | mg/kg | 7.8E+00 | 1.3E+01 (G) | 2.5E+01 | 1.3E+01 | mg/kg | 95% Approximate Gamma UCL | |
| | Chromium | mg/kg | 1.0E+02 | 1.7E+02 (G) | 3.5E+02 | 1.7E+02 | mg/kg | 95% Approximate Gamma UCL | |
| | Cobalt | mg/kg | 6.5E+00 | 9.2E+00 (NP) | 1.4E+01 | 9.2E+00 | mg/kg | 95% KM (t) UCL | |
| | Copper | mg/kg | 1.5E+02 | 3.3E+02 (NP) | 6.5E+02 | 3.3E+02 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Iron | mg/kg | 1.4E+04 | 1.9E+04 (G) | 5.0E+04 (J) | 1.9E+04 | mg/kg | 95% Approximate Gamma UCL | |
| | Lead | mg/kg | 2.6E+02 | 1.4E+03 (LN) | 1.8E+03 | See Appendix D | | | |
| | Manganese | mg/kg | 1.9E+02 | 2.4E+02 (N) | 4.5E+02 (J) | 2.4E+02 | mg/kg | 95% Student's-t UCL | |
| | Mercury | mg/kg | 4.0E-01 | 5.3E-01 (NP) | 1.1E+00 | 5.3E-01 | mg/kg | 95% KM (t) UCL | |
| | Thallium | mg/kg | 2.8E-01 | 3.6E-01 (NP) | 9.6E-01 (J) | 3.6E-01 | mg/kg | 95% KM (t) UCL | |
| | Vanadium | mg/kg | 1.5E+01 | 1.9E+01 (NP) | 3.4E+01 (J) | 1.9E+01 | mg/kg | 95% KM (t) UCL | |

TABLE 3.5.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future

Medium: Sediment

Exposure Medium: Sediment

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |

Notes:

(1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.5.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| Unnamed Island Ponds | | | | | | | | | |
| | Benzo(a)anthracene | mg/kg | 1.2E+00 | 2.3E+00 (NP) | 4.0E+00 (J) | 2.3E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Benzo(a)pyrene | mg/kg | 1.3E+00 | 2.4E+00 (NP) | 4.0E+00 (J) | 2.4E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Benzo(b)fluoranthene | mg/kg | 1.3E+00 | 1.8E+00 (NP) | 3.2E+00 | 1.8E+00 | mg/kg | 95% KM (t) UCL | |
| | Benzo(k)fluoranthene | mg/kg | 7.3E-01 | 1.4E+00 (NP) | 2.2E+00 (J) | 1.4E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | bis(2-Ethylhexyl)phthalate | mg/kg | 2.9E+00 | 1.6E+01 (NP) | 2.0E+01 | 1.6E+01 | mg/kg | 99% KM (Chebyshev) UCL | |
| | Carbazole | mg/kg | 1.4E-01 | 1.4E-01 (NP) | 2.0E-01 | 1.4E-01 | mg/kg | 95% KM (t) UCL | |
| | Dibenz(a,h)anthracene | mg/kg | 2.1E-01 | 2.8E-01 (NP) | 5.8E-01 (J) | 2.8E-01 | mg/kg | 95% KM (BCA) UCL | |
| | Dibenzofuran | mg/kg | 1.5E-01 | 9.0E-02 (NP) | 1.0E-01 (J) | 9.0E-02 | mg/kg | 95% KM (t) UCL | |
| | Indeno(1,2,3-cd)pyrene | mg/kg | 5.7E-01 | 1.1E+00 (NP) | 1.4E+00 | 1.1E+00 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Phenanthrene | mg/kg | 1.0E+00 | 1.4E+00 (NP) | 2.8E+00 (J) | 1.4E+00 | mg/kg | 95% KM (t) UCL | |
| | Aroclor-1242 | mg/kg | ND | ND | ND | ND | mg/kg | NA | |
| | Aroclor-1254 | mg/kg | 7.6E-02 | 1.6E-01 (NP) | 4.2E-01 (J) | 1.6E-01 | mg/kg | 95% KM (t) UCL | |
| | Aroclor-1260 | mg/kg | 1.2E-01 | 2.2E-01 (NP) | 5.5E-01 | 2.2E-01 | mg/kg | 95% KM (BCA) UCL | |
| | Dieldrin | mg/kg | 4.8E-03 | 9.0E-03 (NP) | 2.1E-02 (J) | 9.0E-03 | mg/kg | 95% KM (t) UCL | |
| | Aluminum | mg/kg | 5.9E+03 | 7.3E+03 (N) | 1.2E+04 | 7.3E+03 | mg/kg | 95% Student's-t UCL | |
| | Antimony | mg/kg | 2.2E+00 | 9.1E+00 (NP) | 1.9E+01 (J) | 9.1E+00 | mg/kg | 97.5% KM (Chebyshev) UCL | |
| | Arsenic | mg/kg | 9.2E+00 | 1.2E+01 (NP) | 2.2E+01 | 1.2E+01 | mg/kg | 95% KM (t) UCL | |
| | Cadmium | mg/kg | 7.8E+00 | 1.3E+01 (G) | 2.5E+01 | 1.3E+01 | mg/kg | 95% Approximate Gamma UCL | |
| | Chromium | mg/kg | 1.0E+02 | 1.7E+02 (G) | 3.5E+02 | 1.7E+02 | mg/kg | 95% Approximate Gamma UCL | |
| | Cobalt | mg/kg | 6.5E+00 | 9.2E+00 (NP) | 1.4E+01 | 9.2E+00 | mg/kg | 95% KM (t) UCL | |
| | Copper | mg/kg | 1.5E+02 | 3.3E+02 (NP) | 6.5E+02 | 3.3E+02 | mg/kg | 95% KM (Chebyshev) UCL | |
| | Iron | mg/kg | 1.4E+04 | 1.9E+04 (G) | 5.0E+04 (J) | 1.9E+04 | mg/kg | 95% Approximate Gamma UCL | |
| | Lead | mg/kg | 2.6E+02 | 1.4E+03 (LN) | 1.8E+03 | See Appendix D | | | |
| | Manganese | mg/kg | 1.9E+02 | 2.4E+02 (N) | 4.5E+02 (J) | 2.4E+02 | mg/kg | 95% Student's-t UCL | |
| | Mercury | mg/kg | 4.0E-01 | 5.3E-01 (NP) | 1.1E+00 | 5.3E-01 | mg/kg | 95% KM (t) UCL | |
| | Thallium | mg/kg | 2.8E-01 | 3.6E-01 (NP) | 9.6E-01 (J) | 3.6E-01 | mg/kg | 95% KM (t) UCL | |
| | Vanadium | mg/kg | 1.5E+01 | 1.9E+01 (NP) | 3.4E+01 (J) | 1.9E+01 | mg/kg | 95% KM (t) UCL | |

TABLE 3.5.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future

Medium: Sediment

Exposure Medium: Sediment

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |

Notes:

(1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.6.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| Unnamed Island Ponds | | | | | | | | | |
| | Benzo(a)anthracene | ug/L | 6.1E-02 | 1.3E-01 (NP) | 1.4E-01 (J) | 1.3E-01 | ug/L | 95% KM (t) UCL | |
| | Benzo(a)pyrene | ug/L | 6.5E-02 | 1.2E-01 (NP) | 1.5E-01 | 1.2E-01 | ug/L | 95% KM (t) UCL | |
| | Benzo(b)fluoranthene | ug/L | 6.3E-02 | NC | 2.5E-01 | 2.5E-01 | ug/L | Maximum concentration | (b) |
| | Benzo(g,h,i)perylene | ug/L | 5.4E-02 | NC | 1.1E-01 | 1.1E-01 | ug/L | Maximum concentration | (b) |
| | Benzo(k)fluoranthene | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | bis(2-Ethylhexyl)phthalate | ug/L | 2.4E+00 | 2.1E+00 (NP) | 1.9E+00 (J) | 1.9E+00 | ug/L | Maximum concentration | (d) |
| | Chrysene | ug/L | 6.3E-02 | 1.4E-01 (NP) | 1.6E-01 | 1.4E-01 | ug/L | 95% KM (t) UCL | |
| | Indeno(1,2,3-cd)pyrene | ug/L | 5.4E-02 | NC | 1.1E-01 | 1.1E-01 | ug/L | Maximum concentration | (b) |
| | Naphthalene | ug/L | 5.9E-02 | NC | 1.9E-01 | 1.9E-01 | ug/L | Maximum concentration | (b) |
| | Phenanthrene | ug/L | 8.7E-02 | 1.4E-01 (NP) | 2.1E-01 | 1.4E-01 | ug/L | 95% KM (t) UCL | |
| | 1,4-Dichlorobenzene | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Benzene | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Bromodichloromethane | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Aroclor-1260 | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | 4,4'-DDD | ug/L | 3.1E-03 | NC | 1.2E-02 (J) | 1.2E-02 | ug/L | Maximum concentration | (b) |
| | 4,4'-DDE | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | 4,4'-DDT | ug/L | 3.0E-03 | NC | 9.2E-03 (J) | 9.2E-03 | ug/L | Maximum concentration | (b) |
| | alpha-Chlordane | ug/L | 1.4E-03 | NC | 3.3E-03 (J) | 3.3E-03 | ug/L | Maximum concentration | (b) |
| | beta-BHC | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Dieldrin | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Gamma-Chlordane | ug/L | 2.1E-03 | 4.2E-03 (NP) | 9.4E-03 | 4.2E-03 | ug/L | 95% KM (t) UCL | |
| | Heptachlor Epoxide | ug/L | 1.5E-03 | NC | 5.1E-03 (J) | 5.1E-03 | ug/L | Maximum concentration | (b) |
| | Aluminum | ug/L | 4.3E+02 | 3.3E+03 (NP) | 4.3E+03 | 3.3E+03 | ug/L | 95% KM (Chebyshev) UCL | |
| | Arsenic | ug/L | 2.0E+00 | 3.2E+00 (NP) | 5.1E+00 | 3.2E+00 | ug/L | 95% Chebyshev (Mean, Sd) UCL | |
| | Cadmium | ug/L | 6.7E-01 | 1.4E+00 (NP) | 4.7E+00 | 1.4E+00 | ug/L | 95% KM (t) UCL | |
| | Chromium | ug/L | 5.6E+00 | 1.4E+01 (NP) | 5.9E+01 | 1.4E+01 | ug/L | 95% KM (t) UCL | |
| | Cobalt | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Copper | ug/L | 1.1E+01 | NC | 7.0E+01 | 7.0E+01 | ug/L | Maximum concentration | (b) |
| | Cyanide | ug/L | 2.0E+00 | 3.6E+00 (NP) | 4.8E+00 | 3.6E+00 | ug/L | 95% KM (t) UCL | |
| | Iron | ug/L | 4.3E+03 | 1.0E+04 (NP) | 2.1E+04 (J) | 1.0E+04 | ug/L | 95% Chebyshev (Mean, Sd) UCL | |
| | Lead | ug/L | 1.0E+01 | 2.1E+01 (NP) | 8.3E+01 | See Appendix D | | | |
| | Manganese | ug/L | 4.7E+02 | 5.8E+02 (N) | 1.2E+03 (J) | 5.8E+02 | ug/L | 95% Modified-t UCL | |
| | Mercury | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Vanadium | ug/L | 1.3E+00 | 2.6E+00 (NP) | 9.8E+00 | 2.6E+00 | ug/L | 95% KM (BCA) UCL | |

TABLE 3.6.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future

Medium: Surface Water

Exposure Medium: Surface Water

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |

Notes:

(1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.6.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |
| Unnamed Island Ponds | | | | | | | | | |
| | Benzo(a)anthracene | ug/L | 6.1E-02 | 1.3E-01 (NP) | 1.4E-01 (J) | 1.3E-01 | ug/L | 95% KM (t) UCL | |
| | Benzo(a)pyrene | ug/L | 6.5E-02 | 1.2E-01 (NP) | 1.5E-01 | 1.2E-01 | ug/L | 95% KM (t) UCL | |
| | Benzo(b)fluoranthene | ug/L | 6.3E-02 | NC | 2.5E-01 | 6.3E-02 | ug/L | Arithmetic mean | (e) |
| | Benzo(g,h,i)perylene | ug/L | 5.4E-02 | NC | 1.1E-01 | 5.4E-02 | ug/L | Arithmetic mean | (e) |
| | Benzo(k)fluoranthene | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | bis(2-Ethylhexyl)phthalate | ug/L | 2.4E+00 | 2.1E+00 (NP) | 1.9E+00 (J) | 1.9E+00 | ug/L | Maximum concentration | (f) |
| | Chrysene | ug/L | 6.3E-02 | 1.4E-01 (NP) | 1.6E-01 | 1.4E-01 | ug/L | 95% KM (t) UCL | |
| | Indeno(1,2,3-cd)pyrene | ug/L | 5.4E-02 | NC | 1.1E-01 | 5.4E-02 | ug/L | Maximum concentration | (e) |
| | Naphthalene | ug/L | 5.9E-02 | NC | 1.9E-01 | 5.9E-02 | ug/L | Maximum concentration | (e) |
| | Phenanthrene | ug/L | 8.7E-02 | 1.4E-01 (NP) | 2.1E-01 | 1.4E-01 | ug/L | 95% KM (t) UCL | |
| | 1,4-Dichlorobenzene | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Benzene | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Bromodichloromethane | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Aroclor-1260 | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | 4,4'-DDD | ug/L | 3.1E-03 | NC | 1.2E-02 (J) | 3.1E-03 | ug/L | Arithmetic mean | (e) |
| | 4,4'-DDE | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | 4,4'-DDT | ug/L | 3.0E-03 | NC | 9.2E-03 (J) | 3.0E-03 | ug/L | Arithmetic mean | (e) |
| | alpha-Chlordane | ug/L | 1.4E-03 | NC | 3.3E-03 (J) | 1.4E-03 | ug/L | Arithmetic mean | (e) |
| | beta-BHC | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Dieldrin | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Gamma-Chlordane | ug/L | 2.1E-03 | 4.2E-03 (NP) | 9.4E-03 | 4.2E-03 | ug/L | 95% KM (t) UCL | |
| | Heptachlor Epoxide | ug/L | 1.5E-03 | NC | 5.1E-03 (J) | 1.5E-03 | ug/L | Arithmetic mean | (e) |
| | Aluminum | ug/L | 4.3E+02 | 3.3E+03 (NP) | 4.3E+03 | 3.3E+03 | ug/L | 95% KM (Chebyshev) UCL | |
| | Arsenic | ug/L | 2.0E+00 | 3.2E+00 (NP) | 5.1E+00 | 3.2E+00 | ug/L | 95% Chebyshev (Mean, Sd) UCL | |
| | Cadmium | ug/L | 6.7E-01 | 1.4E+00 (NP) | 4.7E+00 | 1.4E+00 | ug/L | 95% KM (t) UCL | |
| | Chromium | ug/L | 5.6E+00 | 1.4E+01 (NP) | 5.9E+01 | 1.4E+01 | ug/L | 95% KM (t) UCL | |
| | Cobalt | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Copper | ug/L | 1.1E+01 | NC | 7.0E+01 | 1.1E+01 | ug/L | Arithmetic mean | (e) |
| | Cyanide | ug/L | 2.0E+00 | 3.6E+00 (NP) | 4.8E+00 | 3.6E+00 | ug/L | 95% KM (t) UCL | |
| | Iron | ug/L | 4.3E+03 | 1.0E+04 (NP) | 2.1E+04 (J) | 1.0E+04 | ug/L | 95% Chebyshev (Mean, Sd) UCL | |
| | Lead | ug/L | 1.0E+01 | 2.1E+01 (NP) | 8.3E+01 | See Appendix D | | | |
| | Manganese | ug/L | 4.7E+02 | 5.8E+02 (N) | 1.2E+03 (J) | 5.8E+02 | ug/L | 95% Modified-t UCL | |
| | Mercury | ug/L | ND | ND | ND | ND | ug/L | NA | |
| | Vanadium | ug/L | 1.3E+00 | 2.6E+00 (NP) | 9.8E+00 | 2.6E+00 | ug/L | 95% KM (BCA) UCL | |

TABLE 3.6.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future

Medium: Surface Water

Exposure Medium: Surface Water

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (2) | Maximum Concentration (Qualifier) (3) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Units | Statistic (4) | Rationale (5) |

Notes:

(1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. NA = Not applicable.

(2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.

(3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

(4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.

(5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
(a) UCL may not be reliable due to the high frequency of non-detects present.
(b) Maximum detected concentration used for EPC due to the low number of detections.
(c) Due to small sample size, the maximum detected concentration is used.
(d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
(e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
(f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.7.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Outdoor (Trench) Air

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (1) | Maximum Concentration (Qualifier) (1) | Exposure Point Concentration (2) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value (2) | Units | Statistic | Rationale |
| Unnamed Island | | | | | | | | | |
| | 1,1'-Biphenyl | mg/kg | NA | 1.3E-01 | NA | 4.3E-02 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | 2-Methylnaphthalene | mg/kg | NA | 4.5E-01 | NA | 4.5E-01 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Acenaphthene | mg/kg | NA | 4.2E-01 | NA | 4.0E-02 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Acenaphthylene | mg/kg | NA | 3.2E-01 | NA | 1.2E-01 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Acetophenone | mg/kg | NA | 1.4E-01 | NA | 1.4E-01 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Benzaldehyde | mg/kg | NA | 1.7E-01 | NA | 6.0E-01 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Naphthalene | mg/kg | NA | 7.5E-01 | NA | 1.5E+00 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Nitrobenzene | mg/kg | NA | NA | 5.3E-01 (a) | 1.7E+00 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Phenanthrene | mg/kg | NA | 4.6E+00 | NA | 1.3E-01 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | 1,1-Dichloroethene | mg/kg | NA | NA | 5.0E-03 (a) | 2.2E+01 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | 1,4-Dichlorobenzene | mg/kg | NA | 7.0E-02 | NA | 3.1E+00 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Benzene | mg/kg | NA | 3.1E-03 | NA | 3.9E+00 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Carbon disulfide | mg/kg | NA | 5.2E-03 | NA | 3.2E+01 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Carbon tetrachloride | mg/kg | NA | 2.1E-03 | NA | 4.4E+00 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Chlorobenzene | mg/kg | NA | 1.7E-02 | NA | 3.6E+00 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Cyclohexane, methyl- | mg/kg | NA | 2.0E-02 | NA | 1.1E+02 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Dichlorodifluoromethane | mg/kg | NA | 2.8E-03 | NA | 1.2E+01 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Methyl acetate | mg/kg | NA | 8.0E-02 | NA | 1.1E+01 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Methylene chloride | mg/kg | NA | 3.9E-03 | NA | 6.5E+00 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Tetrachloroethene | mg/kg | NA | 3.9E-03 | NA | 4.9E+00 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Trichloroethene | mg/kg | NA | 3.1E-03 | NA | 2.7E+00 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |
| | Xylene (Total) | mg/kg | NA | 1.1E-02 | NA | 2.7E+00 | $ug/m^3$ | Johnson & Ettinger model | see Appendix B |

Notes:
(1) Only statistics utilized for Johnson & Ettinger modeling have been presented. Refer to Appendix C for statistics on each COPC.
NA = Not applicable.
(a) The EPC presented is the maximum detected concentration due to the large number of non-detects in the dataset.
(2) The exposure point concentrations were estimated using the Johnson & Ettinger (slab-on-grade) model (see Appendix B).

TABLE 3.7.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Outdoor (Trench) Air

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean (1) | UCL (Distribution) (1) | Maximum Concentration (Qualifier) (1) | Exposure Point Concentration (2) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value (2) | Units | Statistic | Rationale |
| Unnamed Island | | | | | | | | | |
| | 1,1'-Biphenyl | mg/kg | NA | 1.3E-01 | NA | 4.3E-02 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | 2-Methylnaphthalene | mg/kg | NA | 4.5E-01 | NA | 4.5E-01 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Acenaphthene | mg/kg | NA | 4.2E-01 | NA | 4.0E-02 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Acenaphthylene | mg/kg | NA | 3.2E-01 | NA | 1.2E-01 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Acetophenone | mg/kg | NA | 1.4E-01 | NA | 1.4E-01 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Benzaldehyde | mg/kg | NA | 1.7E-01 | NA | 6.0E-01 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Naphthalene | mg/kg | NA | 7.5E-01 | NA | 1.5E+00 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Nitrobenzene | mg/kg | NA | NA | 5.3E-01 (a) | 1.7E+00 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Phenanthrene | mg/kg | NA | 4.6E+00 | NA | 1.3E-01 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | 1,1-Dichloroethene | mg/kg | NA | NA | 5.0E-03 (a) | 2.2E+01 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | 1,4-Dichlorobenzene | mg/kg | NA | 7.0E-02 | NA | 3.1E+00 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Benzene | mg/kg | NA | 3.1E-03 | NA | 3.9E+00 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Carbon disulfide | mg/kg | NA | 5.2E-03 | NA | 3.2E+01 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Carbon tetrachloride | mg/kg | NA | 2.1E-03 | NA | 4.4E+00 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Chlorobenzene | mg/kg | NA | 1.7E-02 | NA | 3.6E+00 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Cyclohexane, methyl- | mg/kg | NA | 2.0E-02 | NA | 1.1E+02 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Dichlorodifluoromethane | mg/kg | NA | 2.8E-03 | NA | 1.2E+01 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Methyl acetate | mg/kg | NA | 8.0E-02 | NA | 1.1E+01 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Methylene chloride | mg/kg | NA | 3.9E-03 | NA | 6.5E+00 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Tetrachloroethene | mg/kg | NA | 3.9E-03 | NA | 4.9E+00 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Trichloroethene | mg/kg | NA | 3.1E-03 | NA | 2.7E+00 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |
| | Xylene (Total) | mg/kg | NA | 1.1E-02 | NA | 2.7E+00 | ug/m$^3$ | Johnson & Ettinger model | see Appendix B |

Notes:

(1) Only statistics utilized for Johnson & Ettinger modeling have been presented. Refer to Appendix C for statistics on each COPC.
NA = Not applicable.
(a) The EPC presented is the maximum detected concentration due to the large number of non-detects in the dataset.

(2) The exposure point concentrations were estimated using the Johnson & Ettinger (slab-on-grade) model (see Appendix B).

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Current |
| Medium: | Soil |
| Exposure Medium: | Surface Soil |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Trespasser | Adolescent | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.1 | mg/kg | See Table 3.1 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 100 | mg/day | USEPA, 2002 | BW x AT |
| | | | | EF | Exposure Frequency | 104 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | BW | Body Weight | 50 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 3,650 | days | USEPA, 1989 | |
| Dermal | Trespasser | Adolescent | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.1 | mg/kg | See Table 3.1 | CS x SA x AF x ABS x EF x ED x CF |
| | | | | SA | Surface Area | 5,900 | $cm^2$ | USEPA, 1997 | BW x AT |
| | | | | AF | Adherence Factor | 0.07 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | ABS | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 104 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 50 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 3,650 | days | USEPA, 1989 | |

Adherence factor for adolescent soil exposure represents the geometric mean for adult gardeners.

Adolescent surface area assumes head, forearms, hands, lower legs, and feet.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.1.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Current |
| Medium: | Soil |
| Exposure Medium: | Surface Soil |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Trespasser | Adolescent | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.1 | mg/kg | See Table 3.1 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 50 | mg/day | USEPA, 1997; 2002 | BW x AT |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1989 | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 50 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 3,650 | days | USEPA, 1989 | |
| Dermal | Trespasser | Adolescent | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.1 | mg/kg | See Table 3.1 | CS x SA x AF x ABS x EF x ED x CF |
| | | | | SA | Surface Area | 5,900 | $cm^2$ | USEPA, 2004 | BW x AT |
| | | | | AF | Adherence Factor | 0.07 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | ABS | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 50 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 3,650 | days | USEPA, 1989 | |

Adherence factor for adolescent soil exposure represents that for teens in moist soil conditions.

Adolescent surface area assumes head, forearms, hands, lower legs, and feet.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.2.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Current |
| Medium: | Leachate |
| Exposure Medium: | Leachate |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal - wading | Trespasser | Adolescent | Unnamed Island | CW | Chemical Concentration in Water | See Table 3.4 | ug/L | See Table 3.4 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 3,700 | $cm^2$ | USEPA, 1997 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ |
| | | | | ET | Event Time | 1 | hrs/event | USEPA, 2004 | |
| | | | | EV | Event Frequency | 1 | events/day | Professional Judgement | |
| | | | | EF | Exposure Frequency | 52 | days/year | Professional Judgement | Inorganics: |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 50 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$ |
| | | | | ATnc | Averaging Time - noncancer | 3650 | days | USEPA, 1989 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |

Surface area assumes lower legs, feet, and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.2.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Current |
| Medium: | Leachate |
| Exposure Medium: | Leachate |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal-wading | Trespasser | Adolescent | Unnamed Island | CW | Chemical Concentration in Water | See Table 3.4 | ug/L | See Table 3.4 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 3,700 | $cm^2$ | USEPA, 1997 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ |
| | | | | ET | Event Time | 1 | hrs/event | USEPA, 2004 | |
| | | | | EV | Event Frequency | 1 | events/day | Professional Judgement | |
| | | | | EF | Exposure Frequency | 26 | days/year | Professional Judgement | Inorganics: |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 50 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$ |
| | | | | ATnc | Averaging Time - noncancer | 3650 | days | USEPA, 1989 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |

Surface area assumes lower legs, feet, and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.3.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Current |
| Medium: | Surface water |
| Exposure Medium: | Surface water |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal - wading | Trespasser | Adolescent | Unnamed Island Ponds | CW | Chemical Concentration in Water | See Table 3.6 | ug/L | See Table 3.6 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 7,600 | $cm^2$ | USEPA, 1997 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | DA x SA x EV x EF x ED / BW x AT |
| | | | | ET | Event Time | 1 | hrs/event | USEPA, 2004 | |
| | | | | EV | Event Frequency | 1.0 | events/day | Professional Judgement | |
| | | | | EF | Exposure Frequency | 52 | days/year | Professional Judgement | Inorganics: |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 50 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 / BW x AT |
| | | | | ATnc | Averaging Time - noncancer | 3650 | days | USEPA, 1989 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |

Surface areas for wading exposures assume hands, feet, forearms, and lower legs.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.3.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Current |
| Medium: | Surface water |
| Exposure Medium: | Surface water |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal-wading | Trespasser | Adolescent | Unnamed Island Ponds | CW | Chemical Concentration in Water | See Table 3.6 | ug/L | See Table 3.6 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 7,600 | $cm^2$ | USEPA, 1997 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ |
| | | | | ET | Event Time | 1 | hrs/event | USEPA, 2004 | |
| | | | | EV | Event Frequency | 1.0 | events/day | Professional Judgement | |
| | | | | EF | Exposure Frequency | 26 | days/year | Professional Judgement | Inorganics: |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 50 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$ |
| | | | | ATnc | Averaging Time - noncancer | 3650 | days | USEPA, 1989 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |

Surface areas for wading exposures assume hands, feet, forearms, and lower legs.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.4.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Current |
| Medium: | Sediment |
| Exposure Medium: | Sediment |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Trespasser | Adolescent | Unnamed Island Ponds | CS | Chemical Concentration in Sediment | See Table 3.5 | mg/kg | See Table 3.5 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 100 | mg/day | USEPA, 1989; 1997; 2002 | BW x AT |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 10 | years | Professional Judgement | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 50 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 3,650 | days | USEPA, 1989 | |
| Dermal | Trespasser | Adolescent | Unnamed Island Ponds | CS | Chemical Concentration in Sediment | See Table 3.5 | mg/kg | See Table 3.5 | CS x SA x AF x ABS x EF x ED x CF |
| | | | | SA | Surface Area | 7,600 | $cm^2$ | USEPA, 1997 | BW x AT |
| | | | | AF | Adherence Factor | 0.30 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | ABS | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 10 | years | Professional Judgement | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 50 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 3,650 | days | USEPA, 1989 | |

Surface areas assume lower legs, feet, forearms, and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.4.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Current |
| Medium: | Sediment |
| Exposure Medium: | Sediment |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion - wading | Trespasser | Adolescent | Unnamed Island Ponds | CS | Chemical Concentration in Sediment | See Table 3.5 | mg/kg | See Table 3.5 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 50 | mg/day | USEPA, 1989; 2002 | BW x AT |
| | | | | EF | Exposure Frequency | 26 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 10 | years | Professional Judgement | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 50 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 3,650 | days | USEPA, 1989 | |
| Dermal - wading | Trespasser | Adolescent | Unnamed Island Ponds | CS | Chemical Concentration in Sediment | See Table 3.5 | mg/kg | See Table 3.5 | CS x SA x AF x ABS x EF x ED x CF |
| | | | | SA | Surface Area | 7,600 | $cm^2$ | USEPA, 1997 | BW x AT |
| | | | | AF | Adherence Factor | 0.30 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | ABS | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 26 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 10 | years | Professional Judgement | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 50 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 3,650 | days | USEPA, 1989 | |

Surface areas assume lower legs, feet, forearms, and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.5.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Groundwater |
| Exposure Medium: | Groundwater |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Construction Worker | Adult | Shallow Monitoring Well on Unnamed Island | CW | Chemical Concentration in Water | See Table 3.3 | ug/L | See Table 3.3 | CW x CR x EF x ED x CF |
| | | | | CR | Contact Rate | 0.05 | liters/day | USEPA, 1989 | BW x AT |
| | | | | EF | Exposure Frequency | 125 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 1 | years | Professional Judgement | |
| | | | | CF | Conversion Factor | 0.001 | mg/ug | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | |
| Dermal | Construction Worker | Adult | Shallow Monitoring Well on Unnamed Island | CW | Chemical Concentration in Water | See Table 3.3 | ug/L | See Table 3.3 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 2,100 | $cm^2$ | USEPA, 2004 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | DA x SA x EV x EF x ED / BW x AT |
| | | | | ET | Event Time | 0.2 | hour/event | USEPA, 2004 | |
| | | | | EV | Event Frequency | 1 | event/day | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 125 | days/yr | USEPA, 2004 | Inorganics: |
| | | | | ED | Exposure Duration | 1 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 / BW x AT |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |

Surface areas for construction worker assumes arms and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.5.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Groundwater |
| Exposure Medium: | Groundwater |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Construction Worker | Adult | Shallow Monitoring Wells on Unnamed Island | CW | Chemical Concentration in Water | See Table 3.3 | ug/L | See Table 3.3 | CW x CR x EF x ED x CF |
| | | | | CR | Contact Rate | 0.05 | liters/day | USEPA, 1989 | BW x AT |
| | | | | EF | Exposure Frequency | 62 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 1 | years | Professional Judgement | |
| | | | | CF | Conversion Factor | 0.001 | mg/ug | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | |
| Dermal | Construction Worker | Adult | Shallow Monitoring Wells on Unnamed Island | CW | Chemical Concentration in Water | See Table 3.3 | ug/L | See Table 3.3 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 2,100 | $cm^2$ | USEPA, 2004 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | DA x SA x EV x EF x ED |
| | | | | ET | Event Time | 0.2 | hour/event | USEPA, 2004 | BW x AT |
| | | | | EV | Event Frequency | 1 | event/day | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 62 | days/yr | USEPA, 2004 | Inorganics: |
| | | | | ED | Exposure Duration | 1 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | BW x AT |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |

Surface areas for construction worker assumes arms and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.6.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Soil |
| Exposure Medium: | Surface/Subsurface Soil |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Recreational User | Adult | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 100 | mg/day | USEPA, 1997; 2002 | BW x AT |
| | | | | EF | Exposure Frequency | 104 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 1989 | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 8,760 | days | USEPA, 1989 | |
| Dermal | Recreational User | Adult | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | CS x SA x AF x ABS x EF x ED x CF |
| | | | | SA | Surface Area | 5,700 | $cm^2$ | USEPA, 1997 | BW x AT |
| | | | | AF | Adherence Factor | 0.07 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | ABS | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 104 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 8,760 | days | USEPA, 1989 | |
| Ingestion | Recreational User | Older child | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 100 | mg/day | USEPA, 1997; 2002 | BW x AT |
| | | | | EF | Exposure Frequency | 104 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 1989 | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 35 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 2,190 | days | USEPA, 1989 | |
| Dermal | Recreational User | Older child | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | CS x SA x AF x ABS x EF x ED x CF |
| | | | | SA | Surface Area | 4,400 | $cm^2$ | USEPA, 2004 | BW x AT |
| | | | | AF | Adherence Factor | 0.20 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | Abs | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 104 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 35 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 2,190 | days | USEPA, 1989 | |

TABLE 4.6.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Soil |
| Exposure Medium: | Surface/Subsurface Soil |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Construction Worker | Adult | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 330 | mg/day | USEPA, 2002 | BW x AT |
| | | | | EF | Exposure Frequency | 125 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 1 | years | Professional Judgement | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | |
| Dermal | Construction Worker | Adult | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | CS x SA x AF x ABS x EF x ED x CF |
| | | | | SA | Surface Area | 3,300 | $cm^2$ | USEPA, 2004 | BW x AT |
| | | | | AF | Adherence Factor | 0.3 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | ABS | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 125 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 1 | years | Professional Judgement | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | |
| Inhalation of fugitive dust | Construction Worker | Adult | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | Chronic Daily Intake (CDI) ($ug/m^3$) = |
| | | | | ET | Exposure Time | 8 | hrs/day | Professional judgement | CS x ET x EF x ED x CF2 |
| | | | | EF | Exposure Frequency | 125 | days/yr | Professional Judgement | PEF x AT x CF1 |
| | | | | ED | Exposure Duration | 1 | years | Professional Judgement | |
| | | | | PEF | Particulate Emission Factor | 1.36E+09 | $m^3/kg$ | USEPA, 2002 | |
| | | | | CF1 | Conversion Factor 1 | 24 | hrs/day | - - | |
| | | | | CF2 | Conversion Factor 2 | 1000 | ug/mg | - - | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | |

Exposure time for construction worker assumes 8-hr work day.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.6.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Soil |
| Exposure Medium: | Surface/Subsurface Soil |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Recreational User | Adult | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 50 | mg/day | USEPA, 1997 | BW x AT |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 20 | years | Professional Judgement | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 7,300 | days | USEPA, 1989 | |
| Dermal | Recreational User | Adult | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | CS x SA x AF x ABS x EF x ED x CF |
| | | | | SA | Surface Area | 5,700 | $cm^2$ | USEPA, 2004 | BW x AT |
| | | | | AF | Adherence Factor | 0.07 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | Abs | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 20 | years | Professional Judgement | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 7,300 | days | USEPA, 1989 | |
| Ingestion | Recreational User | Older child | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 50 | mg/day | USEPA, 1997 | BW x AT |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 6 | years | Professional Judgement | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 35 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 2,190 | days | USEPA, 1989 | |
| Dermal | Recreational User | Older child | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | CS x SA x AF x ABS x EF x ED x CF |
| | | | | SA | Surface Area | 4,400 | $cm^2$ | USEPA, 2004 | BW x AT |
| | | | | AF | Adherence Factor | 0.20 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | ABS | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 6 | years | Professional Judgement | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 35 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 2,190 | days | USEPA, 1989 | |

TABLE 4.6.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Soil |
| Exposure Medium: | Surface/Subsurface Soil |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Construction Worker | Adult | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 330 | mg/day | USEPA, 2002 | BW x AT |
| | | | | EF | Exposure Frequency | 62 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 1 | years | Professional Judgement | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | |
| Dermal | Construction Worker | Adult | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | CS x SA x AF x Abs x EF x ED x CF |
| | | | | SA | Surface Area | 3,300 | $cm^2$ | USEPA, 2004 | BW x AT |
| | | | | AF | Adherence Factor | 0.3 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | Abs | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 62 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 1 | years | Professional Judgement | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | |
| Inhalation of fugitive dust | Construction Worker | Adult | Unnamed Island | CS | Chemical Concentration in Soil | See Table 3.2 | mg/kg | See Tables 3.2 | Chronic Daily Intake (CDI) ($ug/m^3$) = |
| | | | | ET | Exposure Time | 8 | hrs/day | Professional judgement | CS x ET x EF x ED x CF2 |
| | | | | EF | Exposure Frequency | 62 | days/yr | Professional Judgement | PEF x AT x CF1 |
| | | | | ED | Exposure Duration | 1 | years | Professional Judgement | |
| | | | | PEF | Particulate Emission Factor | 1.36E+09 | $m^3/kg$ | USEPA, 2002 | |
| | | | | CF1 | Conversion Factor 1 | 24 | hrs/day | - - | |
| | | | | CF2 | Conversion Factor 2 | 1000 | ug/mg | - - | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | |

Exposure time for construction worker assumes 8-hr work day.


USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.7.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Soil/Groundwater |
| Exposure Medium: | Ambient/Outdoor (Trench) Air |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Inhalation | Construction Worker | Adult | Unnamed Island | CA | Chemical Concentration in Trench Air | See Table 3.7 | $ug/m^3$ | See Table 3.7 | CA x ET x EF x ED |
| | | | | ET | Exposure Time | 8 | hrs/day | Professional judgement | AT x CF |
| | | | | EF | Exposure Frequency | 125 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 1 | years | Professional Judgement | |
| | | | | CF | Conversion factor | 24 | hours/day | | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | |

Exposure time for construction worker assumes 8-hr work day.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

TABLE 4.7.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Soil/Groundwater |
| Exposure Medium: | Ambient/Outdoor (Trench) Air |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Inhalation | Construction Worker | Adult | Unnamed Island | CA | Chemical Concentration in Trench Air | See Table 3.7 | $ug/m^3$ | See Table 3.7 | CA x ET x EF x ED |
| | | | | ET | Exposure Time | 8 | hrs/day | Professional judgement | AT x CF |
| | | | | EF | Exposure Frequency | 62 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 1 | years | Professional Judgement | |
| | | | | CF | Conversion factor | 24 | hours/day | | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | |

Exposure time for construction worker assumes 8-hr work day.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

TABLE 4.8.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Leachate |
| Exposure Medium: | Leachate |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal - wading | Recreational User | Adult | Unnamed Island | CW | Chemical Concentration in Water | See Table 3.4 | ug/L | See Table 3.4 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 4,500 | $cm^2$ | USEPA, 1997 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | DA x SA x EV x EF x ED / BW x AT |
| | | | | ET | Event Time | 1 | hour/event | USEPA, 2004 | |
| | | | | EV | Event Frequency | 1.0 | event/day | Professional Judgement | |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | Inorganics: |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 / BW x AT |
| | | | | ATnc | Averaging Time - noncancer | 8760 | days | USEPA, 1989 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |
| Dermal - wading | Recreational User | Older child | Unnamed Island | CW | Chemical Concentration in Water | See Table 3.4 | ug/L | See Table 3.4 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 2,700 | $cm^2$ | USEPA, 1997 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | DA x SA x EV x EF x ED / BW x AT |
| | | | | ET | Event Time | 1 | hour/event | USEPA, 2004 | |
| | | | | EV | Event Frequency | 1.0 | event/day | Professional Judgement | |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | Inorganics: |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 35 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 / BW x AT |
| | | | | ATnc | Averaging Time - noncancer | 2190 | days | USEPA, 1989 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |
| Dermal | Construction Worker | Adult | Unnamed Island | CW | Chemical Concentration in Water | See Table 3.4 | ug/L | See Table 3.4 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 2,100 | $cm^2$ | USEPA, 2004 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | DA x SA x EV x EF x ED / BW x AT |
| | | | | ET | Event Time | 0.2 | hour/event | USEPA, 2004 | |
| | | | | EV | Event Frequency | 1 | event/day | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 125 | days/yr | USEPA, 2004 | Inorganics: |
| | | | | ED | Exposure Duration | 1 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 / BW x AT |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |

Surface areas for recreational user assume lower legs, feet, and hands; surface area for construction worker assumes arms and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.8.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Leachate |
| Exposure Medium: | Leachate |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal-wading | Recreational User | Adult | Unnamed Island | CW | Chemical Concentration in Water | See Table 3.4 | ug/L | See Table 3.4 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 4,500 | $cm^2$ | USEPA, 1997 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | DA x SA x EV x EF x ED |
| | | | | ET | Event Time | 1 | hour/event | USEPA, 2004 | BW x AT |
| | | | | EV | Event Frequency | 1.0 | event/day | Professional Judgement | |
| | | | | EF | Exposure Frequency | 26 | days/yr | Professional Judgement | Inorganics: |
| | | | | ED | Exposure Duration | 20 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 |
| | | | | ATnc | Averaging Time - noncancer | 7300 | days | USEPA, 1989 | BW x AT |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |
| Dermal-wading | Recreational User | Older child | Unnamed Island | CW | Chemical Concentration in Water | See Table 3.4 | ug/L | See Table 3.4 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 2,700 | $cm^2$ | USEPA, 1997 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | DA x SA x EV x EF x ED |
| | | | | ET | Event Time | 1 | hour/event | USEPA, 2004 | BW x AT |
| | | | | EV | Event Frequency | 1.0 | event/day | Professional Judgement | |
| | | | | EF | Exposure Frequency | 26 | days/yr | Professional Judgement | Inorganics: |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 35 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 |
| | | | | ATnc | Averaging Time - noncancer | 2190 | days | USEPA, 1989 | BW x AT |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |
| Dermal | Construction Worker | Adult | Unnamed Island | CW | Chemical Concentration in Water | See Table 3.4 | ug/L | See Table 3.4 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 2,100 | $cm^2$ | USEPA, 2004 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | DA x SA x EV x EF x ED |
| | | | | ET | Event Time | 0.2 | hour/event | USEPA, 2004 | BW x AT |
| | | | | EV | Event Frequency | 1 | event/day | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 62 | days/yr | USEPA, 2004 | Inorganics: |
| | | | | ED | Exposure Duration | 1 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 |
| | | | | ATnc | Averaging Time - noncancer | 365 | days | USEPA, 1989 | BW x AT |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |

Surface areas for recreational user assume lower legs, feet, and hands; surface area for construction worker assumes arms and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.9.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Surface water |
| Exposure Medium: | Surface water |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal - wading | Recreational User | Adult | Unnamed Island | CW | Chemical Concentration in Water | See Table 3.6 | ug/L | See Table 3.6 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 7,310 | $cm^2$ | USEPA, 1997 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | DA x SA x EV x EF x ED / BW x AT |
| | | | | ET | Event Time | 1 | hour/event | Professional Judgement | |
| | | | | EV | Event Frequency | 1.0 | event/day | Professional Judgement | |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | Inorganics: |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 / BW x AT |
| | | | | ATnc | Averaging Time - noncancer | 8760 | days | USEPA, 1989 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |
| Dermal-wading | Recreational User | Older child | Unnamed Island | CW | Chemical Concentration in Water | See Table 3.6 | ug/L | See Table 3.6 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 4,170 | $cm^2$ | USEPA, 2004 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | DA x SA x EV x EF x ED / BW x AT |
| | | | | ET | Event Time | 1 | hour/event | USEPA, 2004 | |
| | | | | EV | Event Frequency | 1.0 | event/day | Professional Judgement | |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | Inorganics: |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 35 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 / BW x AT |
| | | | | ATnc | Averaging Time - noncancer | 2190 | days | USEPA, 1989 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |

Surface areas for wading exposures assume hands, forearms, lower legs, and feet.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.9.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Surface water |
| Exposure Medium: | Surface water |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal - wading | Recreational User | Adult | Unnamed Island | CW | Chemical Concentration in Water | See Table 3.6 | ug/L | See Table 3.6 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 7,310 | $cm^2$ | USEPA, 1997 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | DA x SA x EV x EF x ED / BW x AT |
| | | | | ET | Event Time | 1 | hour/event | Professional Judgement | |
| | | | | EV | Event Frequency | 1.0 | event/day | Professional Judgement | |
| | | | | EF | Exposure Frequency | 26 | days/yr | Professional Judgement | Inorganics: |
| | | | | ED | Exposure Duration | 20 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 / BW x AT |
| | | | | ATnc | Averaging Time - noncancer | 7300 | days | USEPA, 1989 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |
| Dermal-wading | Recreational User | Older child | Unnamed Island | CW | Chemical Concentration in Water | See Table 3.6 | ug/L | See Table 3.6 | Organics: |
| | | | | DA | Dose Absorbed per Unit Area per Event | see Appendix E | $mg/cm^2$-event | USEPA, 2004 | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | SA | Surface Area | 4,170 | $cm^2$ | USEPA, 2004 | |
| | | | | PC | Permeability Constant | see Appendix E | cm/hr | USEPA, 2004 | DA x SA x EV x EF x ED / BW x AT |
| | | | | ET | Event Time | 1 | hour/event | USEPA, 2004 | |
| | | | | EV | Event Frequency | 1.0 | event/day | Professional Judgement | |
| | | | | EF | Exposure Frequency | 26 | days/yr | Professional Judgement | Inorganics: |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 1989 | CDI (mg/kg-day) = |
| | | | | BW | Body Weight | 35 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25550 | days | USEPA, 1989 | CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 / BW x AT |
| | | | | ATnc | Averaging Time - noncancer | 2190 | days | USEPA, 1989 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | $L/cm^3$ | - - | |
| | | | | CF2 | Conversion Factor 2 | 0.001 | mg/ug | - - | |

Surface areas for wading exposures assume hands, forearms, lower legs, and feet.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.10.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Sediment |
| Exposure Medium: | Sediment |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion - wading | Recreational User | Adult | Unnamed Island | CS | Chemical Concentration in Sediment | See Table 3.5 | mg/kg | See Table 3.5 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 100 | mg/day | USEPA, 1989; 1997; 2002 | BW x AT |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 1989 | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 8,760 | days | USEPA, 1989 | |
| Dermal - wading | Recreational User | Adult | Unnamed Island | CS | Chemical Concentration in Sediment | See Table 3.5 | mg/kg | See Table 3.5 | CS x SA x AF x ABS x EF x ED x CF |
| | | | | SA | Surface Area | 7,310 | $cm^2$ | USEPA, 1997 | BW x AT |
| | | | | AF | Adherence Factor | 0.30 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | ABS | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 8,760 | days | USEPA, 1989 | |
| Ingestion - wading | Recreational User | Older child | Unnamed Island | CS | Chemical Concentration in Sediment | See Table 3.5 | mg/kg | See Table 3.5 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 100 | mg/day | USEPA,1989; 1997; 2002 | BW x AT |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 1989 | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 35 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 2,190 | days | USEPA, 1989 | |

TABLE 4.10.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Sediment |
| Exposure Medium: | Sediment |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal - wading | Recreational User | Older child | Unnamed Island | CS | Chemical Concentration in Sediment | See Table 3.5 | mg/kg | See Table 3.5 | CS x SA x AF x ABS x EF x ED x CF |
| | | | | SA | Surface Area | 4,170 | $cm^2$ | USEPA, 1997 | BW x AT |
| | | | | AF | Adherence Factor | 0.30 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | ABS | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 52 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 35 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 2,190 | days | USEPA, 1989 | |

Surface areas assume lower legs, feet, forearms, and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.10.CTE
VALUES FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Sediment |
| Exposure Medium: | Sediment |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion - wading | Recreational User | Adult | Unnamed Island | CS | Chemical Concentration in Sediment | See Table 3.5 | mg/kg | See Table 3.5 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 50 | mg/day | USEPA, 1989; 1997; 2002 | BW x AT |
| | | | | EF | Exposure Frequency | 26 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 20 | years | USEPA, 1989 | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 7,300 | days | USEPA, 1989 | |
| Dermal - wading | Recreational User | Adult | Unnamed Island | CS | Chemical Concentration in Sediment | See Table 3.5 | mg/kg | See Table 3.5 | CS x SA x AF x ABS x EF x ED x CF |
| | | | | SA | Surface Area | 7,310 | $cm^2$ | USEPA, 1997 | BW x AT |
| | | | | AF | Adherence Factor | 0.30 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | ABS | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 26 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 20 | years | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 7,300 | days | USEPA, 1989 | |
| Ingestion - wading | Recreational User | Older child | Unnamed Island | CS | Chemical Concentration in Sediment | See Table 3.5 | mg/kg | See Table 3.5 | CS x IR x EF x ED x CF x FI |
| | | | | IR | Ingestion Rate | 50 | mg/day | USEPA, 1989; 1997; 2002 | BW x AT |
| | | | | EF | Exposure Frequency | 26 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 6 | years | Professional Judgement | |
| | | | | FI | Fraction Ingested from Site | 1 | unitless | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 35 | kg | USEPA, 1997 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 2,190 | days | USEPA, 1989 | |

TABLE 4.10.CTE
VALUES FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Sediment |
| Exposure Medium: | Sediment |

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal - wading | Recreational User | Older child | Unnamed Island | CS | Chemical Concentration in Sediment | See Table 3.5 | mg/kg | See Table 3.5 | CS x SA x AF x ABS x EF x ED x CF / BW x AT |
| | | | | SA | Surface Area | 4,170 | $cm^2$ | USEPA, 1997 | |
| | | | | AF | Adherence Factor | 0.30 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | ABS | Dermal absorption fraction | see Appendix E | unitless | USEPA, 2004 | |
| | | | | EF | Exposure Frequency | 26 | days/yr | Professional Judgement | |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 1989 | |
| | | | | CF | Conversion Factor | 1.00E-06 | kg/mg | | |
| | | | | BW | Body Weight | 35 | kg | USEPA, 1989 | |
| | | | | ATc | Averaging Time - cancer | 25,550 | days | USEPA, 1989 | |
| | | | | ATnc | Averaging Time - noncancer | 2,190 | days | USEPA, 1989 | |

Surface areas assume lower legs, feet, forearms, and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 5.1

NON-CANCER TOXICITY DATA -- ORAL/DERMAL

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern (3) | Chronic/ Subchronic | Oral RfD | | Oral Absorption Efficiency for Dermal (1) | Absorbed RfD for Dermal (2) | | Primary Target Organ(s) | Combined Uncertainty/Modifying Factors | RfD:Target Organ(s) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | | Value | Units | | | Source(s) | Date(s) (MM/DD/YYYY) |
| 1,4-Dichlorobenzene | Chronic | 7.0E-02 | mg/kg-day | (4) | 7.0E-02 | mg/kg-day | Liver | 100 | ATSDR | 04/18/10 |
| Benzene | Chronic | 4.0E-03 | mg/kg-day | (4) | 4.0E-03 | mg/kg-day | Immune System | 300 | IRIS | 04/18/10 |
| Bromodichloromethane | Chronic | 2.0E-02 | mg/kg-day | (4) | 2.0E-02 | mg/kg-day | Kidney | 1000 | IRIS | 04/18/10 |
| Chlorobenzene | Chronic | 2.0E-02 | mg/kg-day | (4) | 2.0E-02 | mg/kg-day | Liver/Kidney | 1000 | IRIS | 04/18/10 |
| Ethylbenzene | Chronic | 1E-01 | mg/kg-day | (4) | 1E-01 | mg/kg-day | Liver/Kidney | 1000 | IRIS | 04/18/10 |
| Xylene (total) | Chronic | 2.0E-01 | mg/kg-day | (4) | 2.0E-01 | mg/kg-day | General Toxicity | 1000 | IRIS | 04/18/10 |
| | | | | | | | | | | |
| 4-Methylphenol | Chronic | 5.0E-03 | mg/kg-day | (4) | 5.0E-03 | mg/kg-day | CNS | 1000 | HEAST | July 1997 |
| Acenaphthylene | Chronic | 6.0E-02 | mg/kg-day | (4) | 6.0E-02 | mg/kg-day | Liver | 3000 | IRIS | 04/18/10 |
| Atrazine | Chronic | 3.5E-02 | mg/kg-day | (4) | 3.5E-02 | mg/kg-day | General Toxicity/Cardiovascular | 100 | IRIS | 04/18/10 |
| Benzo(a)anthracene | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(a)pyrene | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(b)fluoranthene | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(g,h,i)perylene | Chronic | 3.0E-02 | mg/kg-day | (4) | 3.0E-02 | mg/kg-day | Kidney | 3000 | IRIS | 04/18/10 |
| Benzo(k)fluoranthene | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Bis(2-ethylhexyl)phthalate | Chronic | 2.0E-02 | mg/kg-day | (4) | 2.0E-02 | mg/kg-day | Liver | 1000 | IRIS | 04/18/10 |
| Carbazole | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Chrysene | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Dibenz(a,h)anthracene | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Dibenzofuran | Chronic | 4.0E-03 | mg/kg-day | (4) | 4.0E-03 | mg/kg-day | Kidney | 3000 | PPRTV | 04/18/10 |
| Indeno(1,2,3-cd)pyrene | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Naphthalene | Chronic | 2.0E-02 | mg/kg-day | (4) | 2.0E-02 | mg/kg-day | General Toxicity | 3000 | IRIS | 04/18/10 |
| N-Nitrosodiphenylamine | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Pentachlorophenol | Chronic | 3E-02 | mg/kg-day | (4) | 3E-02 | mg/kg-day | Liver/Kidney | 100 | IRIS | 04/18/10 |
| Phenanthrene | Chronic | 3.0E-02 | mg/kg-day | (4) | 3.0E-02 | mg/kg-day | Kidney | 3000 | IRIS | 04/18/10 |
| | | | | | | | | | | |
| Aroclor-1242 | Chronic | 2.0E-05 | mg/kg-day | (4) | 2.0E-05 | mg/kg-day | General Toxicity/Immune System | 300 | IRIS | 04/18/10 |
| Aroclor-1254 | Chronic | 2.0E-05 | mg/kg-day | (4) | 2.0E-05 | mg/kg-day | General Toxicity/Immune System | 300 | IRIS | 04/18/10 |
| Aroclor-1260 | Chronic | 2.0E-05 | mg/kg-day | (4) | 2.0E-05 | mg/kg-day | General Toxicity/Immune System | 300 | IRIS | 04/18/10 |
| Total PCBs | Chronic | 2.0E-05 | mg/kg-day | (4) | 2.0E-05 | mg/kg-day | General Toxicity/Immune System | 300 | IRIS | 04/18/10 |
| | | | | | | | | | | |
| 4,4'-DDD | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 4,4'-DDE | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 4,4'-DDT | Chronic | 5.0E-04 | mg/kg-day | (4) | 5.0E-04 | mg/kg-day | Liver | 100 | IRIS | 04/18/10 |

TABLE 5.1

NON-CANCER TOXICITY DATA -- ORAL/DERMAL

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern (3) | Chronic/ Subchronic | Oral RfD | | Oral Absorption Efficiency for Dermal (1) | Absorbed RfD for Dermal (2) | | Primary Target Organ(s) | Combined Uncertainty/Modifying Factors | RfD:Target Organ(s) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | | Value | Units | | | Source(s) | Date(s) (MM/DD/YYYY) |
| alpha-BHC | Chronic | 8.0E-03 | mg/kg-day | (4) | 8.0E-03 | mg/kg-day | Liver | 100 | ATSDR | 04/18/10 |
| alpha-Chlordane | Chronic | 5.0E-04 | mg/kg-day | (4) | 5.0E-04 | mg/kg-day | Liver | 300 | IRIS | 04/18/10 |
| beta-BHC | Chronic | 6.0E-04 | mg/kg-day | (4) | 6.0E-04 | mg/kg-day | Liver | 300 | ATSDR | 04/18/10 |
| Dieldrin | Chronic | 5.0E-05 | mg/kg-day | (4) | 5.0E-05 | mg/kg-day | Liver | 100 | IRIS | 04/18/10 |
| gamma-Chlordane | Chronic | 5.0E-04 | mg/kg-day | (4) | 5.0E-04 | mg/kg-day | Liver | 300 | IRIS | 04/18/10 |
| Heptachlor epoxide | Chronic | 1.3E-05 | mg/kg-day | (4) | 1.3E-05 | mg/kg-day | Liver | 1000 | IRIS | 04/18/10 |
| Dioxin TEQ | Chronic | 1.0E-09 | mg/kg-day | (4) | 1.0E-09 | mg/kg-day | Developmental | 100 | ATSDR | 04/18/10 |
| Aluminum | Chronic | 1.0E+00 | mg/kg-day | 0.01 | 1.0E-02 | mg/kg-day | Developmental | 100 | PPRTV | 04/18/10 |
| Antimony | Chronic | 4.0E-04 | mg/kg-day | 0.15 | 6.0E-05 | mg/kg-day | General Toxicity | 1000 | IRIS | 04/18/10 |
| Arsenic | Chronic | 3.0E-04 | mg/kg-day | (4) | 3.0E-04 | mg/kg-day | Skin | 3 | IRIS | 04/18/10 |
| Barium | Chronic | 2.0E-01 | mg/kg-day | 0.07 | 1.4E-02 | mg/kg-day | Kidney | 300 | IRIS | 04/18/10 |
| Beryllium | Chronic | 2.0E-03 | mg/kg-day | 0.007 | 1.4E-05 | mg/kg-day | GI System | 300 | IRIS | 04/18/10 |
| Cadmium (drinking water) | Chronic | 5.0E-04 | mg/kg-day | 0.05 | 2.5E-05 | mg/kg-day | Kidney | 10 | IRIS | 04/18/10 |
| Cadmium (other media) | Chronic | 1.0E-03 | mg/kg-day | 0.025 | 2.5E-05 | mg/kg-day | Kidney | 10 | IRIS | 04/18/10 |
| Chromium | Chronic | 3.0E-03 | mg/kg-day | 0.025 | 7.5E-05 | mg/kg-day | GI System | 300 | IRIS | 04/18/10 |
| Cobalt | Chronic | 3.0E-04 | mg/kg-day | (4) | 3.0E-04 | mg/kg-day | Endocrine | 3000 | PPRTV | 04/18/10 |
| Copper | Chronic | 4.0E-02 | mg/kg-day | (4) | 4.0E-02 | mg/kg-day | GI System | 100 | HEAST | July 1997 |
| Cyanide | Chronic | 2E-02 | mg/kg-day | (4) | 2E-02 | mg/kg-day | Endocrine/CNS | 500 | IRIS | 04/18/10 |
| Iron | Chronic | 7.0E-01 | mg/kg-day | (4) | 7.0E-01 | mg/kg-day | Liver/GI System | 1.5 | PPRTV | 04/18/10 |
| Lead | Chronic | N/A | N/A | N/A | N/A | N/A | CNS | N/A | IRIS | 04/18/10 |
| Manganese (drinking water) | Chronic | 2.4E-02 | mg/kg-day | 0.04 | 9.6E-04 | mg/kg-day | CNS | 9 | IRIS | 04/18/10 |
| Manganese (food) | Chronic | 1.4E-01 | mg/kg-day | 1 | 1.4E-01 | mg/kg-day | CNS | 1 | IRIS | 04/18/10 |
| Manganese (other media) | Chronic | 7.0E-02 | mg/kg-day | 1 | 7.0E-02 | mg/kg-day | CNS | 3 | IRIS | 04/18/10 |
| Mercury (other media) | Chronic | 1.0E-04 | mg/kg-day | (4) | 1.0E-04 | mg/kg-day | CNS | 10 | IRIS | 04/18/10 |
| Mercury (water) | Chronic | 3.0E-04 | mg/kg-day | 0.07 | 2.1E-05 | mg/kg-day | Immune System | 1000 | IRIS | 04/18/10 |
| Nickel | Chronic | 2.0E-02 | mg/kg-day | 0.04 | 8.0E-04 | mg/kg-day | General Toxicity | 300 | IRIS | 04/18/10 |
| Silver | Chronic | 5.0E-03 | mg/kg-day | 0.04 | 2.0E-04 | mg/kg-day | Skin | 3 | IRIS | 04/18/10 |
| Thallium | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | IRIS | 04/18/10 |
| Vanadium | Chronic | 7.0E-03 | mg/kg-day | 0.026 | 1.8E-04 | mg/kg-day | Kidney | 100 | HEAST | July 1997 |
| Zinc | Chronic | 3.0E-01 | mg/kg-day | (4) | 3.0E-01 | mg/kg-day | Blood | 3 | IRIS | 04/18/10 |

TABLE 5.1

NON-CANCER TOXICITY DATA -- ORAL/DERMAL

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern (3) | Chronic/ Subchronic | Oral RfD | | Oral Absorption Efficiency for Dermal (1) | Absorbed RfD for Dermal (2) | | Primary Target Organ(s) | Combined Uncertainty/Modifying Factors | RfD:Target Organ(s) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | | Value | Units | | | Source(s) | Date(s) (MM/DD/YYYY) |
| 1,4-Dichlorobenzene | Subchronic | 7.0E-02 | mg/kg-day | (4) | 7.0E-02 | mg/kg-day | Liver | 100 | ATSDR | 04/18/10 |
| Benzene | Subchronic | 1.2E-02 | mg/kg-day | (4) | 1.2E-02 | mg/kg-day | Immune System | 100 | IRIS | 04/18/10 |
| Bromodichloromethane | Subchronic | 2.0E-02 | mg/kg-day | (4) | 2.0E-02 | mg/kg-day | Kidney | 1000 | IRIS | 04/18/10 |
| Chlorobenzene | Subchronic | 7.0E-02 | mg/kg-day | (4) | 7.0E-02 | mg/kg-day | Liver/Kidney | 300 | IRIS | 04/18/10 |
| Ethylbenzene | Subchronic | 1E+00 | mg/kg-day | (4) | 1E+00 | mg/kg-day | Liver/Kidney | 100 | IRIS | 04/18/10 |
| Xylene (Total) | Subchronic | 2.0E-01 | mg/kg-day | (4) | 2.0E-01 | mg/kg-day | General Toxicity | 1000 | IRIS | 04/18/10 |
| | | | | | | | | | | |
| 4-Methylphenol | Subchronic | 5E-03 | mg/kg-day | (4) | 5E-03 | mg/kg-day | CNS | 1000 | HEAST | July 1997 |
| Acenaphthylene | Subchronic | 6E-01 | mg/kg-day | (4) | 6E-01 | mg/kg-day | Liver | 300 | IRIS | 04/18/10 |
| Atrazine | Subchronic | 3.5E-02 | mg/kg-day | (4) | 3.5E-02 | mg/kg-day | General Toxicity/Cardiovascular | 100 | IRIS | 04/18/10 |
| Benzo(a)anthracene | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(a)pyrene | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(b)fluoranthene | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(g,h,i)perylene | Subchronic | 3E-01 | mg/kg-day | (4) | 3E-01 | mg/kg-day | Kidney | 300 | IRIS | 04/18/10 |
| Benzo(k)fluoranthene | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Bis(2-ethylhexyl)phthalate | Subchronic | 2E-02 | mg/kg-day | (4) | 2E-02 | mg/kg-day | Liver | 1000 | IRIS | 04/18/10 |
| Carbazole | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Chrysene | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Dibenz(a,h)anthracene | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Dibenzofuran | Subchronic | 4.0E-03 | mg/kg-day | (4) | 4.0E-03 | mg/kg-day | Kidney | 3000 | PPRTV | 04/18/10 |
| Indeno(1,2,3-cd)pyrene | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Naphthalene | Subchronic | 2E-01 | mg/kg-day | (4) | 2E-01 | mg/kg-day | General Toxicity | 300 | IRIS | 04/18/10 |
| N-Nitrosodiphenylamine | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Pentachlorophenol | Subchronic | 3E-02 | mg/kg-day | (4) | 3E-02 | mg/kg-day | Liver/Kidney | 100 | IRIS | 04/18/10 |
| Phenanthrene | Subchronic | 3E-01 | mg/kg-day | (4) | 3E-01 | mg/kg-day | Kidney | 300 | IRIS | 04/18/10 |
| | | | | | | | | | | |
| Aroclor-1242 | Subchronic | 6E-05 | mg/kg-day | (4) | 6E-05 | mg/kg-day | General Toxicity/Immune System | 100 | IRIS | 04/18/10 |
| Aroclor-1254 | Subchronic | 6E-05 | mg/kg-day | (4) | 6E-05 | mg/kg-day | General Toxicity/Immune System | 100 | IRIS | 04/18/10 |
| Aroclor-1260 | Subchronic | 6E-05 | mg/kg-day | (4) | 6E-05 | mg/kg-day | General Toxicity/Immune System | 100 | IRIS | 04/18/10 |
| Total PCBs | Subchronic | 6E-05 | mg/kg-day | (4) | 6E-05 | mg/kg-day | General Toxicity/Immune System | 100 | IRIS | 04/18/10 |
| | | | | | | | | | | |
| 4,4'-DDD | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| 4,4'-DDE | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| 4,4'-DDT | Subchronic | 5.0E-04 | mg/kg-day | (4) | 5.0E-04 | mg/kg-day | Liver | 100 | IRIS | 04/18/10 |

TABLE 5.1

NON-CANCER TOXICITY DATA -- ORAL/DERMAL

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern (3) | Chronic/ Subchronic | Oral RfD | | Oral Absorption Efficiency for Dermal (1) | Absorbed RfD for Dermal (2) | | Primary Target Organ(s) | Combined Uncertainty/Modifying Factors | RfD:Target Organ(s) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | | Value | Units | | | Source(s) | Date(s) (MM/DD/YYYY) |
| alpha-BHC | Subchronic | 8E-03 | mg/kg-day | (4) | 8E-03 | mg/kg-day | Liver | 100 | ATSDR | 04/18/10 |
| alpha-Chlordane | Subchronic | 5E-04 | mg/kg-day | (4) | 5E-04 | mg/kg-day | Liver | 300 | IRIS | 04/18/10 |
| beta-BHC | Subchronic | 6.0E-04 | mg/kg-day | (4) | 6.0E-04 | mg/kg-day | Liver | 300 | ATSDR | 04/18/10 |
| Dieldrin | Subchronic | 5E-05 | mg/kg-day | (4) | 5E-05 | mg/kg-day | Liver | 100 | IRIS | 04/18/10 |
| gamma-Chlordane | Subchronic | 5E-04 | mg/kg-day | (4) | 5E-04 | mg/kg-day | Liver | 300 | IRIS | 04/18/10 |
| Heptachlor epoxide | Subchronic | 1.3E-05 | mg/kg-day | (4) | 1.3E-05 | mg/kg-day | Liver | 1000 | IRIS | 04/18/10 |
| Dioxin TEQ | Subchronic | 2.0E-08 | mg/kg-day | (4) | 2.0E-08 | mg/kg-day | Immune System | 30 | ATSDR | 04/18/10 |
| Aluminum | Subchronic | 1E+00 | mg/kg-day | 0.01 | 1.0E-02 | mg/kg-day | Developmental | 100 | PPRTV | 04/18/10 |
| Antimony | Subchronic | 4E-04 | mg/kg-day | 0.15 | 6.0E-05 | mg/kg-day | General Toxicity | 1000 | IRIS | 04/18/10 |
| Arsenic | Subchronic | 3E-04 | mg/kg-day | (4) | 3E-04 | mg/kg-day | Skin | 3 | IRIS | 04/18/10 |
| Barium | Subchronic | 2E-01 | mg/kg-day | 0.07 | 1.4E-02 | mg/kg-day | Kidney | 300 | IRIS | 04/18/10 |
| Beryllium | Subchronic | 2E-03 | mg/kg-day | 0.007 | 1.4E-05 | mg/kg-day | GI System | 300 | IRIS | 04/18/10 |
| Cadmium (drinking water) | Subchronic | 5E-04 | mg/kg-day | 0.05 | 2.5E-05 | mg/kg-day | Kidney | 10 | IRIS | 04/18/10 |
| Cadmium (other media) | Subchronic | 1E-03 | mg/kg-day | 0.025 | 2.5E-05 | mg/kg-day | Kidney | 10 | IRIS | 04/18/10 |
| Chromium | Subchronic | 9E-03 | mg/kg-day | 0.025 | 2.3E-04 | mg/kg-day | GI System | 100 | IRIS | 04/18/10 |
| Cobalt | Subchronic | 3E-03 | mg/kg-day | (4) | 3E-03 | mg/kg-day | Endocrine | 300 | PPRTV | 04/18/10 |
| Copper | Subchronic | 4E-02 | mg/kg-day | (4) | 4E-02 | mg/kg-day | GI System | 100 | HEAST | July 1997 |
| Cyanide | Subchronic | 2E-02 | mg/kg-day | (4) | 2E-02 | mg/kg-day | Endocrine/CNS | 500 | IRIS | 04/18/10 |
| Iron | Subchronic | 7E-01 | mg/kg-day | (4) | 7E-01 | mg/kg-day | Liver/GI System | 1.5 | PPRTV | 04/18/10 |
| Lead | Subchronic | N/A | N/A | N/A | N/A | N/A | CNS | N/A | IRIS | 04/18/10 |
| Manganese (drinking water) | Subchronic | 2.4E-02 | mg/kg-day | 0.04 | 9.6E-04 | mg/kg-day | CNS | 9 | IRIS | 04/18/10 |
| Manganese (food) | Subchronic | 1.4E-01 | mg/kg-day | 1 | 1.4E-01 | mg/kg-day | CNS | 1 | IRIS | 04/18/10 |
| Manganese (other media) | Subchronic | 7E-02 | mg/kg-day | 1 | 7.0E-02 | mg/kg-day | CNS | 3 | IRIS | 04/18/10 |
| Mercury (other media) | Subchronic | 1E-04 | mg/kg-day | (4) | 1E-04 | mg/kg-day | CNS | 10 | IRIS | 04/18/10 |
| Mercury (water) | Subchronic | 3E-03 | mg/kg-day | 0.07 | 2.1E-04 | mg/kg-day | Immune System | 100 | IRIS | 04/18/10 |
| Nickel | Subchronic | 2E-02 | mg/kg-day | 0.04 | 8.0E-04 | mg/kg-day | General Toxicity | 300 | IRIS | 04/18/10 |
| Silver | Subchronic | 5E-03 | mg/kg-day | 0.04 | 2.0E-04 | mg/kg-day | Skin | 3 | IRIS | 04/18/10 |
| Thallium | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | IRIS | 04/18/10 |
| Vanadium | Subchronic | 7E-03 | mg/kg-day | 0.026 | 1.8E-04 | mg/kg-day | Kidney | 100 | HEAST | July 1997 |
| Zinc | Subchronic | 3E-01 | mg/kg-day | (4) | 3E-01 | mg/kg-day | Blood | 3 | IRIS | 04/18/10 |

TABLE 5.1

NON-CANCER TOXICITY DATA -- ORAL/DERMAL

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern (3) | Chronic/ Subchronic | Oral RfD | | Oral Absorption Efficiency for Dermal (1) | Absorbed RfD for Dermal (2) | | Primary Target Organ(s) | Combined Uncertainty/Modifying Factors | RfD:Target Organ(s) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | | Value | Units | | | Source(s) | Date(s) (MM/DD/YYYY) |

(1) Oral Absorption Efficiencies from Exhibit 4-1, RAGS Part E, USEPA 2004b.
Oral absorption efficiencies for aluminum, cobalt, copper and iron obtained from ATSDR Toxicological Profiles.

(2) Calculated as: (oral RfD) x (oral to dermal adjustment factor).

(3) RfD for Aroclor 1254 used as a surrogate for Aroclor 1242 and Aroclor 1260.
RfDs for manganese are based on total allowable intake (10 mg/day) minus the background intake (5 mg/day). The remaining intake (5 mg/day) is divided by 70 kg.
RfD for mercury (water/inorganic) based on mercuric chloride; for mercury (other media/organic), based on methylmercury.
RfD for acenaphthene used as a surrogate for acenaphthylene.
RfD for pyrene used as a surrogate for phenanthrene and benzo(g,h,i)perylene.
RfD for nickel is based on nickel, soluble salts.
RfD for chlordane used as a surrogate for alpha-chlordane and gamma-chlordane.
Subchronic RfD for beta-BHC used as chronic RfD.
Subchronic RfD for dibenzofuran used as chronic RfD.

(4) Oral absorption efficiency exceeds 50%. Therefore, no adjustment of the oral reference dose is necessary (USEPA, 2001).
When the chronic RfD is based on a subchronic study, a subchronic RfD has been developed by the elimination of the 10-fold uncertainty factor for subchronic to chronic adjustment. If no subchronic data are available, the chronic RfD has been adopted as the subchronic RfD.

(5) Permeability constants (Kp) used for water absorption calculations: 2E-03 cm/hr for chromium (VI), 4E-04 cm/hr for cobalt, 1E-04 cm/hr for lead, 2E-04 cm/hr for nickel, 6E-04 cm/hr for silver and zinc, and 1E-03 cm/hr for the remaining inorganics (USEPA, 2004); for organics, see Appendix U.

(6) See Appendix D for lead model calculations.

IRIS = Integrated Risk Information System
HEAST = Health Effects Assessment Summary Tables
N/A = Not Applicable/Not Available
NOAEL = No Observed Adverse Effects Level
STSC = Superfund Technical Support Center
ATSDR = Agency for Toxic Substances and Disease Registry
PPRTV = Provisional Peer Reviewed Toxicity Values developed by STSC

TABLE 5.2

NON-CANCER TOXICITY DATA -- INHALATION

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern | Chronic/ Subchronic | Inhalation RfC | | Extrapolated RfD[(1)] | | Primary Target Organ(s) | Combined Uncertainty/Modifying Factors | RfC : Target Organ(s) | |
|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | Value | Units | | | Source(s) | Date(s) (MM/DD/YYYY) |
| 1,1-Dichloroethane | Chronic | 5.0E+02 | ug/m$^3$ | N/A | N/A | Kidney | 1000 | HEAST | July 1997 |
| 1,1-Dichloroethene | Chronic | 2E+02 | ug/m$^3$ | N/A | N/A | Liver | 30 | IRIS | 04/18/10 |
| 1,4-Dichlorobenzene | Chronic | 8.0E+02 | ug/m$^3$ | N/A | N/A | Liver | 100 | IRIS | 04/18/10 |
| Benzene | Chronic | 3.0E+01 | ug/m$^3$ | N/A | N/A | Immune System | 300 | IRIS | 04/18/10 |
| Carbon disulfide | Chronic | 7.0E+02 | ug/m$^3$ | N/A | N/A | CNS | 30 | IRIS | 04/18/10 |
| Carbon tetrachloride | Chronic | 1.0E+02 | ug/m$^3$ | N/A | N/A | Liver | 100 | IRIS | 04/18/10 |
| Chlorobenzene | Chronic | 5.0E+01 | ug/m$^3$ | N/A | N/A | Liver/Kidney | 1000 | PPRTV | 04/18/10 |
| Cyclohexane, methyl- | Chronic | 3.0E+03 | ug/m$^3$ | N/A | N/A | Kidney | 100 | HEAST | July 1997 |
| Dichlorodifluoromethane | Chronic | 2.0E+02 | ug/m$^3$ | N/A | N/A | Liver | 10000 | HEAST | July 1997 |
| Methyl acetate | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Methylene Chloride | Chronic | 1.0E+03 | ug/m$^3$ | N/A | N/A | Liver | 30 | ATSDR | 04/18/10 |
| Tetrachloroethene | Chronic | 2.7E+02 | ug/m$^3$ | N/A | N/A | CNS | 100 | ATSDR | 04/18/10 |
| Trichloroethene | Chronic | 1.0E+01 | ug/m$^3$ | N/A | N/A | CNS | 1000 | NYSDOH | 04/18/10 |
| Xylene (Total) | Chronic | 1.0E+02 | ug/m$^3$ | N/A | N/A | CNS | 300 | IRIS | 04/18/10 |
| 1,1'-Biphenyl | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| 2-Methylnaphthalene | Chronic | 3.0E+00 | ug/m$^3$ | N/A | N/A | Respiratory | 3000 | IRIS | 04/18/10 |
| Acenaphthene | Chronic | 3.0E+00 | ug/m$^3$ | N/A | N/A | Respiratory | 3000 | IRIS | 04/18/10 |
| Acenaphthylene | Chronic | 3.0E+00 | ug/m$^3$ | N/A | N/A | Respiratory | 3000 | IRIS | 04/18/10 |
| Acetophenone | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzaldehyde | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(a)anthracene | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(a)pyrene | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(b)fluoranthene | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(g,h,i)perylene | Chronic | 3.0E+00 | ug/m$^3$ | N/A | N/A | Respiratory | 3000 | IRIS | 04/18/10 |
| Benzo(k)fluoranthene | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Bis(2-ethylhexyl)phthalate | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Carbazole | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Dibenz(a,h)anthracene | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Dibenzofuran | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Indeno(1,2,3-cd)pyrene | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |

TABLE 5.2

NON-CANCER TOXICITY DATA -- INHALATION

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern | Chronic/ Subchronic | Inhalation RfC | | Extrapolated RfD[(1)] | | Primary Target Organ(s) | Combined Uncertainty/Modifying Factors | RfC : Target Organ(s) | |
|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | Value | Units | | | Source(s) | Date(s) (MM/DD/YYYY) |
| Naphthalene | Chronic | 3.0E+00 | ug/m$^3$ | N/A | N/A | Respiratory | 3000 | IRIS | 04/18/10 |
| Nitrobenzene | Chronic | 9.0E+00 | ug/m$^3$ | N/A | N/A | Respiratory | 30 | IRIS | 04/18/10 |
| Phenanthrene | Chronic | 3.0E+00 | ug/m$^3$ | N/A | N/A | Respiratory | 3000 | IRIS | 04/18/10 |
| Aroclor-1242 | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Aroclor-1254 | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Aroclor-1260 | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Dieldrin | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Dioxin TEQ | Chronic | 4.0E-05 | ug/m$^3$ | N/A | N/A | Liver/Immune System | 100 | CalEPA | 04/18/10 |
| Aluminum | Chronic | 5.0E+00 | ug/m$^3$ | N/A | N/A | CNS | 300 | PPRTV | 04/18/10 |
| Antimony | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Arsenic | Chronic | 1.5E-02 | ug/m$^3$ | N/A | N/A | Developmental | 30 | CalEPA | 04/18/10 |
| Cadmium (other media) | Chronic | 1.0E-02 | ug/m$^3$ | N/A | N/A | Kidney | 9 | ATSDR | 04/18/10 |
| Chromium | Chronic | 1.0E-01 | ug/m$^3$ | N/A | N/A | Respiratory | 300 | IRIS | 04/18/10 |
| Cobalt | Chronic | 6.0E-03 | ug/m$^3$ | N/A | N/A | Respiratory | 300 | PPRTV | 04/18/10 |
| Copper | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Iron | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Lead | Chronic | N/A | N/A | N/A | N/A | CNS | N/A | IRIS | 04/18/10 |
| Manganese (food) | Chronic | 5.0E-02 | ug/m$^3$ | N/A | N/A | CNS | 1000 | IRIS | 04/18/10 |
| Manganese (other media) | Chronic | 5.0E-02 | ug/m$^3$ | N/A | N/A | CNS | 1000 | IRIS | 04/18/10 |
| Mercury (other media) | Chronic | 3.0E-02 | ug/m$^3$ | N/A | N/A | CNS | 300 | CalEPA | 04/18/10 |
| Nickel | Chronic | 9.0E-02 | ug/m$^3$ | N/A | N/A | Respiratory | 30 | ATSDR | 04/18/10 |
| Thallium | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Vanadium | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Zinc | Chronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |

TABLE 5.2

NON-CANCER TOXICITY DATA -- INHALATION

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern | Chronic/ Subchronic | Inhalation RfC | | Extrapolated RfD[(1)] | | Primary Target Organ(s) | Combined Uncertainty/Modifying Factors | RfC : Target Organ(s) | |
|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | Value | Units | | | Source(s) | Date(s) (MM/DD/YYYY) |
| 1,1-Dichloroethane | Subchronic | 5.0E+03 | $ug/m^3$ | N/A | N/A | Kidney | 100 | HEAST | July 1997 |
| 1,1-Dichloroethene | Subchronic | 2E+02 | $ug/m^3$ | N/A | N/A | Liver | 30 | IRIS | 04/18/10 |
| 1,4-Dichlorobenzene | Subchronic | 2.4E+03 | $ug/m^3$ | N/A | N/A | Liver | 30 | IRIS | 04/18/10 |
| Benzene | Subchronic | 9.0E+01 | $ug/m^3$ | N/A | N/A | Immune System | 100 | IRIS | 04/18/10 |
| Carbon disulfide | Subchronic | 7.0E+02 | $ug/m^3$ | N/A | N/A | CNS | 30 | IRIS | 04/18/10 |
| Carbon tetrachloride | Subchronic | 1.0E+02 | $ug/m^3$ | N/A | N/A | Liver | 100 | IRIS | 04/18/10 |
| Chlorobenzene | Subchronic | 5.0E+02 | $ug/m^3$ | N/A | N/A | Liver/Kidney | 100 | PPRTV | 04/18/10 |
| Cyclohexane, methyl- | Subchronic | 3.0E+03 | $ug/m^3$ | N/A | N/A | Kidney | 100 | HEAST | July 1997 |
| Dichlorodifluoromethane | Subchronic | 2.0E+03 | $ug/m^3$ | N/A | N/A | Liver | 1000 | HEAST | July 1997 |
| Methyl acetate | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Methylene Chloride | Subchronic | 1.0E+03 | $ug/m^3$ | N/A | N/A | Liver | 100 | ATSDR | 04/18/10 |
| Tetrachloroethene | Subchronic | 2.7E+02 | $ug/m^3$ | N/A | N/A | CNS | 100 | ATSDR | 04/18/10 |
| Trichloroethene | Subchronic | 1.0E+02 | $ug/m^3$ | N/A | N/A | CNS | 100 | NYSDOH | 04/18/10 |
| Xylene (Total) | Subchronic | 3.0E+02 | $ug/m^3$ | N/A | N/A | CNS | 100 | IRIS | 04/18/10 |
| | | | | | | | | | |
| 1,1'-Biphenyl | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| 2-Methylnaphthalene | Subchronic | 3.0E+00 | $ug/m^3$ | N/A | N/A | Respiratory | 3000 | IRIS | 04/18/10 |
| Acenaphthene | Subchronic | 3.0E+00 | $ug/m^3$ | N/A | N/A | Respiratory | 3000 | IRIS | 04/18/10 |
| Acenaphthylene | Subchronic | 3.0E+00 | $ug/m^3$ | N/A | N/A | Respiratory | 3000 | IRIS | 04/18/10 |
| Acetophenone | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzaldehyde | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(a)anthracene | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(a)pyrene | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(b)fluoranthene | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(g,h,i)perylene | Subchronic | 3.0E+00 | $ug/m^3$ | N/A | N/A | Respiratory | 3000 | IRIS | 04/18/10 |
| Benzo(k)fluoranthene | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Bis(2-ethylhexyl)phthalate | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Carbazole | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Dibenz(a,h)anthracene | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Dibenzofuran | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Indeno(1,2,3-cd)pyrene | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Naphthalene | Subchronic | 3.0E+00 | $ug/m^3$ | N/A | N/A | Respiratory | 3000 | IRIS | 04/18/10 |

TABLE 5.2

NON-CANCER TOXICITY DATA -- INHALATION

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern | Chronic/ Subchronic | Inhalation RfC | | Extrapolated RfD[1] | | Primary Target Organ(s) | Combined Uncertainty/Modifying Factors | RfC : Target Organ(s) | |
|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | Value | Units | | | Source(s) | Date(s) (MM/DD/YYYY) |
| Nitrobenzene | Subchronic | 9.0E+00 | ug/m$^3$ | N/A | N/A | Respiratory | 30 | IRIS | 04/18/10 |
| Phenanthrene | Subchronic | 3.0E+00 | ug/m$^3$ | N/A | N/A | Respiratory | 3000 | IRIS | 04/18/10 |
| Aroclor-1242 | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Aroclor-1254 | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Aroclor-1260 | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Dieldrin | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Dioxin TEQ | Subchronic | 4.0E-05 | ug/m$^3$ | N/A | N/A | Liver/Immune System | 100 | CalEPA | 04/18/10 |
| Aluminum | Subchronic | 5.0E+00 | ug/m$^3$ | N/A | N/A | CNS | 300 | PPRTV | 04/18/10 |
| Antimony | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Arsenic | Subchronic | 1.5E-02 | ug/m$^3$ | N/A | N/A | Developmental | 30 | CalEPA | 04/18/10 |
| Cadmium (other media) | Subchronic | 1.0E-02 | ug/m$^3$ | N/A | N/A | Kidney | 9 | ATSDR | 04/18/10 |
| Chromium | Subchronic | 3.0E-01 | ug/m$^3$ | N/A | N/A | Respiratory | 100 | IRIS | 04/18/10 |
| Cobalt | Subchronic | 2.0E-02 | ug/m$^3$ | N/A | N/A | Respiratory | 100 | PPRTV | 04/18/10 |
| Copper | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Iron | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Lead | Subchronic | N/A | N/A | N/A | N/A | CNS | N/A | IRIS | 04/18/10 |
| Manganese (food) | Subchronic | 5.0E-02 | ug/m$^3$ | N/A | N/A | CNS | 1000 | IRIS | 04/18/10 |
| Manganese (other media) | Subchronic | 5.0E-02 | ug/m$^3$ | N/A | N/A | CNS | 1000 | IRIS | 04/18/10 |
| Mercury (other media) | Subchronic | 3.0E-02 | ug/m$^3$ | N/A | N/A | CNS | 300 | CalEPA | 04/18/10 |
| Nickel | Subchronic | 2.0E-01 | ug/m$^3$ | N/A | N/A | Respiratory | 30 | ATSDR | 04/18/10 |
| Thallium | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Vanadium | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Zinc | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |

TABLE 5.2

NON-CANCER TOXICITY DATA -- INHALATION

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern | Chronic/ Subchronic | Inhalation RfC | | Extrapolated RfD[1] | | Primary Target Organ(s) | Combined Uncertainty/Modifying Factors | RfC : Target Organ(s) | |
|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | Value | Units | | | Source(s) | Date(s) (MM/DD/YYYY) |

IRIS = Integrated Risk Information System

HEAST = Health Effects Assessment Summary Tables

STSC = Superfund Technical Support Center

PPRTV = Provisional Peer Reviewed Toxicity Value developed by STSC

CalEPA = California Environmental Protection Agency, Office of Environmental Health Hazard Assessment

ATSDR = Agency for Toxic Substances and Disease Registry

NYSDOH = New York State Department of Health

N/A = Not Applicable or Not Available

(1) RfC for naphthalene used as a surrogate for all noncarcinogenic PAHs.

TABLE 6.1

CANCER TOXICITY DATA -- ORAL/DERMAL

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern (3) | Oral Cancer Slope Factor | | Oral Absorption Efficiency for Dermal (1) | Absorbed Cancer Slope Factor for Dermal (2) | | Weight of Evidence/ Cancer Guideline Description | Oral CSF | |
|---|---|---|---|---|---|---|---|---|
| | Value | Units | | Value | Units | | Source(s) | Date(s) (MM/DD/YYYY) |
| 1,4-Dichlorobenzene | 5.4E-03 | (mg/kg-day)$^{-1}$ | (1) | 5.4E-03 | (mg/kg-day)$^{-1}$ | C | CalEPA | 04/18/10 |
| Benzene | 5.5E-02 | (mg/kg-day)$^{-1}$ | (1) | 5.5E-02 | (mg/kg-day)$^{-1}$ | A | IRIS | 04/18/10 |
| Bromodichloromethane | 6.2E-02 | (mg/kg-day)$^{-1}$ | (1) | 6.2E-02 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Chlorobenzene | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Ethylbenzene | 1.10E-02 | (mg/kg-day)$^{-1}$ | (1) | 1.10E-02 | (mg/kg-day)$^{-1}$ | B2 | CalEPA | 04/18/10 |
| Xylene (Total) | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| | | | | | | | | |
| 4-Methylphenol | N/A | N/A | N/A | N/A | N/A | C | IRIS | 04/18/10 |
| Acenaphthylene | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Atrazine | 2.3E-01 | (mg/kg-day)$^{-1}$ | (1) | 2.3E-01 | (mg/kg-day)$^{-1}$ | C | CalEPA | 04/18/10 |
| Benzo(a)anthracene | 7.3E-01 | (mg/kg-day)$^{-1}$ | (1) | 7.3E-01 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Benzo(a)pyrene | 7.3E+00 | (mg/kg-day)$^{-1}$ | (1) | 7.3E+00 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Benzo(b)fluoranthene | 7.3E-01 | (mg/kg-day)$^{-1}$ | (1) | 7.3E-01 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Benzo(g,h,i)perylene | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Benzo(k)fluoranthene | 7.3E-02 | (mg/kg-day)$^{-1}$ | (1) | 7.3E-02 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Bis(2-ethylhexyl)phthalate | 1.4E-02 | (mg/kg-day)$^{-1}$ | (1) | 1.4E-02 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Carbazole | 2.0E-02 | (mg/kg-day)$^{-1}$ | (1) | 2.0E-02 | (mg/kg-day)$^{-1}$ | B2 | HEAST | July 1997 |
| Chrysene | 7.3E-03 | (mg/kg-day)$^{-1}$ | (1) | 7.3E-03 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Dibenz(a,h)anthracene | 7.3E+00 | (mg/kg-day)$^{-1}$ | (1) | 7.3E+00 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Dibenzofuran | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Indeno(1,2,3-cd)pyrene | 7.3E-01 | (mg/kg-day)$^{-1}$ | (1) | 7.3E-01 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Naphthalene | N/A | N/A | N/A | N/A | N/A | C | IRIS | 04/18/10 |
| N-Nitrosodiphenylamine | 4.9E-03 | (mg/kg-day)$^{-1}$ | (1) | 4.9E-03 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Pentachlorophenol | 1.2E-01 | (mg/kg-day)$^{-1}$ | (1) | 1.2E-01 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Phenanthrene | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| | | | | | | | | |
| Aroclor-1242 | 2.0E+00 | (mg/kg-day)$^{-1}$ | (1) | 2.0E+00 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Aroclor-1254 | 2.0E+00 | (mg/kg-day)$^{-1}$ | (1) | 2.0E+00 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Aroclor-1260 | 2.0E+00 | (mg/kg-day)$^{-1}$ | (1) | 2.0E+00 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Total PCBs | 2.0E+00 | (mg/kg-day)$^{-1}$ | (1) | 2.0E+00 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| | | | | | | | | |
| 4,4'-DDD | 2.4E-01 | (mg/kg-day)$^{-1}$ | (1) | 2.4E-01 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| 4,4'-DDE | 3.4E-01 | (mg/kg-day)$^{-1}$ | (1) | 3.4E-01 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |

TABLE 6.1

CANCER TOXICITY DATA -- ORAL/DERMAL

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern (3) | Oral Cancer Slope Factor | | Oral Absorption Efficiency for Dermal (1) | Absorbed Cancer Slope Factor for Dermal (2) | | Weight of Evidence/ Cancer Guideline Description | Oral CSF | |
|---|---|---|---|---|---|---|---|---|
| | Value | Units | | Value | Units | | Source(s) | Date(s) (MM/DD/YYYY) |
| 4,4'-DDT | 3.4E-01 | (mg/kg-day)$^{-1}$ | (1) | 3.4E-01 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| alpha-BHC | 6.3E+00 | (mg/kg-day)$^{-1}$ | (1) | 6.3E+00 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| alpha-Chlordane | 3.5E-01 | (mg/kg-day)$^{-1}$ | (1) | 3.5E-01 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| beta-BHC | 1.8E+00 | (mg/kg-day)$^{-1}$ | (1) | 1.8E+00 | (mg/kg-day)$^{-1}$ | C | IRIS | 04/18/10 |
| Dieldrin | 1.6E+01 | (mg/kg-day)$^{-1}$ | (1) | 1.6E+01 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| gamma-Chlordane | 3.5E-01 | (mg/kg-day)$^{-1}$ | (1) | 3.5E-01 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Heptachlor epoxide | 9.1E+00 | (mg/kg-day)$^{-1}$ | (1) | 9.1E+00 | (mg/kg-day)$^{-1}$ | B2 | IRIS | 04/18/10 |
| Dioxin TEQ | 1.56E+05 | (mg/kg-day)$^{-1}$ | (1) | 1.56E+05 | (mg/kg-day)$^{-1}$ | B2 | OHEA (4) | 1985 |
| Aluminum | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Antimony | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Arsenic | 1.5E+00 | (mg/kg-day)$^{-1}$ | (1) | 1.5E+00 | (mg/kg-day)$^{-1}$ | A | IRIS | 04/18/10 |
| Barium | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Beryllium | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Cadmium (drinking water) | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Cadmium (other media) | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Chromium | 5.0E-01 | (mg/kg-day)$^{-1}$ | 0.025 | 1.25E-02 | (mg/kg-day)$^{-1}$ | A | New Jersey | 04/18/10 |
| Cobalt | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Copper | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Cyanide | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Iron | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Lead | N/A | N/A | N/A | N/A | N/A | B2 | IRIS | 04/18/10 |
| Manganese (drinking water) | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Manganese (food) | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Manganese (other media) | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Mercury (other media) | N/A | N/A | N/A | N/A | N/A | C | IRIS | 04/18/10 |
| Mercury (water) | N/A | N/A | N/A | N/A | N/A | C | IRIS | 04/18/10 |
| Nickel | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Silver | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Thallium | N/A | N/A | N/A | N/A | N/A | "inadequate" | IRIS | 04/18/10 |
| Vanadium | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Zinc | N/A | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |

TABLE 6.1

CANCER TOXICITY DATA -- ORAL/DERMAL

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern (3) | Oral Cancer Slope Factor | | Oral Absorption Efficiency for Dermal (1) | Absorbed Cancer Slope Factor for Dermal (2) | | Weight of Evidence/ Cancer Guideline Description | Oral CSF | |
|---|---|---|---|---|---|---|---|---|
| | Value | Units | | Value | Units | | Source(s) | Date(s) (MM/DD/YYYY) |

IRIS = Integrated Risk Information System

STSC = Superfund Technical Support Center

PPRTV = Provisional Peer Reviewed Toxicity Value developed by STSC

N/A = Not Applicable/Not Available

CalEPA = California Environmental Protection Agency, Office of Environmental Health Hazard Assessment

OHEA = EPA's Office of Health and Environmental Assessment

Slope factor for benzo(a)pyrene, along with the appropriate relative potency factor (USEPA, 1993), used for the other carcinogenic PAHs.

The slope factor presented for benzene is the high end of the range from 0.015 to 0.055 per mg/kg-day.

For PCBs, the RME slope factor presented represents the upper-bound slope factor for high risk and persistence situations. The CTE slope factor is 1 per mg/kg-day and represents the central-estimate slope factor.

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen (by the oral route)

E - Evidence of noncarcinogenicity

(1) Oral absorption efficiency exceeds 50%. Therefore, no adjustment of the oral slope factor is necessary. Oral Absorption Efficiencies from Exhibit 4-1, RAGS Part E, USEPA 2004b.

(2) Calculated as: (oral slope factor) / (oral to dermal adjustment factor)

(3) See Appendix D for lead model calculations.

(4) EPA. 1985. Health Assessment Document for Polychlorinated Dibenzo-p-Dioxins. U.S. Environmental Protection Agency, Office of Health and Environmental Assessment. EPA 600/8-84-014F.

TABLE 6.2

CANCER TOXICITY DATA -- INHALATION

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern | Unit Risk | | Inhalation Cancer Slope Factor | | Weight of Evidence/ Cancer Guideline Description | Unit Risk : Inhalation CSF | |
|---|---|---|---|---|---|---|---|
| | Value | Units | Value | Units | | Source(s) | Date(s) (MM/DD/YYYY) |
| 1,1-Dichloroethane | 1.6E-06 | $(ug/m^3)^{-1}$ | N/A | N/A | C | CalEPA | 04/18/10 |
| 1,1-Dichloroethene | N/A | N/A | N/A | N/A | C | IRIS | 04/18/10 |
| 1,4-Dichlorobenzene | 1.1E-05 | $(ug/m^3)^{-1}$ | N/A | N/A | C | CalEPA | 04/18/10 |
| Benzene | 7.8E-06 | $(ug/m^3)^{-1}$ | N/A | N/A | A | IRIS | 04/18/10 |
| Carbon disulfide | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Carbon tetrachloride | 6.0E-06 | $(ug/m^3)^{-1}$ | N/A | N/A | "likely" | IRIS | 04/18/10 |
| Chlorobenzene | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Cyclohexane, methyl- | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Dichlorodifluoromethane | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Methyl acetate | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Methylene Chloride | 4.7E-07 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | IRIS | 04/18/10 |
| Tetrachloroethene | 5.9E-06 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | CalEPA | 04/18/10 |
| Trichloroethene | 2.0E-06 | $(ug/m^3)^{-1}$ | N/A | N/A | C-B2 | CalEPA | 04/18/10 |
| Xylene (Total) | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| | | | | | | | |
| 1,1'-Biphenyl | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| 2-Methylnaphthalene | N/A | N/A | N/A | N/A | C | IRIS | 04/18/10 |
| Acenaphthene | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Acenaphthylene | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Acetophenone | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Benzaldehyde | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Benzo(a)anthracene | 1.1E-04 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | CalEPA | 04/18/10 |
| Benzo(a)pyrene | 1.1E-03 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | CalEPA | 04/18/10 |
| Benzo(b)fluoranthene | 1.1E-04 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | CalEPA | 04/18/10 |
| Benzo(g,h,i)perylene | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Benzo(k)fluoranthene | 1.1E-04 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | CalEPA | 04/18/10 |
| Bis(2-ethylhexyl)phthalate | 2.4E-06 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | CalEPA | 04/18/10 |
| Carbazole | N/A | N/A | N/A | N/A | B2 | HEAST | July 1997 |
| Dibenz(a,h)anthracene | 1.2E-03 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | CalEPA | 04/18/10 |
| Dibenzofuran | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Indeno(1,2,3-cd)pyrene | 1.1E-04 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | CalEPA | 04/18/10 |

TABLE 6.2

CANCER TOXICITY DATA -- INHALATION

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern | Unit Risk | | Inhalation Cancer Slope Factor | | Weight of Evidence/ Cancer Guideline Description | Unit Risk : Inhalation CSF | |
|---|---|---|---|---|---|---|---|
| | Value | Units | Value | Units | | Source(s) | Date(s) (MM/DD/YYYY) |
| Naphthalene | 3.4E-05 | $(ug/m^3)^{-1}$ | N/A | N/A | C | CalEPA | 04/18/10 |
| Nitrobenzene | 4.0E-05 | $(ug/m^3)^{-1}$ | N/A | N/A | "likely" | IRIS | 04/18/10 |
| Phenanthrene | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Aroclor-1242 | 5.7E-04 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | IRIS | 04/18/10 |
| Aroclor-1254 | 5.7E-04 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | IRIS | 04/18/10 |
| Aroclor-1260 | 5.7E-04 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | IRIS | 04/18/10 |
| Dieldrin | 4.6E-03 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | IRIS | 04/18/10 |
| Dioxin TEQ | 3.8E+01 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | CalEPA | 04/18/10 |
| Aluminum | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Antimony | N/A | N/A | N/A | N/A | N/A | IRIS | 04/18/10 |
| Arsenic | 4.3E-03 | $(ug/m^3)^{-1}$ | N/A | N/A | A | IRIS | 04/18/10 |
| Cadmium (other media) | 1.8E-03 | $(ug/m^3)^{-1}$ | N/A | N/A | B1 | IRIS | 04/18/10 |
| Chromium | 8.4E-02 | $(ug/m^3)^{-1}$ | N/A | N/A | A | IRIS | 04/18/10 |
| Cobalt | 9.0E-03 | $(ug/m^3)^{-1}$ | N/A | N/A | B2 | PPRTV | 04/18/10 |
| Copper | N/A | N/A | N/A | N/A | D | IRIS | 01/15/09 |
| Iron | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Lead | N/A | N/A | N/A | N/A | B2 | IRIS | 04/18/10 |
| Manganese (food) | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Manganese (other media) | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |
| Mercury (other media) | N/A | N/A | N/A | N/A | C | IRIS | 04/18/10 |
| Nickel | 2.6E-04 | $(ug/m^3)^{-1}$ | N/A | N/A | N/A | CalEPA | 04/18/10 |
| Thallium | N/A | N/A | N/A | N/A | "inadequate" | IRIS | 04/18/10 |
| Vanadium | N/A | N/A | N/A | N/A | N/A | N/A | 04/18/10 |
| Zinc | N/A | N/A | N/A | N/A | D | IRIS | 04/18/10 |

TABLE 6.2

CANCER TOXICITY DATA -- INHALATION

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

| Chemical of Potential Concern | Unit Risk | | Inhalation Cancer Slope Factor | | Weight of Evidence/ Cancer Guideline Description | Unit Risk : Inhalation CSF | |
|---|---|---|---|---|---|---|---|
| | Value | Units | Value | Units | | Source(s) | Date(s) (MM/DD/YYYY) |

IRIS = Integrated Risk Information System

STSC = Superfund Technical Support Center

PPRTV = Provisional Peer Reviewed Toxicity Values developed by STSC

CalEPA = California Environmental Protection Agency, Office of Environmental Health Hazard Assessment

HEAST = Health Effects Assessment Summary Tables

N/A = Not Applicable

(1) See Appendix D for lead model calculations.

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen (by the oral route)

E - Evidence of noncarcinogenicity

The unit risk presented for benzene is the high end of the range from 2.2E-06 to 7E-06 per ug/$m^3$.

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Soil | Surface Soil | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 1.2E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.3E-07 | 8.6E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 1E+00 | mg/kg | 1.1E-07 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.1E-06 | 7.7E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 1.7E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.1E-07 | 1.2E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 9E-01 | mg/kg | 7.1E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.3E-08 | 5.0E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 4E+01 | mg/kg | 3.0E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 4.2E-08 | 2.1E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.0E-03 |
| | | | | Carbazole | 2E-01 | mg/kg | 2.0E-08 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 3.9E-10 | 1.4E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 2.1E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 4.0E-07 | 1.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 1.8E-08 | mg/kg-day | N/A | N/A | N/A | 1.2E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 3.1E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 8E-01 | mg/kg | 6.6E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.3E-07 | 4.6E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 2E+00 | mg/kg | 1.8E-07 | mg/kg-day | N/A | N/A | N/A | 1.3E-06 | mg/kg-day | 3.0E-02 | mg/kg-day | 4.2E-05 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 2.0E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 3.9E-08 | 1.4E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 6.8E-03 |
| | | | | Aroclor-1254 | 4E-01 | mg/kg | 3.0E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 6.1E-08 | 2.1E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 1.1E-02 |
| | | | | Aroclor-1260 | 5E-01 | mg/kg | 4.2E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 8.4E-08 | 2.9E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 1.5E-02 |
| | | | | Dieldrin | 3E-01 | mg/kg | 2.1E-08 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 3.4E-07 | 1.5E-07 | mg/kg-day | 5.0E-05 | mg/kg-day | 3.0E-03 |
| | | | | Dioxin TEQ | 5E-05 | mg/kg | 4.2E-12 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 6.5E-07 | 2.9E-11 | mg/kg-day | 1.0E-09 | mg/kg-day | 2.9E-02 |
| | | | | Aluminum | 7E+03 | mg/kg | 5.4E-04 | mg/kg-day | N/A | N/A | N/A | 3.8E-03 | mg/kg-day | 1.0E+00 | mg/kg-day | 3.8E-03 |
| | | | | Antimony | 9E+00 | mg/kg | 7.7E-07 | mg/kg-day | N/A | N/A | N/A | 5.4E-06 | mg/kg-day | 4.0E-04 | mg/kg-day | 1.4E-02 |
| | | | | Arsenic | 1E+01 | mg/kg | 9.4E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 1.4E-06 | 6.6E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 2.2E-02 |
| | | | | Cadmium (other media) | 7E+00 | mg/kg | 5.6E-07 | mg/kg-day | N/A | N/A | N/A | 3.9E-06 | mg/kg-day | 1.0E-03 | mg/kg-day | 3.9E-03 |
| | | | | Chromium | 1E+02 | mg/kg | 1.2E-05 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 1.5E-05 | 8.2E-05 | mg/kg-day | 3.0E-03 | mg/kg-day | 2.7E-02 |
| | | | | Cobalt | 6E+00 | mg/kg | 4.5E-07 | mg/kg-day | N/A | N/A | N/A | 3.2E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.1E-02 |
| | | | | Copper | 3E+02 | mg/kg | 2.7E-05 | mg/kg-day | N/A | N/A | N/A | 1.9E-04 | mg/kg-day | 4.0E-02 | mg/kg-day | 4.6E-03 |
| | | | | Iron | 2E+04 | mg/kg | 2.0E-03 | mg/kg-day | N/A | N/A | N/A | 1.4E-02 | mg/kg-day | 7.0E-01 | mg/kg-day | 2.0E-02 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 3E+02 | mg/kg | 2.8E-05 | mg/kg-day | N/A | N/A | N/A | 2.0E-04 | mg/kg-day | 7.0E-02 | mg/kg-day | 2.8E-03 |
| | | | | Mercury (other media) | 5E-01 | mg/kg | 4.5E-08 | mg/kg-day | N/A | N/A | N/A | 3.1E-07 | mg/kg-day | 1.0E-04 | mg/kg-day | 3.1E-03 |
| | | | | Nickel | 4E+01 | mg/kg | 3.4E-06 | mg/kg-day | N/A | N/A | N/A | 2.4E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.2E-03 |
| | | | | Thallium | 3E-01 | mg/kg | 2.4E-08 | mg/kg-day | N/A | N/A | N/A | 1.7E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 1.4E-06 | mg/kg-day | N/A | N/A | N/A | 1.0E-05 | mg/kg-day | 7.0E-03 | mg/kg-day | 1.4E-03 |
| | | | Exp. Route Total | | | | | | | | 2E-05 | | | | | 2E-01 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 6.6E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.3E-07 | 4.6E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 1E+00 | mg/kg | 5.9E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.1E-06 | 4.1E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 8.9E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.7E-07 | 6.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 9E-01 | mg/kg | 3.8E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 7.2E-09 | 2.7E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 4E+01 | mg/kg | 1.2E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 1.7E-08 | 8.6E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 4.3E-04 |
| | | | | Carbazole | 2E-01 | mg/kg | 1.1E-08 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 2.1E-10 | 7.4E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 1.1E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.2E-07 | 8.0E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 7.2E-09 | mg/kg-day | N/A | N/A | N/A | 5.1E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 1.3E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 8E-01 | mg/kg | 3.5E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 6.7E-08 | 2.5E-07 | mg/kg-day | N/A | N/A | N/A |

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Phenanthrene | 2E+00 | mg/kg | 9.7E-08 | mg/kg-day | N/A | N/A | N/A | 6.8E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 2.3E-05 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 1.1E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 2.3E-08 | 7.9E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 4.0E-03 |
| | | | | Aroclor-1254 | 4E-01 | mg/kg | 1.8E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 3.5E-08 | 1.2E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 6.1E-03 |
| | | | | Aroclor-1260 | 5E-01 | mg/kg | 2.4E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 4.9E-08 | 1.7E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 8.5E-03 |
| | | | | Dieldrin | 3E-01 | mg/kg | 8.7E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 1.4E-07 | 6.1E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 1.2E-03 |
| | | | | Dioxin TEQ | 5E-05 | mg/kg | 5.2E-13 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 8.1E-08 | 3.6E-12 | mg/kg-day | 1.0E-09 | mg/kg-day | 3.6E-03 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 1.2E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 1.8E-07 | 8.2E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 2.7E-03 |
| | | | | Cadmium (other media) | 7E+00 | mg/kg | 2.3E-09 | mg/kg-day | N/A | N/A | N/A | 1.6E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 6.5E-04 |
| | | | | Chromium | 1E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.5E-05 | mg/kg-day | N/A |
| | | | | Cobalt | 6E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 3E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 2E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 3E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 5E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Nickel | 4E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 3E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 2E-06 | | | | | 3E-02 |
| | | Exposure Point Total | | | | | | | | | 2E-05 | | | | | 2E-01 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Leachate | Leachate | Unnamed Island | Dermal | | | | | | | | | | | | | |
| | | | | 4-Methylphenol | 5E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 5.0E-03 | mg/kg-day | N/A |
| | | | | Acenaphthylene | 3E-02 | ug/L | 8.7E-09 | mg/kg-day | N/A | N/A | N/A | 6.1E-08 | mg/kg-day | 6.0E-02 | mg/kg-day | 1.0E-06 |
| | | | | Atrazine | 3E+00 | ug/L | N/A | N/A | 2.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.5E-02 | mg/kg-day | N/A |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 1E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 3E+00 | ug/L | 9.4E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 1.3E-08 | 6.6E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.3E-04 |
| | | | | Chrysene | 3E-02 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | ND | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenzofuran | 3E-01 | ug/L | 1.2E-07 | mg/kg-day | N/A | N/A | N/A | 8.2E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 2.1E-04 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 9E-01 | ug/L | 1.3E-07 | mg/kg-day | N/A | N/A | N/A | 9.3E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 4.6E-05 |
| | | | | N-Nitrosodiphenylamine | 5E+00 | ug/L | N/A | N/A | 4.9E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Pentachlorophenol | ND | ug/L | N/A | N/A | 1.2E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Phenanthrene | 3E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | 2E+00 | ug/L | 2.7E-07 | mg/kg-day | 5.4E-03 | (mg/kg-day) $^{-1}$ | 1.4E-09 | 1.9E-06 | mg/kg-day | 7.0E-02 | mg/kg-day | 2.7E-05 |
| | | | | Benzene | 4E+00 | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 4.0E-03 | mg/kg-day | N/A |
| | | | | Chlorobenzene | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Ethylbenzene | ND | ug/L | N/A | N/A | 1.1E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 1.0E-01 | mg/kg-day | N/A |
| | | | | Xylene (total) | 1E+00 | ug/L | 1.7E-07 | mg/kg-day | N/A | N/A | N/A | 1.2E-06 | mg/kg-day | 2.0E-01 | mg/kg-day | 5.8E-06 |
| | | | | Total PCBs | 3E+00 | ug/L | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 1E-02 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | 1E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-BHC | 1E-03 | ug/L | 1.1E-10 | mg/kg-day | 6.3E+00 | (mg/kg-day) $^{-1}$ | 6.8E-10 | 7.6E-10 | mg/kg-day | 8.0E-03 | mg/kg-day | 9.5E-08 |
| | | | | alpha-Chlordane | 4E-03 | ug/L | 1.7E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 5.9E-10 | 1.2E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.4E-05 |
| | | | | Dieldrin | 2E-03 | ug/L | 2.7E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 4.4E-09 | 1.9E-09 | mg/kg-day | 5.0E-05 | mg/kg-day | 3.8E-05 |
| | | | | Gamma-Chlordane | ND | ug/L | N/A | N/A | 3.5E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | Aluminum | 1E+02 | ug/L | 2.0E-07 | mg/kg-day | N/A | N/A | N/A | 1.4E-06 | mg/kg-day | 1.0E-02 | mg/kg-day | 1.4E-04 |
| | | | | Antimony | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 4E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Barium | 7E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.4E-02 | mg/kg-day | N/A |
| | | | | Beryllium | 2E-01 | ug/L | 2.7E-10 | mg/kg-day | N/A | N/A | N/A | 1.9E-09 | mg/kg-day | 1.4E-05 | mg/kg-day | 1.4E-04 |
| | | | | Cadmium (other media) | 8E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5E-05 | mg/kg-day | N/A |
| | | | | Chromium | 5E+00 | ug/L | 1.5E-08 | mg/kg-day | 1.3E-02 | (mg/kg-day) $^{-1}$ | 5.0E-10 | 1.1E-07 | mg/kg-day | 7.5E-05 | mg/kg-day | 1.4E-03 |
| | | | | Cobalt | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 2E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 4E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | N/A |
| | | | | Manganese (other media) | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (water) | 3E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-05 | mg/kg-day | N/A |
| | | | | Nickel | 4E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Silver | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 6E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 2E-08 | | | | | 2E-03 |
| | | Exposure Point Total | | | | | | | | | 2E-08 | | | | | 2E-03 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Surface Water | Surface Water | Unnamed Island | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 1E-01 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 1E-01 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Benzo(b)fluoranthene | 3E-01 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | ND | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+00 | ug/L | 1.3E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 1.8E-08 | 9.1E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 4.6E-04 |
| | | | | Chrysene | 1E-01 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-01 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 2E-01 | ug/L | 5.6E-08 | mg/kg-day | N/A | N/A | N/A | 3.9E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.0E-05 |
| | | | | Phenanthrene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | ND | ug/L | N/A | N/A | 5.4E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Benzene | ND | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 4.0E-03 | mg/kg-day | N/A |
| | | | | Bromodichloromethane | ND | ug/L | N/A | N/A | 6.2E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Aroclor-1260 | ND | ug/L | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 1E-02 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | 9E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-Chlordane | 3E-03 | ug/L | 3.0E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 1.1E-09 | 2.1E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 4.3E-05 |
| | | | | beta-BHC | ND | ug/L | N/A | N/A | 1.8E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 6.0E-04 | mg/kg-day | N/A |
| | | | | Dieldrin | ND | ug/L | N/A | N/A | 1.6E+01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-05 | mg/kg-day | N/A |
| | | | | Gamma-Chlordane | 4E-03 | ug/L | 3.9E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 1.4E-09 | 2.7E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 5.5E-05 |
| | | | | Heptachlor Epoxide | 5E-03 | ug/L | 3.6E-09 | mg/kg-day | 9.1E+00 | (mg/kg-day) $^{-1}$ | 3.3E-08 | 2.5E-08 | mg/kg-day | 1.3E-05 | mg/kg-day | 2.0E-03 |
| | | | | Aluminum | 3E+03 | ug/L | 1.0E-05 | mg/kg-day | N/A | N/A | N/A | 7.1E-05 | mg/kg-day | 1.0E-02 | mg/kg-day | 7.1E-03 |
| | | | | Arsenic | 3E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Cadmium (other media) | 1E+00 | ug/L | 4.4E-09 | mg/kg-day | N/A | N/A | N/A | 3.1E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 1.2E-03 |
| | | | | Chromium | 1E+01 | ug/L | 8.4E-08 | mg/kg-day | 1.3E-02 | (mg/kg-day) $^{-1}$ | 2.7E-09 | 5.9E-07 | mg/kg-day | 7.5E-05 | mg/kg-day | 7.8E-03 |
| | | | | Cobalt | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 7E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | 4E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 1E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 6E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (water) | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-05 | mg/kg-day | N/A |
| | | | | Vanadium | 3E+00 | ug/L | 7.9E-09 | mg/kg-day | N/A | N/A | N/A | 5.5E-08 | mg/kg-day | 1.8E-04 | mg/kg-day | 3.0E-04 |
| | | | Exp. Route Total | | | | | | | | 6E-08 | | | | | 2E-02 |
| | | Exposure Point Total | | | | | | | | | 6E-08 | | | | | 2E-02 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Sediment | Sediment | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 9.5E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.8E-07 | 6.6E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 9.9E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.9E-06 | 6.9E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 7.2E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.4E-07 | 5.0E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 5.8E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.1E-08 | 4.1E-07 | mg/kg-day | N/A | N/A | N/A |

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+01 | mg/kg | 6.5E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 9.1E-09 | 4.6E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.3E-04 |
| | | | | Carbazole | 1E-01 | mg/kg | 5.7E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 1.1E-10 | 4.0E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 1.1E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.2E-07 | 7.9E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 9E-02 | mg/kg | 3.7E-09 | mg/kg-day | N/A | N/A | N/A | 2.6E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 6.4E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 4.3E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 8.2E-08 | 3.0E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 1E+00 | mg/kg | 5.6E-08 | mg/kg-day | N/A | N/A | N/A | 3.9E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 1.3E-05 |
| | | | | Aroclor-1242 | ND | mg/kg | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 2E-01 | mg/kg | 6.6E-09 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 1.3E-08 | 4.6E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 2.3E-03 |
| | | | | Aroclor-1260 | 2E-01 | mg/kg | 8.9E-09 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 1.8E-08 | 6.2E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 3.1E-03 |
| | | | | Dieldrin | 9E-03 | mg/kg | 3.7E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 5.9E-09 | 2.6E-09 | mg/kg-day | 5.0E-05 | mg/kg-day | 5.1E-05 |
| | | | | Aluminum | 7E+03 | mg/kg | 3.0E-04 | mg/kg-day | N/A | N/A | N/A | 2.1E-03 | mg/kg-day | 1.0E+00 | mg/kg-day | 2.1E-03 |
| | | | | Antimony | 9E+00 | mg/kg | 3.7E-07 | mg/kg-day | N/A | N/A | N/A | 2.6E-06 | mg/kg-day | 4.0E-04 | mg/kg-day | 6.5E-03 |
| | | | | Arsenic | 1E+01 | mg/kg | 4.9E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 7.4E-07 | 3.5E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.2E-02 |
| | | | | Cadmium (other media) | 1E+01 | mg/kg | 5.3E-07 | mg/kg-day | N/A | N/A | N/A | 3.7E-06 | mg/kg-day | 1.0E-03 | mg/kg-day | 3.7E-03 |
| | | | | Chromium | 2E+02 | mg/kg | 6.8E-06 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 8.9E-06 | 4.8E-05 | mg/kg-day | 3.0E-03 | mg/kg-day | 1.6E-02 |
| | | | | Cobalt | 9E+00 | mg/kg | 3.7E-07 | mg/kg-day | N/A | N/A | N/A | 2.6E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 8.7E-03 |
| | | | | Copper | 3E+02 | mg/kg | 1.3E-05 | mg/kg-day | N/A | N/A | N/A | 9.4E-05 | mg/kg-day | 4.0E-02 | mg/kg-day | 2.4E-03 |
| | | | | Iron | 2E+04 | mg/kg | 7.5E-04 | mg/kg-day | N/A | N/A | N/A | 5.3E-03 | mg/kg-day | 7.0E-01 | mg/kg-day | 7.5E-03 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 2E+02 | mg/kg | 9.6E-06 | mg/kg-day | N/A | N/A | N/A | 6.7E-05 | mg/kg-day | 7.0E-02 | mg/kg-day | 9.6E-04 |
| | | | | Mercury (other media) | 5E-01 | mg/kg | 2.2E-08 | mg/kg-day | N/A | N/A | N/A | 1.5E-07 | mg/kg-day | 1.0E-04 | mg/kg-day | 1.5E-03 |
| | | | | Thallium | 4E-01 | mg/kg | 1.4E-08 | mg/kg-day | N/A | N/A | N/A | 1.0E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 7.8E-07 | mg/kg-day | N/A | N/A | N/A | 5.4E-06 | mg/kg-day | 7.0E-03 | mg/kg-day | 7.8E-04 |
| | | | Exp. Route Total | | | | | | | | 1E-05 | | | | | 7E-02 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 2.8E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 5.3E-07 | 2.0E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 2.9E-07 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 5.6E-06 | 2.1E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 2.1E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 4.0E-07 | 1.5E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 1.7E-07 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 3.3E-08 | 1.2E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+01 | mg/kg | 1.5E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 2.1E-08 | 1.0E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 5.2E-04 |
| | | | | Carbazole | 1E-01 | mg/kg | 1.7E-08 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 3.4E-10 | 1.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 3.4E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 6.4E-07 | 2.4E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 9E-02 | mg/kg | 8.4E-09 | mg/kg-day | N/A | N/A | N/A | 5.9E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 1.5E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 1.3E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.4E-07 | 8.9E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 1E+00 | mg/kg | 1.7E-07 | mg/kg-day | N/A | N/A | N/A | 1.2E-06 | mg/kg-day | 3.0E-02 | mg/kg-day | 3.9E-05 |
| | | | | Aroclor-1242 | ND | mg/kg | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 2E-01 | mg/kg | 2.1E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 4.2E-08 | 1.5E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 7.3E-03 |
| | | | | Aroclor-1260 | 2E-01 | mg/kg | 2.8E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 5.7E-08 | 2.0E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 1.0E-02 |
| | | | | Dieldrin | 9E-03 | mg/kg | 8.4E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 1.3E-08 | 5.9E-09 | mg/kg-day | 5.0E-05 | mg/kg-day | 1.2E-04 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Antimony | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 3.4E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 5.1E-07 | 2.4E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 7.9E-03 |
| | | | | Cadmium (other media) | 1E+01 | mg/kg | 1.2E-08 | mg/kg-day | N/A | N/A | N/A | 8.5E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 3.4E-03 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.5E-05 | mg/kg-day | N/A |
| | | | | Cobalt | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 3E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 2E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 2E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 5E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 4E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 8E-06 | | | | | 3E-02 |
| | | Exposure Point Total | | | | | | | | | 2E-05 | | | | | 1E-01 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | Total of Receptor Risks Across All Media | N/A | | | | Total of Receptor Hazards Across All Media | N/A |

Notes

Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 3 for 8/10 of the result (ages 9-16) and an ADAF of 1 for 2/10 of the result (ages 17-18).

Highlighted cancer risk are calculated in Appendix F

TABLE 7.1.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Soil | Surface Soil | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 3.1E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 5.9E-08 | 2.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 1E+00 | mg/kg | 2.7E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 5.2E-07 | 1.9E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 4.1E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 7.9E-08 | 2.9E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 9E-01 | mg/kg | 1.8E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 3.4E-09 | 1.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 4E+01 | mg/kg | 7.5E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 1.0E-08 | 5.2E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.6E-04 |
| | | | | Carbazole | 2E-01 | mg/kg | 4.9E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 9.8E-11 | 3.4E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 5.3E-09 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.0E-07 | 3.7E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 4.4E-09 | mg/kg-day | N/A | N/A | N/A | 3.1E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 7.7E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 8E-01 | mg/kg | 1.7E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.1E-08 | 1.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 2E+00 | mg/kg | 4.5E-08 | mg/kg-day | N/A | N/A | N/A | 3.2E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 1.1E-05 |
| | | | | Aroclor-1242 | 3E-02 | mg/kg | 5.4E-10 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 5.4E-10 | 3.8E-09 | mg/kg-day | 2.0E-05 | mg/kg-day | 1.9E-04 |
| | | | | Aroclor-1254 | 4E-01 | mg/kg | 7.6E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 7.6E-09 | 5.3E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 2.6E-03 |
| | | | | Aroclor-1260 | 5E-01 | mg/kg | 1.1E-08 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 1.1E-08 | 7.4E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 3.7E-03 |
| | | | | Dieldrin | 3E-01 | mg/kg | 5.3E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 8.5E-08 | 3.7E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 7.4E-04 |
| | | | | Dioxin TEQ | 5E-05 | mg/kg | 1.0E-12 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 1.6E-07 | 7.3E-12 | mg/kg-day | 1.0E-09 | mg/kg-day | 7.3E-03 |
| | | | | Aluminum | 7E+03 | mg/kg | 1.3E-04 | mg/kg-day | N/A | N/A | N/A | 9.4E-04 | mg/kg-day | 1.0E+00 | mg/kg-day | 9.4E-04 |
| | | | | Antimony | 9E+00 | mg/kg | 1.9E-07 | mg/kg-day | N/A | N/A | N/A | 1.4E-06 | mg/kg-day | 4.0E-04 | mg/kg-day | 3.4E-03 |
| | | | | Arsenic | 1E+01 | mg/kg | 2.4E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 3.5E-07 | 1.6E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 5.5E-03 |
| | | | | Cadmium (other media) | 7E+00 | mg/kg | 1.4E-07 | mg/kg-day | N/A | N/A | N/A | 9.9E-07 | mg/kg-day | 1.0E-03 | mg/kg-day | 9.9E-04 |
| | | | | Chromium | 1E+02 | mg/kg | 2.9E-06 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 3.8E-06 | 2.0E-05 | mg/kg-day | 3.0E-03 | mg/kg-day | 6.8E-03 |
| | | | | Cobalt | 6E+00 | mg/kg | 1.1E-07 | mg/kg-day | N/A | N/A | N/A | 7.9E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 2.6E-03 |
| | | | | Copper | 3E+02 | mg/kg | 6.6E-06 | mg/kg-day | N/A | N/A | N/A | 4.6E-05 | mg/kg-day | 4.0E-02 | mg/kg-day | 1.2E-03 |
| | | | | Iron | 2E+04 | mg/kg | 4.9E-04 | mg/kg-day | N/A | N/A | N/A | 3.5E-03 | mg/kg-day | 7.0E-01 | mg/kg-day | 4.9E-03 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 3E+02 | mg/kg | 7.0E-06 | mg/kg-day | N/A | N/A | N/A | 4.9E-05 | mg/kg-day | 7.0E-02 | mg/kg-day | 7.0E-04 |
| | | | | Mercury (other media) | 5E-01 | mg/kg | 1.1E-08 | mg/kg-day | N/A | N/A | N/A | 7.8E-08 | mg/kg-day | 1.0E-04 | mg/kg-day | 7.8E-04 |
| | | | | Nickel | 4E+01 | mg/kg | 8.6E-07 | mg/kg-day | N/A | N/A | N/A | 6.0E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.0E-04 |
| | | | | Thallium | 3E-01 | mg/kg | 6.1E-09 | mg/kg-day | N/A | N/A | N/A | 4.3E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 3.6E-07 | mg/kg-day | N/A | N/A | N/A | 2.5E-06 | mg/kg-day | 7.0E-03 | mg/kg-day | 3.6E-04 |
| | | | Exp. Route Total | | | | | | | | 5E-06 | | | | | 4E-02 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 3.3E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 6.3E-08 | 2.3E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 1E+00 | mg/kg | 2.9E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 5.6E-07 | 2.1E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 4.4E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 8.4E-08 | 3.1E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 9E-01 | mg/kg | 1.9E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 3.6E-09 | 1.3E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 4E+01 | mg/kg | 6.2E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 8.6E-09 | 4.3E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.2E-04 |
| | | | | Carbazole | 2E-01 | mg/kg | 5.3E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 1.1E-10 | 3.7E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 5.7E-09 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.1E-07 | 4.0E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 3.6E-09 | mg/kg-day | N/A | N/A | N/A | 2.5E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 6.3E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 8E-01 | mg/kg | 1.8E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.4E-08 | 1.2E-07 | mg/kg-day | N/A | N/A | N/A |

TABLE 7.1.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Phenanthrene | 2E+00 | mg/kg | 4.8E-08 | mg/kg-day | N/A | N/A | N/A | 3.4E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 1.1E-05 |
| | | | | Aroclor-1242 | 3E-02 | mg/kg | 6.2E-10 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 6.2E-10 | 4.4E-09 | mg/kg-day | 2.0E-05 | mg/kg-day | 2.2E-04 |
| | | | | Aroclor-1254 | 4E-01 | mg/kg | 8.8E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 8.8E-09 | 6.1E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 3.1E-03 |
| | | | | Aroclor-1260 | 5E-01 | mg/kg | 1.2E-08 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 1.2E-08 | 8.5E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 4.3E-03 |
| | | | | Dieldrin | 3E-01 | mg/kg | 4.4E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 7.0E-08 | 3.1E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 6.1E-04 |
| | | | | Dioxin TEQ | 5E-05 | mg/kg | 2.6E-13 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 4.0E-08 | 1.8E-12 | mg/kg-day | 1.0E-09 | mg/kg-day | 1.8E-03 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 5.8E-08 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 8.8E-08 | 4.1E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.4E-03 |
| | | | | Cadmium (other media) | 7E+00 | mg/kg | 1.2E-09 | mg/kg-day | N/A | N/A | N/A | 8.1E-09 | mg/kg-day | 2.5E-05 | mg/kg-day | 3.3E-04 |
| | | | | Chromium | 1E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.5E-05 | mg/kg-day | N/A |
| | | | | Cobalt | 6E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 3E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 2E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 3E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 5E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Nickel | 4E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 3E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 1E-06 | | | | | 1E-02 |
| | | Exposure Point Total | | | | | | | | | 6E-06 | | | | | 6E-02 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Leachate | Leachate | Unnamed Island | Dermal | | | | | | | | | | | | | |
| | | | | 4-Methylphenol | 5E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 5.0E-03 | mg/kg-day | N/A |
| | | | | Acenaphthylene | 3E-02 | ug/L | 4.3E-09 | mg/kg-day | N/A | N/A | N/A | 3.0E-08 | mg/kg-day | 6.0E-02 | mg/kg-day | 5.0E-07 |
| | | | | Atrazine | 1E+00 | ug/L | N/A | N/A | 2.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.5E-02 | mg/kg-day | N/A |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 1E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 3E+00 | ug/L | 4.7E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 6.6E-09 | 3.3E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.7E-04 |
| | | | | Chrysene | 3E-02 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | ND | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenzofuran | 3E-01 | ug/L | 5.9E-08 | mg/kg-day | N/A | N/A | N/A | 4.1E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 1.0E-04 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 9E-01 | ug/L | 6.6E-08 | mg/kg-day | N/A | N/A | N/A | 4.6E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.3E-05 |
| | | | | N-Nitrosodiphenylamine | 5E+00 | ug/L | N/A | N/A | 4.9E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Pentachlorophenol | ND | ug/L | N/A | N/A | 1.2E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |

TABLE 7.1.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Phenanthrene | 3E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | 2E+00 | ug/L | 1.3E-07 | mg/kg-day | 5.4E-03 | (mg/kg-day) $^{-1}$ | 7.2E-10 | 9.4E-07 | mg/kg-day | 7.0E-02 | mg/kg-day | 1.3E-05 |
| | | | | Benzene | 4E+00 | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 4.0E-03 | mg/kg-day | N/A |
| | | | | Chlorobenzene | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Ethylbenzene | ND | ug/L | N/A | N/A | 1.1E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 1.0E-01 | mg/kg-day | N/A |
| | | | | Xylene (total) | 1E+00 | ug/L | 8.3E-08 | mg/kg-day | N/A | N/A | N/A | 5.8E-07 | mg/kg-day | 2.0E-01 | mg/kg-day | 2.9E-06 |
| | | | | Total PCBs | 3E+00 | ug/L | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 1E-02 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | 1E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-BHC | 1E-03 | ug/L | 5.4E-11 | mg/kg-day | 6.3E+00 | (mg/kg-day) $^{-1}$ | 3.4E-10 | 3.8E-10 | mg/kg-day | 8.0E-03 | mg/kg-day | 4.7E-08 |
| | | | | alpha-Chlordane | 4E-03 | ug/L | 8.5E-10 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 3.0E-10 | 5.9E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.2E-05 |
| | | | | Dieldrin | 2E-03 | ug/L | 1.4E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 2.2E-09 | 9.5E-10 | mg/kg-day | 5.0E-05 | mg/kg-day | 1.9E-05 |
| | | | | Gamma-Chlordane | ND | ug/L | N/A | N/A | 3.5E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | Aluminum | 1E+02 | ug/L | 1.0E-07 | mg/kg-day | N/A | N/A | N/A | 7.1E-07 | mg/kg-day | 1.0E-02 | mg/kg-day | 7.1E-05 |
| | | | | Antimony | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 4E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Barium | 7E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.4E-02 | mg/kg-day | N/A |
| | | | | Beryllium | 2E-01 | ug/L | 1.1E-10 | mg/kg-day | N/A | N/A | N/A | 7.9E-10 | mg/kg-day | 1.4E-05 | mg/kg-day | 5.6E-05 |
| | | | | Cadmium (other media) | 8E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5E-05 | mg/kg-day | N/A |
| | | | | Chromium | 5E+00 | ug/L | 7.7E-09 | mg/kg-day | 1.3E-02 | (mg/kg-day) $^{-1}$ | 2.5E-10 | 5.4E-08 | mg/kg-day | 7.5E-05 | mg/kg-day | 7.2E-04 |
| | | | | Cobalt | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 2E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 4E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | N/A |
| | | | | Manganese (other media) | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (water) | 3E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-05 | mg/kg-day | N/A |
| | | | | Nickel | 4E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Silver | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 1E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 1E-08 | | | | | 1E-03 |
| | | Exposure Point Total | | | | | | | | | 1E-08 | | | | | 1E-03 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Surface Water | Surface Water | Unnamed Island | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 1E-01 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 1E-01 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |

TABLE 7.1.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Benzo(b)fluoranthene | 6E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 5E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | ND | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+00 | ug/L | 6.5E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 9.1E-09 | 4.6E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.3E-04 |
| | | | | Chrysene | 1E-01 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 5E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 6E-02 | ug/L | 8.7E-09 | mg/kg-day | N/A | N/A | N/A | 6.1E-08 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.1E-06 |
| | | | | Phenanthrene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | ND | ug/L | N/A | N/A | 5.4E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Benzene | ND | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 4.0E-03 | mg/kg-day | N/A |
| | | | | Bromodichloromethane | ND | ug/L | N/A | N/A | 6.2E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Aroclor-1260 | ND | ug/L | N/A | N/A | 1.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 3E-03 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | 3E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-Chlordane | 1E-03 | ug/L | 6.5E-10 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 2.3E-10 | 4.5E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 9.0E-06 |
| | | | | beta-BHC | ND | ug/L | N/A | N/A | 1.8E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 6.0E-04 | mg/kg-day | N/A |
| | | | | Dieldrin | ND | ug/L | N/A | N/A | 1.6E+01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-05 | mg/kg-day | N/A |
| | | | | Gamma-Chlordane | 4E-03 | ug/L | 2.0E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 6.8E-10 | 1.4E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.7E-05 |
| | | | | Heptachlor Epoxide | 2E-03 | ug/L | 5.3E-10 | mg/kg-day | 9.1E+00 | (mg/kg-day) $^{-1}$ | 4.9E-09 | 3.7E-09 | mg/kg-day | 1.3E-05 | mg/kg-day | 2.9E-04 |
| | | | | Aluminum | 3E+03 | ug/L | 5.0E-06 | mg/kg-day | N/A | N/A | N/A | 3.5E-05 | mg/kg-day | 1.0E-02 | mg/kg-day | 3.5E-03 |
| | | | | Arsenic | 3E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Cadmium (other media) | 1E+00 | ug/L | 2.2E-09 | mg/kg-day | N/A | N/A | N/A | 1.5E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 6.2E-04 |
| | | | | Chromium | 1E+01 | ug/L | 4.2E-08 | mg/kg-day | 1.3E-02 | (mg/kg-day) $^{-1}$ | 1.4E-09 | 2.9E-07 | mg/kg-day | 7.5E-05 | mg/kg-day | 3.9E-03 |
| | | | | Cobalt | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | 4E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 1E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 6E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (water) | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-05 | mg/kg-day | N/A |
| | | | | Vanadium | 3E+00 | ug/L | 4.0E-09 | mg/kg-day | N/A | N/A | N/A | 2.8E-08 | mg/kg-day | 1.8E-04 | mg/kg-day | 1.5E-04 |
| | | | Exp. Route Total | | | | | | | | 2E-08 | | | | | 9E-03 |
| | | Exposure Point Total | | | | | | | | | 2E-08 | | | | | 9E-03 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Sediment | Sediment | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 2.4E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 4.5E-08 | 1.7E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 2.5E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 4.7E-07 | 1.7E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 1.8E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.4E-08 | 1.3E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 1.5E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 2.8E-09 | 1.0E-07 | mg/kg-day | N/A | N/A | N/A |

TABLE 7.1.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+01 | mg/kg | 1.6E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 2.3E-09 | 1.1E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 5.7E-05 |
| | | | | Carbazole | 1E-01 | mg/kg | 1.4E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 2.8E-11 | 9.9E-09 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 2.8E-09 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 5.4E-08 | 2.0E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 9E-02 | mg/kg | 9.2E-10 | mg/kg-day | N/A | N/A | N/A | 6.4E-09 | mg/kg-day | 4.0E-03 | mg/kg-day | 1.6E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 1.1E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.0E-08 | 7.5E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 1E+00 | mg/kg | 1.4E-08 | mg/kg-day | N/A | N/A | N/A | 9.8E-08 | mg/kg-day | 3.0E-02 | mg/kg-day | 3.3E-06 |
| | | | | Aroclor-1242 | ND | mg/kg | N/A | N/A | 1.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 2E-01 | mg/kg | 1.6E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 1.6E-09 | 1.1E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 5.7E-04 |
| | | | | Aroclor-1260 | 2E-01 | mg/kg | 2.2E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 2.2E-09 | 1.6E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 7.8E-04 |
| | | | | Dieldrin | 9E-03 | mg/kg | 9.2E-11 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 1.5E-09 | 6.4E-10 | mg/kg-day | 5.0E-05 | mg/kg-day | 1.3E-05 |
| | | | | Aluminum | 7E+03 | mg/kg | 7.4E-05 | mg/kg-day | N/A | N/A | N/A | 5.2E-04 | mg/kg-day | 1.0E+00 | mg/kg-day | 5.2E-04 |
| | | | | Antimony | 9E+00 | mg/kg | 9.3E-08 | mg/kg-day | N/A | N/A | N/A | 6.5E-07 | mg/kg-day | 4.0E-04 | mg/kg-day | 1.6E-03 |
| | | | | Arsenic | 1E+01 | mg/kg | 1.2E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 1.9E-07 | 8.6E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 2.9E-03 |
| | | | | Cadmium (other media) | 1E+01 | mg/kg | 1.3E-07 | mg/kg-day | N/A | N/A | N/A | 9.3E-07 | mg/kg-day | 1.0E-03 | mg/kg-day | 9.3E-04 |
| | | | | Chromium | 2E+02 | mg/kg | 1.7E-06 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 2.2E-06 | 1.2E-05 | mg/kg-day | 3.0E-03 | mg/kg-day | 4.0E-03 |
| | | | | Cobalt | 9E+00 | mg/kg | 9.4E-08 | mg/kg-day | N/A | N/A | N/A | 6.6E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 2.2E-03 |
| | | | | Copper | 3E+02 | mg/kg | 3.4E-06 | mg/kg-day | N/A | N/A | N/A | 2.4E-05 | mg/kg-day | 4.0E-02 | mg/kg-day | 5.9E-04 |
| | | | | Iron | 2E+04 | mg/kg | 1.9E-04 | mg/kg-day | N/A | N/A | N/A | 1.3E-03 | mg/kg-day | 7.0E-01 | mg/kg-day | 1.9E-03 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 2E+02 | mg/kg | 2.4E-06 | mg/kg-day | N/A | N/A | N/A | 1.7E-05 | mg/kg-day | 7.0E-02 | mg/kg-day | 2.4E-04 |
| | | | | Mercury (other media) | 5E-01 | mg/kg | 5.4E-09 | mg/kg-day | N/A | N/A | N/A | 3.8E-08 | mg/kg-day | 1.0E-04 | mg/kg-day | 3.8E-04 |
| | | | | Thallium | 4E-01 | mg/kg | 3.6E-09 | mg/kg-day | N/A | N/A | N/A | 2.5E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 1.9E-07 | mg/kg-day | N/A | N/A | N/A | 1.4E-06 | mg/kg-day | 7.0E-03 | mg/kg-day | 1.9E-04 |
| | | | Exp. Route Total | | | | | | | | 3E-06 | | | | | 2E-02 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 1.4E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.7E-07 | 9.8E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 1.5E-07 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.8E-06 | 1.0E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 1.1E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.0E-07 | 7.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 8.6E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.6E-08 | 6.0E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+01 | mg/kg | 7.4E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 1.0E-08 | 5.2E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.6E-04 |
| | | | | Carbazole | 1E-01 | mg/kg | 8.4E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 1.7E-10 | 5.9E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 1.7E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 3.2E-07 | 1.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 9E-02 | mg/kg | 4.2E-09 | mg/kg-day | N/A | N/A | N/A | 2.9E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 7.3E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 6.4E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.2E-07 | 4.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 1E+00 | mg/kg | 8.3E-08 | mg/kg-day | N/A | N/A | N/A | 5.8E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 1.9E-05 |
| | | | | Aroclor-1242 | ND | mg/kg | N/A | N/A | 1.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 2E-01 | mg/kg | 1.0E-08 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 1.0E-08 | 7.3E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 3.7E-03 |
| | | | | Aroclor-1260 | 2E-01 | mg/kg | 1.4E-08 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 1.4E-08 | 1.0E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 5.0E-03 |
| | | | | Dieldrin | 9E-03 | mg/kg | 4.2E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 6.7E-09 | 2.9E-09 | mg/kg-day | 5.0E-05 | mg/kg-day | 5.9E-05 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |

TABLE 7.1.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Antimony | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 1.7E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 2.5E-07 | 1.2E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 3.9E-03 |
| | | | | Cadmium (other media) | 1E+01 | mg/kg | 6.1E-09 | mg/kg-day | N/A | N/A | N/A | 4.3E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 1.7E-03 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.5E-05 | mg/kg-day | N/A |
| | | | | Cobalt | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 3E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 2E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 2E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 5E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 4E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 4E-06 | | | | | 1E-02 |
| | | Exposure Point Total | | | | | | | | | 7E-06 | | | | | 3E-02 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | Total of Receptor Risks Across All Media | N/A | | | | Total of Receptor Hazards Across All Media | N/A |

Notes

Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 3 for 8/10 of the result (ages 9-16) and an ADAF of 1 for 2/10 of the result (ages 17-18).

Highlighted cancer risk are calculated in Appendix F

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Soil | Surface/Subsurface Soil | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 4.5E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.3E-07 | 1.3E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 4.4E-07 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 3.2E-06 | 1.3E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 4.2E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.1E-07 | 1.2E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 2.4E-07 | mg/kg-day | N/A | N/A | N/A | 7.1E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 2.4E-05 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 2.4E-07 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.7E-08 | 7.0E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 2.1E-05 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 2.9E-07 | 6.0E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.0E-03 |
| | | | | Carbazole | 2E-01 | mg/kg | 2.8E-08 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 5.6E-10 | 8.2E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 6.3E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 4.6E-07 | 1.8E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 2.7E-08 | mg/kg-day | N/A | N/A | N/A | 8.0E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 2.0E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 1.9E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.4E-07 | 5.7E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 1.0E-07 | mg/kg-day | N/A | N/A | N/A | 3.0E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.5E-05 |
| | | | | Phenanthrene | 5E+00 | mg/kg | 6.5E-07 | mg/kg-day | N/A | N/A | N/A | 1.9E-06 | mg/kg-day | 3.0E-02 | mg/kg-day | 6.3E-05 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 2.3E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 4.7E-08 | 6.8E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 3.4E-03 |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 7.0E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 1.4E-07 | 2.0E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 1.0E-02 |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 9.9E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 2.0E-07 | 2.9E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 1.4E-02 |
| | | | | Dieldrin | 2E-01 | mg/kg | 2.2E-08 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 3.5E-07 | 6.3E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 1.3E-03 |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 8.6E-12 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 1.3E-06 | 2.5E-11 | mg/kg-day | 1.0E-09 | mg/kg-day | 2.5E-02 |
| | | | | Aluminum | 7E+03 | mg/kg | 9.5E-04 | mg/kg-day | N/A | N/A | N/A | 2.8E-03 | mg/kg-day | 1.0E+00 | mg/kg-day | 2.8E-03 |
| | | | | Antimony | 4E+01 | mg/kg | 5.9E-06 | mg/kg-day | N/A | N/A | N/A | 1.7E-05 | mg/kg-day | 4.0E-04 | mg/kg-day | 4.3E-02 |
| | | | | Arsenic | 1E+01 | mg/kg | 1.9E-06 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 2.9E-06 | 5.6E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.9E-02 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 7.6E-07 | mg/kg-day | N/A | N/A | N/A | 2.2E-06 | mg/kg-day | 1.0E-03 | mg/kg-day | 2.2E-03 |
| | | | | Chromium | 2E+02 | mg/kg | 3.0E-05 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 1.5E-05 | 8.7E-05 | mg/kg-day | 3.0E-03 | mg/kg-day | 2.9E-02 |
| | | | | Cobalt | 6E+00 | mg/kg | 8.3E-07 | mg/kg-day | N/A | N/A | N/A | 2.4E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 8.1E-03 |
| | | | | Copper | 4E+02 | mg/kg | 5.8E-05 | mg/kg-day | N/A | N/A | N/A | 1.7E-04 | mg/kg-day | 4.0E-02 | mg/kg-day | 4.2E-03 |
| | | | | Iron | 3E+04 | mg/kg | 4.1E-03 | mg/kg-day | N/A | N/A | N/A | 1.2E-02 | mg/kg-day | 7.0E-01 | mg/kg-day | 1.7E-02 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | 5.4E-05 | mg/kg-day | N/A | N/A | N/A | 1.6E-04 | mg/kg-day | 7.0E-02 | mg/kg-day | 2.2E-03 |
| | | | | Mercury (other media) | 1E+00 | mg/kg | 1.5E-07 | mg/kg-day | N/A | N/A | N/A | 4.4E-07 | mg/kg-day | 1.0E-04 | mg/kg-day | 4.4E-03 |
| | | | | Nickel | 5E+01 | mg/kg | 6.9E-06 | mg/kg-day | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.0E-03 |
| | | | | Thallium | 2E-01 | mg/kg | 3.0E-08 | mg/kg-day | N/A | N/A | N/A | 8.9E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 2.5E-06 | mg/kg-day | N/A | N/A | N/A | 7.3E-06 | mg/kg-day | 7.0E-03 | mg/kg-day | 1.0E-03 |
| | | | | Zinc | 9E+02 | mg/kg | 1.3E-04 | mg/kg-day | N/A | N/A | N/A | 3.8E-04 | mg/kg-day | 3.0E-01 | mg/kg-day | 1.3E-03 |
| | | | Exp. Route Total | | | | | | | | 2E-05 | | | | | 2E-01 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 2.3E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.7E-07 | 6.8E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 2.3E-07 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.7E-06 | 6.6E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 2.2E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.6E-07 | 6.4E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 1.3E-07 | mg/kg-day | N/A | N/A | N/A | 3.7E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 1.2E-05 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 1.2E-07 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 9.0E-09 | 3.6E-07 | mg/kg-day | N/A | N/A | N/A |

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 8.2E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 1.1E-07 | 2.4E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.2E-03 |
| | | | | Carbazole | 2E-01 | mg/kg | 1.5E-08 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 2.9E-10 | 4.2E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 3.2E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.4E-07 | 9.5E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 1.1E-08 | mg/kg-day | N/A | N/A | N/A | 3.2E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 8.0E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 1.0E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 7.4E-08 | 2.9E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 5.4E-08 | mg/kg-day | N/A | N/A | N/A | 1.6E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 7.9E-06 |
| | | | | Phenanthrene | 5E+00 | mg/kg | 3.3E-07 | mg/kg-day | N/A | N/A | N/A | 9.8E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 3.3E-05 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 1.3E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 2.6E-08 | 3.8E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 1.9E-03 |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 3.9E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 7.8E-08 | 1.1E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 5.7E-03 |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 5.5E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 1.1E-07 | 1.6E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 8.0E-03 |
| | | | | Dieldrin | 2E-01 | mg/kg | 8.6E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 1.4E-07 | 2.5E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 5.0E-04 |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 1.0E-12 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 1.6E-07 | 3.0E-12 | mg/kg-day | 1.0E-09 | mg/kg-day | 3.0E-03 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 4E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 2.3E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 3.5E-07 | 6.7E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 2.2E-03 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 3.0E-09 | mg/kg-day | N/A | N/A | N/A | 8.9E-09 | mg/kg-day | 2.5E-05 | mg/kg-day | 3.5E-04 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.5E-05 | mg/kg-day | N/A |
| | | | | Cobalt | 6E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 4E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 3E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 1E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Nickel | 5E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 2E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 9E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 3E-06 | | | | | 2E-02 |
| | | Exposure Point Total | | | | | | | | | 3E-05 | | | | | 2E-01 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Leachate | Leachate | Unnamed Island | Dermal | | | | | | | | | | | | | |
| | | | | 4-Methylphenol | 5E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 5.0E-03 | mg/kg-day | N/A |
| | | | | Acenaphthylene | 3E-02 | ug/L | 1.8E-08 | mg/kg-day | N/A | N/A | N/A | 5.3E-08 | mg/kg-day | 6.0E-02 | mg/kg-day | 8.8E-07 |
| | | | | Atrazine | 3E+00 | ug/L | N/A | N/A | 2.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.5E-02 | mg/kg-day | N/A |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 1E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 3E+00 | ug/L | 2.0E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 2.8E-08 | 5.7E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.9E-04 |

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Chrysene | 3E-02 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | ND | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenzofuran | 3E-01 | ug/L | 2.4E-07 | mg/kg-day | N/A | N/A | N/A | 7.1E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 1.8E-04 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 9E-01 | ug/L | 2.8E-07 | mg/kg-day | N/A | N/A | N/A | 8.1E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 4.0E-05 |
| | | | | N-Nitrosodiphenylamine | 5E+00 | ug/L | 6.9E-07 | mg/kg-day | 4.9E-03 | (mg/kg-day) $^{-1}$ | 3.4E-09 | 2.0E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Pentachlorophenol | ND | ug/L | N/A | N/A | 1.2E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Phenanthrene | 3E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | 2E+00 | ug/L | 5.6E-07 | mg/kg-day | 5.4E-03 | (mg/kg-day) $^{-1}$ | 3.0E-09 | 1.6E-06 | mg/kg-day | 7.0E-02 | mg/kg-day | 2.3E-05 |
| | | | | Benzene | 4E+00 | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 4.0E-03 | mg/kg-day | N/A |
| | | | | Chlorobenzene | 1E+01 | ug/L | 2.0E-06 | mg/kg-day | N/A | N/A | N/A | 5.8E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.9E-04 |
| | | | | Ethylbenzene | ND | ug/L | N/A | N/A | 1.1E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 1.0E-01 | mg/kg-day | N/A |
| | | | | Xylene (total) | 1E+00 | ug/L | 3.4E-07 | mg/kg-day | N/A | N/A | N/A | 1.0E-06 | mg/kg-day | 2.0E-01 | mg/kg-day | 5.0E-06 |
| | | | | Total PCBs | 3E+00 | ug/L | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 1E-02 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | 1E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-BHC | 1E-03 | ug/L | 2.3E-10 | mg/kg-day | 6.3E+00 | (mg/kg-day) $^{-1}$ | 1.4E-09 | 6.6E-10 | mg/kg-day | 8.0E-03 | mg/kg-day | 8.2E-08 |
| | | | | alpha-Chlordane | 4E-03 | ug/L | 3.5E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 1.2E-09 | 1.0E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.1E-05 |
| | | | | Dieldrin | 2E-03 | ug/L | 5.7E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 9.1E-09 | 1.7E-09 | mg/kg-day | 5.0E-05 | mg/kg-day | 3.3E-05 |
| | | | | Gamma-Chlordane | ND | ug/L | N/A | N/A | 3.5E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | Aluminum | 1E+02 | ug/L | 4.3E-07 | mg/kg-day | N/A | N/A | N/A | 1.2E-06 | mg/kg-day | 1.0E-02 | mg/kg-day | 1.2E-04 |
| | | | | Antimony | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 4E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Barium | 7E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.4E-02 | mg/kg-day | N/A |
| | | | | Beryllium | 2E-01 | ug/L | 5.7E-10 | mg/kg-day | N/A | N/A | N/A | 1.6E-09 | mg/kg-day | 1.4E-05 | mg/kg-day | 1.2E-04 |
| | | | | Cadmium (other media) | 8E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5E-05 | mg/kg-day | N/A |
| | | | | Chromium | 5E+00 | ug/L | 3.2E-08 | mg/kg-day | 1.3E-02 | (mg/kg-day) $^{-1}$ | 4.0E-10 | 9.4E-08 | mg/kg-day | 7.5E-05 | mg/kg-day | 1.2E-03 |
| | | | | Cobalt | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 2E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 4E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (water) | 3E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-05 | mg/kg-day | N/A |
| | | | | Nickel | 4E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Silver | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 6E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 5E-08 | | | | | 2E-03 |
| | | Exposure Point Total | | | | | | | | | 5E-08 | | | | | 2E-03 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Surface Water | Surface Water | Unnamed Island | Dermal (wading) | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 1E-01 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 1E-01 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E-01 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | ND | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+00 | ug/L | 2.2E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 3.0E-08 | 6.3E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.1E-04 |
| | | | | Chrysene | 1E-01 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-01 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 2E-01 | ug/L | 9.3E-08 | mg/kg-day | N/A | N/A | N/A | 2.7E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.3E-05 |
| | | | | Phenanthrene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | ND | ug/L | N/A | N/A | 5.4E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Benzene | ND | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 4.0E-03 | mg/kg-day | N/A |
| | | | | Bromodichloromethane | ND | ug/L | N/A | N/A | 6.2E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Aroclor-1260 | ND | ug/L | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 1E-02 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | 9E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-Chlordane | 3E-03 | ug/L | 5.0E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 1.8E-09 | 1.5E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.9E-05 |
| | | | | beta-BHC | ND | ug/L | N/A | N/A | 1.8E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 6.0E-04 | mg/kg-day | N/A |
| | | | | Dieldrin | ND | ug/L | N/A | N/A | 1.6E+01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-05 | mg/kg-day | N/A |
| | | | | Gamma-Chlordane | 4E-03 | ug/L | 6.4E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 2.3E-09 | 1.9E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 3.8E-05 |
| | | | | Heptachlor Epoxide | 5E-03 | ug/L | 6.0E-09 | mg/kg-day | 9.1E+00 | (mg/kg-day) $^{-1}$ | 5.5E-08 | 1.7E-08 | mg/kg-day | 1.3E-05 | mg/kg-day | 1.3E-03 |
| | | | | Aluminum | 3E+03 | ug/L | 1.7E-05 | mg/kg-day | N/A | N/A | N/A | 4.9E-05 | mg/kg-day | 1.0E-02 | mg/kg-day | 4.9E-03 |
| | | | | Arsenic | 3E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Cadmium (other media) | 1E+00 | ug/L | 7.3E-09 | mg/kg-day | N/A | N/A | N/A | 2.1E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 8.5E-04 |
| | | | | Chromium | 1E+01 | ug/L | 1.4E-07 | mg/kg-day | 1.3E-02 | (mg/kg-day) $^{-1}$ | 1.7E-09 | 4.0E-07 | mg/kg-day | 7.5E-05 | mg/kg-day | 5.4E-03 |
| | | | | Cobalt | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 7E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | 4E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 1E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 6E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Mercury (water) | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-05 | mg/kg-day | N/A |
| | | | | Vanadium | 3E+00 | ug/L | 1.3E-08 | mg/kg-day | N/A | N/A | N/A | 3.8E-08 | mg/kg-day | 1.8E-04 | mg/kg-day | 2.1E-04 |
| | | | Exp. Route Total | | | | | | | | 9E-08 | | | | | 1E-02 |
| | | Exposure Point Total | | | | | | | | | 9E-08 | | | | | 1E-02 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Sediment | Sediment | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 1.6E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.2E-07 | 4.7E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 1.7E-07 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.2E-06 | 4.9E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 1.2E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 9.0E-08 | 3.6E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 1.0E-07 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 7.3E-09 | 2.9E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+01 | mg/kg | 1.1E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 1.6E-08 | 3.3E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.6E-04 |
| | | | | Carbazole | 1E-01 | mg/kg | 9.7E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 1.9E-10 | 2.8E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 1.9E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.4E-07 | 5.7E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 9E-02 | mg/kg | 6.3E-09 | mg/kg-day | N/A | N/A | N/A | 1.8E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 4.6E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 7.4E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 5.4E-08 | 2.1E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 1E+00 | mg/kg | 9.6E-08 | mg/kg-day | N/A | N/A | N/A | 2.8E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 9.4E-06 |
| | | | | Aroclor-1242 | ND | mg/kg | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 2E-01 | mg/kg | 1.1E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 2.2E-08 | 3.3E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 1.6E-03 |
| | | | | Aroclor-1260 | 2E-01 | mg/kg | 1.5E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 3.1E-08 | 4.5E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 2.2E-03 |
| | | | | Dieldrin | 9E-03 | mg/kg | 6.3E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 1.0E-08 | 1.8E-09 | mg/kg-day | 5.0E-05 | mg/kg-day | 3.7E-05 |
| | | | | Aluminum | 7E+03 | mg/kg | 5.1E-04 | mg/kg-day | N/A | N/A | N/A | 1.5E-03 | mg/kg-day | 1.0E+00 | mg/kg-day | 1.5E-03 |
| | | | | Antimony | 9E+00 | mg/kg | 6.4E-07 | mg/kg-day | N/A | N/A | N/A | 1.9E-06 | mg/kg-day | 4.0E-04 | mg/kg-day | 4.6E-03 |
| | | | | Arsenic | 1E+01 | mg/kg | 8.5E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 1.3E-06 | 2.5E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 8.2E-03 |
| | | | | Cadmium (other media) | 1E+01 | mg/kg | 9.1E-07 | mg/kg-day | N/A | N/A | N/A | 2.7E-06 | mg/kg-day | 1.0E-03 | mg/kg-day | 2.7E-03 |
| | | | | Chromium | 2E+02 | mg/kg | 1.2E-05 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 5.9E-06 | 3.4E-05 | mg/kg-day | 3.0E-03 | mg/kg-day | 1.1E-02 |
| | | | | Cobalt | 9E+00 | mg/kg | 6.4E-07 | mg/kg-day | N/A | N/A | N/A | 1.9E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 6.2E-03 |
| | | | | Copper | 3E+02 | mg/kg | 2.3E-05 | mg/kg-day | N/A | N/A | N/A | 6.7E-05 | mg/kg-day | 4.0E-02 | mg/kg-day | 1.7E-03 |
| | | | | Iron | 2E+04 | mg/kg | 1.3E-03 | mg/kg-day | N/A | N/A | N/A | 3.8E-03 | mg/kg-day | 7.0E-01 | mg/kg-day | 5.4E-03 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 2E+02 | mg/kg | 1.6E-05 | mg/kg-day | N/A | N/A | N/A | 4.8E-05 | mg/kg-day | 7.0E-02 | mg/kg-day | 6.8E-04 |
| | | | | Mercury (other media) | 5E-01 | mg/kg | 3.7E-08 | mg/kg-day | N/A | N/A | N/A | 1.1E-07 | mg/kg-day | 1.0E-04 | mg/kg-day | 1.1E-03 |
| | | | | Thallium | 4E-01 | mg/kg | 2.5E-08 | mg/kg-day | N/A | N/A | N/A | 7.2E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 1.3E-06 | mg/kg-day | N/A | N/A | N/A | 3.9E-06 | mg/kg-day | 7.0E-03 | mg/kg-day | 5.5E-04 |
| | | | Exp. Route Total | | | | | | | | 9E-06 | | | | | 5E-02 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 4.6E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.4E-07 | 1.3E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 4.8E-07 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 3.5E-06 | 1.4E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 3.5E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.6E-07 | 1.0E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 2.8E-07 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 2.1E-08 | 8.3E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+01 | mg/kg | 2.5E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 3.4E-08 | 7.2E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.6E-04 |
| | | | | Carbazole | 1E-01 | mg/kg | 2.8E-08 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 5.5E-10 | 8.1E-08 | mg/kg-day | N/A | N/A | N/A |

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 5.6E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 4.1E-07 | 1.6E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 9E-02 | mg/kg | 1.4E-08 | mg/kg-day | N/A | N/A | N/A | 4.0E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 1.0E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 2.1E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.5E-07 | 6.1E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 1E+00 | mg/kg | 2.7E-07 | mg/kg-day | N/A | N/A | N/A | 8.0E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 2.7E-05 |
| | | | | Aroclor-1242 | ND | mg/kg | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 2E-01 | mg/kg | 3.4E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 6.9E-08 | 1.0E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 5.0E-03 |
| | | | | Aroclor-1260 | 2E-01 | mg/kg | 4.7E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 9.4E-08 | 1.4E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 6.8E-03 |
| | | | | Dieldrin | 9E-03 | mg/kg | 1.4E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 2.2E-08 | 4.0E-09 | mg/kg-day | 5.0E-05 | mg/kg-day | 8.1E-05 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 5.6E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 8.3E-07 | 1.6E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 5.4E-03 |
| | | | | Cadmium (other media) | 1E+01 | mg/kg | 2.0E-08 | mg/kg-day | N/A | N/A | N/A | 5.8E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 2.3E-03 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.5E-05 | mg/kg-day | N/A |
| | | | | Cobalt | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 3E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 2E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 2E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 5E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 4E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 6E-06 | | | | | 2E-02 |
| | | Exposure Point Total | | | | | | | | | 1E-05 | | | | | 7E-02 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| | | | | | | | | | | Total of Receptor Risks Across All Media | N/A | | | | Total of Receptor Hazards Across All Media | N/A |

TABLE 7.2.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Soil | Surface/Subsurface Soil | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 9.3E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 6.8E-08 | 3.3E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 9.1E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 6.6E-07 | 3.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 8.8E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 6.4E-08 | 3.1E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 5.0E-08 | mg/kg-day | N/A | N/A | N/A | 1.8E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 5.9E-06 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 5.0E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 3.6E-09 | 1.7E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 4.3E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 6.0E-08 | 1.5E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 7.5E-04 |
| | | | | Carbazole | 2E-01 | mg/kg | 5.8E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 1.2E-10 | 2.0E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 1.3E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 9.5E-08 | 4.6E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 5.7E-09 | mg/kg-day | N/A | N/A | N/A | 2.0E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 5.0E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 4.0E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.0E-08 | 1.4E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 2.2E-08 | mg/kg-day | N/A | N/A | N/A | 7.6E-08 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.8E-06 |
| | | | | Phenanthrene | 5E+00 | mg/kg | 1.3E-07 | mg/kg-day | N/A | N/A | N/A | 4.7E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 1.6E-05 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 4.9E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 4.9E-09 | 1.7E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 8.5E-04 |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 1.5E-08 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 1.5E-08 | 5.1E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 2.5E-03 |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 2.1E-08 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 2.1E-08 | 7.2E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 3.6E-03 |
| | | | | Dieldrin | 2E-01 | mg/kg | 4.5E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 7.2E-08 | 1.6E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 3.2E-04 |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 1.8E-12 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 2.8E-07 | 6.3E-12 | mg/kg-day | 1.0E-09 | mg/kg-day | 6.3E-03 |
| | | | | Aluminum | 7E+03 | mg/kg | 2.0E-04 | mg/kg-day | N/A | N/A | N/A | 6.9E-04 | mg/kg-day | 1.0E+00 | mg/kg-day | 6.9E-04 |
| | | | | Antimony | 4E+01 | mg/kg | 1.2E-06 | mg/kg-day | N/A | N/A | N/A | 4.3E-06 | mg/kg-day | 4.0E-04 | mg/kg-day | 1.1E-02 |
| | | | | Arsenic | 1E+01 | mg/kg | 4.0E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 6.0E-07 | 1.4E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 4.7E-03 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 1.6E-07 | mg/kg-day | N/A | N/A | N/A | 5.6E-07 | mg/kg-day | 1.0E-03 | mg/kg-day | 5.6E-04 |
| | | | | Chromium | 2E+02 | mg/kg | 6.2E-06 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 3.1E-06 | 2.2E-05 | mg/kg-day | 3.0E-03 | mg/kg-day | 7.3E-03 |
| | | | | Cobalt | 6E+00 | mg/kg | 1.7E-07 | mg/kg-day | N/A | N/A | N/A | 6.1E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 2.0E-03 |
| | | | | Copper | 4E+02 | mg/kg | 1.2E-05 | mg/kg-day | N/A | N/A | N/A | 4.2E-05 | mg/kg-day | 4.0E-02 | mg/kg-day | 1.1E-03 |
| | | | | Iron | 3E+04 | mg/kg | 8.5E-04 | mg/kg-day | N/A | N/A | N/A | 3.0E-03 | mg/kg-day | 7.0E-01 | mg/kg-day | 4.2E-03 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | 1.1E-05 | mg/kg-day | N/A | N/A | N/A | 3.9E-05 | mg/kg-day | 7.0E-02 | mg/kg-day | 5.6E-04 |
| | | | | Mercury (other media) | 1E+00 | mg/kg | 3.1E-08 | mg/kg-day | N/A | N/A | N/A | 1.1E-07 | mg/kg-day | 1.0E-04 | mg/kg-day | 1.1E-03 |
| | | | | Nickel | 5E+01 | mg/kg | 1.4E-06 | mg/kg-day | N/A | N/A | N/A | 5.0E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.5E-04 |
| | | | | Thallium | 2E-01 | mg/kg | 6.3E-09 | mg/kg-day | N/A | N/A | N/A | 2.2E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 5.2E-07 | mg/kg-day | N/A | N/A | N/A | 1.8E-06 | mg/kg-day | 7.0E-03 | mg/kg-day | 2.6E-04 |
| | | | | Zinc | 9E+02 | mg/kg | 2.7E-05 | mg/kg-day | N/A | N/A | N/A | 9.6E-05 | mg/kg-day | 3.0E-01 | mg/kg-day | 3.2E-04 |
| | | | Exp. Route Total | | | | | | | | 5E-06 | | | | | 5E-02 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 9.7E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 7.1E-08 | 3.4E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 9.4E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 6.9E-07 | 3.3E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 9.2E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 6.7E-08 | 3.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 5.2E-08 | mg/kg-day | N/A | N/A | N/A | 1.8E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 6.1E-06 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 5.2E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 3.8E-09 | 1.8E-07 | mg/kg-day | N/A | N/A | N/A |

TABLE 7.2.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 3.4E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 4.8E-08 | 1.2E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 6.0E-04 |
| | | | | Carbazole | 2E-01 | mg/kg | 6.1E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 1.2E-10 | 2.1E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 1.4E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 9.9E-08 | 4.7E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 4.5E-09 | mg/kg-day | N/A | N/A | N/A | 1.6E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 4.0E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 4.2E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.1E-08 | 1.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 2.2E-08 | mg/kg-day | N/A | N/A | N/A | 7.9E-08 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.9E-06 |
| | | | | Phenanthrene | 5E+00 | mg/kg | 1.4E-07 | mg/kg-day | N/A | N/A | N/A | 4.9E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 1.6E-05 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 5.4E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 5.4E-09 | 1.9E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 9.5E-04 |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 1.6E-08 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 1.6E-08 | 5.7E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 2.8E-03 |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 2.3E-08 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 2.3E-08 | 8.0E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 4.0E-03 |
| | | | | Dieldrin | 2E-01 | mg/kg | 3.6E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 5.8E-08 | 1.3E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 2.5E-04 |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 4.3E-13 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 6.7E-08 | 1.5E-12 | mg/kg-day | 1.0E-09 | mg/kg-day | 1.5E-03 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 4E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 9.6E-08 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 1.4E-07 | 3.4E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.1E-03 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 1.3E-09 | mg/kg-day | N/A | N/A | N/A | 4.4E-09 | mg/kg-day | 2.5E-05 | mg/kg-day | 1.8E-04 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.5E-05 | mg/kg-day | N/A |
| | | | | Cobalt | 6E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 4E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 3E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 1E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Nickel | 5E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 2E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 9E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 1E-06 | | | | | 1E-02 |
| | | Exposure Point Total | | | | | | | | | 6E-06 | | | | | 6E-02 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Leachate | Leachate | Unnamed Island | Dermal | | | | | | | | | | | | | |
| | | | | 4-Methylphenol | 5E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 5.0E-03 | mg/kg-day | N/A |
| | | | | Acenaphthylene | 3E-02 | ug/L | 7.5E-09 | mg/kg-day | N/A | N/A | N/A | 2.6E-08 | mg/kg-day | 6.0E-02 | mg/kg-day | 4.4E-07 |
| | | | | Atrazine | 1E+00 | ug/L | N/A | N/A | 2.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.5E-02 | mg/kg-day | N/A |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 1E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 3E+00 | ug/L | 8.2E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 1.1E-08 | 2.9E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.4E-04 |

TABLE 7.2.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Chrysene | 3E-02 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | ND | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenzofuran | 3E-01 | ug/L | 1.0E-07 | mg/kg-day | N/A | N/A | N/A | 3.6E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 8.9E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 9E-01 | ug/L | 1.2E-07 | mg/kg-day | N/A | N/A | N/A | 4.0E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.0E-05 |
| | | | | N-Nitrosodiphenylamine | 5E+00 | ug/L | 2.9E-07 | mg/kg-day | 4.9E-03 | (mg/kg-day) $^{-1}$ | 1.4E-09 | 1.0E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Pentachlorophenol | ND | ug/L | N/A | N/A | 1.2E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Phenanthrene | 3E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | 2E+00 | ug/L | 2.3E-07 | mg/kg-day | 5.4E-03 | (mg/kg-day) $^{-1}$ | 1.3E-09 | 8.2E-07 | mg/kg-day | 7.0E-02 | mg/kg-day | 1.2E-05 |
| | | | | Benzene | 4E+00 | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 4.0E-03 | mg/kg-day | N/A |
| | | | | Chlorobenzene | 1E+01 | ug/L | 8.2E-07 | mg/kg-day | N/A | N/A | N/A | 2.9E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.4E-04 |
| | | | | Ethylbenzene | ND | ug/L | N/A | N/A | 1.1E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 1.0E-01 | mg/kg-day | N/A |
| | | | | Xylene (total) | 1E+00 | ug/L | 1.4E-07 | mg/kg-day | N/A | N/A | N/A | 5.0E-07 | mg/kg-day | 2.0E-01 | mg/kg-day | 2.5E-06 |
| | | | | Total PCBs | 3E+00 | ug/L | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 1E-02 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | 1E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-BHC | 1E-03 | ug/L | 9.4E-11 | mg/kg-day | 6.3E+00 | (mg/kg-day) $^{-1}$ | 5.9E-10 | 3.3E-10 | mg/kg-day | 8.0E-03 | mg/kg-day | 4.1E-08 |
| | | | | alpha-Chlordane | 4E-03 | ug/L | 1.5E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 5.2E-10 | 5.2E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.0E-05 |
| | | | | Dieldrin | 2E-03 | ug/L | 2.4E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 3.8E-09 | 8.3E-10 | mg/kg-day | 5.0E-05 | mg/kg-day | 1.7E-05 |
| | | | | Gamma-Chlordane | ND | ug/L | N/A | N/A | 3.5E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | Aluminum | 1E+02 | ug/L | 1.8E-07 | mg/kg-day | N/A | N/A | N/A | 6.2E-07 | mg/kg-day | 1.0E-02 | mg/kg-day | 6.2E-05 |
| | | | | Antimony | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 4E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Barium | 7E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.4E-02 | mg/kg-day | N/A |
| | | | | Beryllium | 2E-01 | ug/L | 2.0E-10 | mg/kg-day | N/A | N/A | N/A | 6.9E-10 | mg/kg-day | 1.4E-05 | mg/kg-day | 4.9E-05 |
| | | | | Cadmium (other media) | 8E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5E-05 | mg/kg-day | N/A |
| | | | | Chromium | 5E+00 | ug/L | 1.3E-08 | mg/kg-day | 1.3E-02 | (mg/kg-day) $^{-1}$ | 1.7E-10 | 4.7E-08 | mg/kg-day | 7.5E-05 | mg/kg-day | 6.2E-04 |
| | | | | Cobalt | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 2E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 4E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (water) | 3E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-05 | mg/kg-day | N/A |
| | | | | Nickel | 4E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |

TABLE 7.2.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Silver | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 1E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 2E-08 | | | | | 1E-03 |
| | | Exposure Point Total | | | | | | | | | 2E-08 | | | | | 1E-03 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Surface Water | Surface Water | Unnamed Island | Dermal (wading) | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 1E-01 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 1E-01 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 6E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 5E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | ND | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+00 | ug/L | 9.0E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 1.3E-08 | 3.1E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.6E-04 |
| | | | | Chrysene | 1E-01 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 5E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 6E-02 | ug/L | 1.2E-08 | mg/kg-day | N/A | N/A | N/A | 4.2E-08 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.1E-06 |
| | | | | Phenanthrene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | ND | ug/L | N/A | N/A | 5.4E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Benzene | ND | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 4.0E-03 | mg/kg-day | N/A |
| | | | | Bromodichloromethane | ND | ug/L | N/A | N/A | 6.2E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Aroclor-1260 | ND | ug/L | N/A | N/A | 1.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 3E-03 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | 3E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-Chlordane | 1E-03 | ug/L | 8.9E-10 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 3.1E-10 | 3.1E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 6.2E-06 |
| | | | | beta-BHC | ND | ug/L | N/A | N/A | 1.8E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 6.0E-04 | mg/kg-day | N/A |
| | | | | Dieldrin | ND | ug/L | N/A | N/A | 1.6E+01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-05 | mg/kg-day | N/A |
| | | | | Gamma-Chlordane | 4E-03 | ug/L | 2.7E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 9.4E-10 | 9.4E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.9E-05 |
| | | | | Heptachlor Epoxide | 2E-03 | ug/L | 7.3E-10 | mg/kg-day | 9.1E+00 | (mg/kg-day) $^{-1}$ | 6.7E-09 | 2.6E-09 | mg/kg-day | 1.3E-05 | mg/kg-day | 2.0E-04 |
| | | | | Aluminum | 3E+03 | ug/L | 6.9E-06 | mg/kg-day | N/A | N/A | N/A | 2.4E-05 | mg/kg-day | 1.0E-02 | mg/kg-day | 2.4E-03 |
| | | | | Arsenic | 3E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Cadmium (other media) | 1E+00 | ug/L | 3.0E-09 | mg/kg-day | N/A | N/A | N/A | 1.1E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 4.2E-04 |
| | | | | Chromium | 1E+01 | ug/L | 5.7E-08 | mg/kg-day | 1.3E-02 | (mg/kg-day) $^{-1}$ | 7.2E-10 | 2.0E-07 | mg/kg-day | 7.5E-05 | mg/kg-day | 2.7E-03 |
| | | | | Cobalt | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | 4E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 1E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 6E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |

TABLE 7.2.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Mercury (water) | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-05 | mg/kg-day | N/A |
| | | | | Vanadium | 3E+00 | ug/L | 5.4E-09 | mg/kg-day | N/A | N/A | N/A | 1.9E-08 | mg/kg-day | 1.8E-04 | mg/kg-day | 1.0E-04 |
| | | | Exp. Route Total | | | | | | | | 2E-08 | | | | | 6E-03 |
| | | Exposure Point Total | | | | | | | | | 2E-08 | | | | | 6E-03 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Sediment | Sediment | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 3.4E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.5E-08 | 1.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 3.5E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.6E-07 | 1.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 2.6E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.9E-08 | 9.0E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 2.1E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.5E-09 | 7.3E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+01 | mg/kg | 2.3E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 3.3E-09 | 8.2E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 4.1E-05 |
| | | | | Carbazole | 1E-01 | mg/kg | 2.0E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 4.0E-11 | 7.1E-09 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 4.1E-09 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 3.0E-08 | 1.4E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 9E-02 | mg/kg | 1.3E-09 | mg/kg-day | N/A | N/A | N/A | 4.6E-09 | mg/kg-day | 4.0E-03 | mg/kg-day | 1.1E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 1.5E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.1E-08 | 5.4E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 1E+00 | mg/kg | 2.0E-08 | mg/kg-day | N/A | N/A | N/A | 7.0E-08 | mg/kg-day | 3.0E-02 | mg/kg-day | 2.3E-06 |
| | | | | Aroclor-1242 | ND | mg/kg | N/A | N/A | 1.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 2E-01 | mg/kg | 2.3E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 2.3E-09 | 8.2E-09 | mg/kg-day | 2.0E-05 | mg/kg-day | 4.1E-04 |
| | | | | Aroclor-1260 | 2E-01 | mg/kg | 3.2E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 3.2E-09 | 1.1E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 5.6E-04 |
| | | | | Dieldrin | 9E-03 | mg/kg | 1.3E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 2.1E-09 | 4.6E-10 | mg/kg-day | 5.0E-05 | mg/kg-day | 9.2E-06 |
| | | | | Aluminum | 7E+03 | mg/kg | 1.1E-04 | mg/kg-day | N/A | N/A | N/A | 3.7E-04 | mg/kg-day | 1.0E+00 | mg/kg-day | 3.7E-04 |
| | | | | Antimony | 9E+00 | mg/kg | 1.3E-07 | mg/kg-day | N/A | N/A | N/A | 4.6E-07 | mg/kg-day | 4.0E-04 | mg/kg-day | 1.2E-03 |
| | | | | Arsenic | 1E+01 | mg/kg | 1.8E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 2.6E-07 | 6.2E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 2.1E-03 |
| | | | | Cadmium (other media) | 1E+01 | mg/kg | 1.9E-07 | mg/kg-day | N/A | N/A | N/A | 6.7E-07 | mg/kg-day | 1.0E-03 | mg/kg-day | 6.7E-04 |
| | | | | Chromium | 2E+02 | mg/kg | 2.4E-06 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 1.2E-06 | 8.6E-06 | mg/kg-day | 3.0E-03 | mg/kg-day | 2.9E-03 |
| | | | | Cobalt | 9E+00 | mg/kg | 1.3E-07 | mg/kg-day | N/A | N/A | N/A | 4.7E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.6E-03 |
| | | | | Copper | 3E+02 | mg/kg | 4.8E-06 | mg/kg-day | N/A | N/A | N/A | 1.7E-05 | mg/kg-day | 4.0E-02 | mg/kg-day | 4.2E-04 |
| | | | | Iron | 2E+04 | mg/kg | 2.7E-04 | mg/kg-day | N/A | N/A | N/A | 9.4E-04 | mg/kg-day | 7.0E-01 | mg/kg-day | 1.3E-03 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 2E+02 | mg/kg | 3.4E-06 | mg/kg-day | N/A | N/A | N/A | 1.2E-05 | mg/kg-day | 7.0E-02 | mg/kg-day | 1.7E-04 |
| | | | | Mercury (other media) | 5E-01 | mg/kg | 7.7E-09 | mg/kg-day | N/A | N/A | N/A | 2.7E-08 | mg/kg-day | 1.0E-04 | mg/kg-day | 2.7E-04 |
| | | | | Thallium | 4E-01 | mg/kg | 5.2E-09 | mg/kg-day | N/A | N/A | N/A | 1.8E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 2.8E-07 | mg/kg-day | N/A | N/A | N/A | 9.7E-07 | mg/kg-day | 7.0E-03 | mg/kg-day | 1.4E-04 |
| | | | Exp. Route Total | | | | | | | | 2E-06 | | | | | 1E-02 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 1.9E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.4E-07 | 6.7E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 2.0E-07 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.5E-06 | 7.0E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 1.5E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.1E-07 | 5.1E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 1.2E-07 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 8.6E-09 | 4.1E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+01 | mg/kg | 1.0E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 1.4E-08 | 3.6E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.8E-04 |
| | | | | Carbazole | 1E-01 | mg/kg | 1.2E-08 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 2.3E-10 | 4.0E-08 | mg/kg-day | N/A | N/A | N/A |

TABLE 7.2.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 2.3E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.7E-07 | 8.1E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 9E-02 | mg/kg | 5.8E-09 | mg/kg-day | N/A | N/A | N/A | 2.0E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 5.0E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 8.7E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 6.4E-08 | 3.1E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 1E+00 | mg/kg | 1.1E-07 | mg/kg-day | N/A | N/A | N/A | 4.0E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 1.3E-05 |
| | | | | Aroclor-1242 | ND | mg/kg | N/A | N/A | 1.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 2E-01 | mg/kg | 1.4E-08 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 1.4E-08 | 5.0E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 2.5E-03 |
| | | | | Aroclor-1260 | 2E-01 | mg/kg | 2.0E-08 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 2.0E-08 | 6.8E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 3.4E-03 |
| | | | | Dieldrin | 9E-03 | mg/kg | 5.8E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 9.2E-09 | 2.0E-09 | mg/kg-day | 5.0E-05 | mg/kg-day | 4.0E-05 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 2.3E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 3.5E-07 | 8.1E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 2.7E-03 |
| | | | | Cadmium (other media) | 1E+01 | mg/kg | 8.4E-09 | mg/kg-day | N/A | N/A | N/A | 2.9E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 1.2E-03 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.5E-05 | mg/kg-day | N/A |
| | | | | Cobalt | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 3E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 2E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 2E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 5E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 4E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 2E-06 | | | | | 1E-02 |
| | | Exposure Point Total | | | | | | | | | 4E-06 | | | | | 2E-02 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| | | | | | | | | | | Total of Receptor Risks Across All Media | N/A | | | | Total of Receptor Hazards Across All Media | N/A |

TABLE 7.3.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Soil | Surface/Subsurface Soil | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 2.2E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 4.9E-07 | 2.6E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 2.2E-07 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 4.8E-06 | 2.5E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 2.1E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 4.6E-07 | 2.5E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 1.2E-07 | mg/kg-day | N/A | N/A | N/A | 1.4E-06 | mg/kg-day | 3.0E-02 | mg/kg-day | 4.7E-05 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 1.2E-07 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 2.6E-08 | 1.4E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 1.0E-05 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 1.4E-07 | 1.2E-04 | mg/kg-day | 2.0E-02 | mg/kg-day | 6.0E-03 |
| | | | | Carbazole | 2E-01 | mg/kg | 1.4E-08 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 2.8E-10 | 1.6E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 3.1E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 6.8E-07 | 3.6E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 1.4E-08 | mg/kg-day | N/A | N/A | N/A | 1.6E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 4.0E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 9.7E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.1E-07 | 1.1E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 5.2E-08 | mg/kg-day | N/A | N/A | N/A | 6.1E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.0E-05 |
| | | | | Phenanthrene | 5E+00 | mg/kg | 3.2E-07 | mg/kg-day | N/A | N/A | N/A | 3.8E-06 | mg/kg-day | 3.0E-02 | mg/kg-day | 1.3E-04 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 1.2E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 2.3E-08 | 1.4E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 6.8E-03 |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 3.5E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 7.0E-08 | 4.1E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 2.0E-02 |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 4.9E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 9.9E-08 | 5.8E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 2.9E-02 |
| | | | | Dieldrin | 2E-01 | mg/kg | 1.1E-08 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 1.7E-07 | 1.3E-07 | mg/kg-day | 5.0E-05 | mg/kg-day | 2.5E-03 |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 4.3E-12 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 6.7E-07 | 5.0E-11 | mg/kg-day | 1.0E-09 | mg/kg-day | 5.0E-02 |
| | | | | Aluminum | 7E+03 | mg/kg | 4.8E-04 | mg/kg-day | N/A | N/A | N/A | 5.6E-03 | mg/kg-day | 1.0E+00 | mg/kg-day | 5.6E-03 |
| | | | | Antimony | 4E+01 | mg/kg | 3.0E-06 | mg/kg-day | N/A | N/A | N/A | 3.5E-05 | mg/kg-day | 4.0E-04 | mg/kg-day | 8.6E-02 |
| | | | | Arsenic | 1E+01 | mg/kg | 9.7E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 1.4E-06 | 1.1E-05 | mg/kg-day | 3.0E-04 | mg/kg-day | 3.8E-02 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 3.8E-07 | mg/kg-day | N/A | N/A | N/A | 4.4E-06 | mg/kg-day | 1.0E-03 | mg/kg-day | 4.4E-03 |
| | | | | Chromium | 2E+02 | mg/kg | 1.5E-05 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 2.2E-05 | 1.7E-04 | mg/kg-day | 3.0E-03 | mg/kg-day | 5.8E-02 |
| | | | | Cobalt | 6E+00 | mg/kg | 4.2E-07 | mg/kg-day | N/A | N/A | N/A | 4.9E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.6E-02 |
| | | | | Copper | 4E+02 | mg/kg | 2.9E-05 | mg/kg-day | N/A | N/A | N/A | 3.4E-04 | mg/kg-day | 4.0E-02 | mg/kg-day | 8.4E-03 |
| | | | | Iron | 3E+04 | mg/kg | 2.0E-03 | mg/kg-day | N/A | N/A | N/A | 2.4E-02 | mg/kg-day | 7.0E-01 | mg/kg-day | 3.4E-02 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | 2.7E-05 | mg/kg-day | N/A | N/A | N/A | 3.1E-04 | mg/kg-day | 7.0E-02 | mg/kg-day | 4.5E-03 |
| | | | | Mercury (other media) | 1E+00 | mg/kg | 7.5E-08 | mg/kg-day | N/A | N/A | N/A | 8.7E-07 | mg/kg-day | 1.0E-04 | mg/kg-day | 8.7E-03 |
| | | | | Nickel | 5E+01 | mg/kg | 3.5E-06 | mg/kg-day | N/A | N/A | N/A | 4.0E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.0E-03 |
| | | | | Thallium | 2E-01 | mg/kg | 1.5E-08 | mg/kg-day | N/A | N/A | N/A | 1.8E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 1.3E-06 | mg/kg-day | N/A | N/A | N/A | 1.5E-05 | mg/kg-day | 7.0E-03 | mg/kg-day | 2.1E-03 |
| | | | | Zinc | 9E+02 | mg/kg | 6.6E-05 | mg/kg-day | N/A | N/A | N/A | 7.6E-04 | mg/kg-day | 3.0E-01 | mg/kg-day | 2.5E-03 |
| | | | Exp. Route Total | | | | | | | | 3E-05 | | | | | 4E-01 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 2.6E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 5.6E-07 | 3.0E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 2.5E-07 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 5.5E-06 | 2.9E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 2.4E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 5.3E-07 | 2.8E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 1.4E-07 | mg/kg-day | N/A | N/A | N/A | 1.6E-06 | mg/kg-day | 3.0E-02 | mg/kg-day | 5.4E-05 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 1.4E-07 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 3.0E-08 | 1.6E-06 | mg/kg-day | N/A | N/A | N/A |

TABLE 7.3.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 9.1E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 1.3E-07 | 1.1E-04 | mg/kg-day | 2.0E-02 | mg/kg-day | 5.3E-03 |
| | | | | Carbazole | 2E-01 | mg/kg | 1.6E-08 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 3.2E-10 | 1.9E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 3.6E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 7.8E-07 | 4.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 1.2E-08 | mg/kg-day | N/A | N/A | N/A | 1.4E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 3.5E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 1.1E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.4E-07 | 1.3E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 5.9E-08 | mg/kg-day | N/A | N/A | N/A | 6.9E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.5E-05 |
| | | | | Phenanthrene | 5E+00 | mg/kg | 3.7E-07 | mg/kg-day | N/A | N/A | N/A | 4.3E-06 | mg/kg-day | 3.0E-02 | mg/kg-day | 1.4E-04 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 1.4E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 2.9E-08 | 1.7E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 8.4E-03 |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 4.3E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 8.6E-08 | 5.0E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 2.5E-02 |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 6.1E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 1.2E-07 | 7.1E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 3.5E-02 |
| | | | | Dieldrin | 2E-01 | mg/kg | 9.5E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 1.5E-07 | 1.1E-07 | mg/kg-day | 5.0E-05 | mg/kg-day | 2.2E-03 |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 1.1E-12 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 1.8E-07 | 1.3E-11 | mg/kg-day | 1.0E-09 | mg/kg-day | 1.3E-02 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 4E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 2.6E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 3.8E-07 | 3.0E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 9.9E-03 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 3.4E-09 | mg/kg-day | N/A | N/A | N/A | 3.9E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 1.6E-03 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.5E-05 | mg/kg-day | N/A |
| | | | | Cobalt | 6E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 4E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 3E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 1E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Nickel | 5E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 2E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 9E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 9E-06 | | | | | 1E-01 |
| | | Exposure Point Total | | | | | | | | | 4E-05 | | | | | 5E-01 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Leachate | Leachate | Unnamed Island | Dermal | | | | | | | | | | | | | |
| | | | | 4-Methylphenol | 5E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 5.0E-03 | mg/kg-day | N/A |
| | | | | Acenaphthylene | 3E-02 | ug/L | 5.4E-09 | mg/kg-day | N/A | N/A | N/A | 6.3E-08 | mg/kg-day | 6.0E-02 | mg/kg-day | 1.1E-06 |
| | | | | Atrazine | 3E+00 | ug/L | N/A | N/A | 2.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.5E-02 | mg/kg-day | N/A |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 1E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 3E+00 | ug/L | 5.9E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 8.3E-09 | 6.9E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.4E-04 |

TABLE 7.3.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Chrysene | 3E-02 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | ND | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenzofuran | 3E-01 | ug/L | 7.3E-08 | mg/kg-day | N/A | N/A | N/A | 8.6E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 2.1E-04 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 9E-01 | ug/L | 8.3E-08 | mg/kg-day | N/A | N/A | N/A | 9.7E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 4.8E-05 |
| | | | | N-Nitrosodiphenylamine | 5E+00 | ug/L | N/A | N/A | 4.9E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Pentachlorophenol | ND | ug/L | N/A | N/A | 1.2E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Phenanthrene | 3E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | 2E+00 | ug/L | 1.7E-07 | mg/kg-day | 5.4E-03 | (mg/kg-day) $^{-1}$ | 9.1E-10 | 2.0E-06 | mg/kg-day | 7.0E-02 | mg/kg-day | 2.8E-05 |
| | | | | Benzene | 4E+00 | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 4.0E-03 | mg/kg-day | N/A |
| | | | | Chlorobenzene | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Ethylbenzene | ND | ug/L | N/A | N/A | 1.1E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 1.0E-01 | mg/kg-day | N/A |
| | | | | Xylene (total) | 1E+00 | ug/L | 1.0E-07 | mg/kg-day | N/A | N/A | N/A | 1.2E-06 | mg/kg-day | 2.0E-01 | mg/kg-day | 6.0E-06 |
| | | | | Total PCBs | 3E+00 | ug/L | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 1E-02 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | 1E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-BHC | 1E-03 | ug/L | N/A | N/A | 6.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 8.0E-03 | mg/kg-day | N/A |
| | | | | alpha-Chlordane | 4E-03 | ug/L | 1.1E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 3.7E-10 | 1.2E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.5E-05 |
| | | | | Dieldrin | 2E-03 | ug/L | 1.7E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 2.7E-09 | 2.0E-09 | mg/kg-day | 5.0E-05 | mg/kg-day | 4.0E-05 |
| | | | | Gamma-Chlordane | ND | ug/L | N/A | N/A | 3.5E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | Aluminum | 1E+02 | ug/L | 1.3E-07 | mg/kg-day | N/A | N/A | N/A | 1.5E-06 | mg/kg-day | 1.0E-02 | mg/kg-day | 1.5E-04 |
| | | | | Antimony | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 4E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Barium | 7E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.4E-02 | mg/kg-day | N/A |
| | | | | Beryllium | 2E-01 | ug/L | 1.7E-10 | mg/kg-day | N/A | N/A | N/A | 2.0E-09 | mg/kg-day | 1.4E-05 | mg/kg-day | 1.4E-04 |
| | | | | Cadmium (other media) | 8E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5E-05 | mg/kg-day | N/A |
| | | | | Chromium | 5E+00 | ug/L | 9.6E-09 | mg/kg-day | 1.3E-02 | (mg/kg-day) $^{-1}$ | 3.6E-10 | 1.1E-07 | mg/kg-day | 7.5E-05 | mg/kg-day | 1.5E-03 |
| | | | | Cobalt | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 2E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 4E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (water) | 3E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-05 | mg/kg-day | N/A |
| | | | | Nickel | 4E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |

TABLE 7.3.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Silver | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 6E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 1E-08 | | | | | 2E-03 |
| | | Exposure Point Total | | | | | | | | | 1E-08 | | | | | 2E-03 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Surface Water | Surface Water | Unnamed Island | Dermal (wading) | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 1E-01 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 1E-01 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E-01 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | ND | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+00 | ug/L | 6.1E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 8.6E-09 | 7.2E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.6E-04 |
| | | | | Chrysene | 1E-01 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-01 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 2E-01 | ug/L | 2.6E-08 | mg/kg-day | N/A | N/A | N/A | 3.1E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.5E-05 |
| | | | | Phenanthrene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | ND | ug/L | N/A | N/A | 5.4E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Benzene | ND | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 4.0E-03 | mg/kg-day | N/A |
| | | | | Bromodichloromethane | ND | ug/L | N/A | N/A | 6.2E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Aroclor-1260 | ND | ug/L | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 1E-02 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | 9E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-Chlordane | 3E-03 | ug/L | 1.4E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 5.0E-10 | 1.7E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 3.3E-05 |
| | | | | beta-BHC | ND | ug/L | N/A | N/A | 1.8E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 6.0E-04 | mg/kg-day | N/A |
| | | | | Dieldrin | ND | ug/L | N/A | N/A | 1.6E+01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-05 | mg/kg-day | N/A |
| | | | | Gamma-Chlordane | 4E-03 | ug/L | 1.8E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 6.4E-10 | 2.1E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 4.3E-05 |
| | | | | Heptachlor Epoxide | 5E-03 | ug/L | 1.7E-09 | mg/kg-day | 9.1E+00 | (mg/kg-day) $^{-1}$ | 1.6E-08 | 2.0E-08 | mg/kg-day | 1.3E-05 | mg/kg-day | 1.5E-03 |
| | | | | Aluminum | 3E+03 | ug/L | 4.7E-06 | mg/kg-day | N/A | N/A | N/A | 5.5E-05 | mg/kg-day | 1.0E-02 | mg/kg-day | 5.5E-03 |
| | | | | Arsenic | 3E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Cadmium (other media) | 1E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5E-05 | mg/kg-day | N/A |
| | | | | Chromium | 1E+01 | ug/L | 3.9E-08 | mg/kg-day | 1.3E-02 | (mg/kg-day) $^{-1}$ | 1.5E-09 | 4.6E-07 | mg/kg-day | 7.5E-05 | mg/kg-day | 6.1E-03 |
| | | | | Cobalt | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 7E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | 4E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 1E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 6E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |

TABLE 7.3.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Mercury (water) | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-05 | mg/kg-day | N/A |
| | | | | Vanadium | 3E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 3E-08 | | | | | 1E-02 |
| | | Exposure Point Total | | | | | | | | | 3E-08 | | | | | 1E-02 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Sediment | Sediment | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 8.1E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.8E-07 | 9.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 8.5E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.9E-06 | 9.9E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 6.2E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.4E-07 | 7.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 5.0E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.1E-08 | 5.8E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+01 | mg/kg | 5.6E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 7.8E-09 | 6.5E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.3E-04 |
| | | | | Carbazole | 1E-01 | mg/kg | 4.8E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 9.7E-11 | 5.7E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 9.7E-09 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.1E-07 | 1.1E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 9E-02 | mg/kg | 3.2E-09 | mg/kg-day | N/A | N/A | N/A | 3.7E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 9.2E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 3.7E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 8.1E-08 | 4.3E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 1E+00 | mg/kg | 4.8E-08 | mg/kg-day | N/A | N/A | N/A | 5.6E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 1.9E-05 |
| | | | | Aroclor-1242 | ND | mg/kg | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 2E-01 | mg/kg | 5.6E-09 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 1.1E-08 | 6.6E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 3.3E-03 |
| | | | | Aroclor-1260 | 2E-01 | mg/kg | 7.6E-09 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 1.5E-08 | 8.9E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 4.5E-03 |
| | | | | Dieldrin | 9E-03 | mg/kg | 3.2E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 5.0E-09 | 3.7E-09 | mg/kg-day | 5.0E-05 | mg/kg-day | 7.4E-05 |
| | | | | Aluminum | 7E+03 | mg/kg | 2.5E-04 | mg/kg-day | N/A | N/A | N/A | 3.0E-03 | mg/kg-day | 1.0E+00 | mg/kg-day | 3.0E-03 |
| | | | | Antimony | 9E+00 | mg/kg | 3.2E-07 | mg/kg-day | N/A | N/A | N/A | 3.7E-06 | mg/kg-day | 4.0E-04 | mg/kg-day | 9.3E-03 |
| | | | | Arsenic | 1E+01 | mg/kg | 4.2E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 6.3E-07 | 4.9E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.6E-02 |
| | | | | Cadmium (other media) | 1E+01 | mg/kg | 4.6E-07 | mg/kg-day | N/A | N/A | N/A | 5.3E-06 | mg/kg-day | 1.0E-03 | mg/kg-day | 5.3E-03 |
| | | | | Chromium | 2E+02 | mg/kg | 5.9E-06 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 8.8E-06 | 6.8E-05 | mg/kg-day | 3.0E-03 | mg/kg-day | 2.3E-02 |
| | | | | Cobalt | 9E+00 | mg/kg | 3.2E-07 | mg/kg-day | N/A | N/A | N/A | 3.7E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.2E-02 |
| | | | | Copper | 3E+02 | mg/kg | 1.2E-05 | mg/kg-day | N/A | N/A | N/A | 1.3E-04 | mg/kg-day | 4.0E-02 | mg/kg-day | 3.4E-03 |
| | | | | Iron | 2E+04 | mg/kg | 6.5E-04 | mg/kg-day | N/A | N/A | N/A | 7.5E-03 | mg/kg-day | 7.0E-01 | mg/kg-day | 1.1E-02 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 2E+02 | mg/kg | 8.2E-06 | mg/kg-day | N/A | N/A | N/A | 9.6E-05 | mg/kg-day | 7.0E-02 | mg/kg-day | 1.4E-03 |
| | | | | Mercury (other media) | 5E-01 | mg/kg | 1.8E-08 | mg/kg-day | N/A | N/A | N/A | 2.2E-07 | mg/kg-day | 1.0E-04 | mg/kg-day | 2.2E-03 |
| | | | | Thallium | 4E-01 | mg/kg | 1.2E-08 | mg/kg-day | N/A | N/A | N/A | 1.4E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 6.6E-07 | mg/kg-day | N/A | N/A | N/A | 7.8E-06 | mg/kg-day | 7.0E-03 | mg/kg-day | 1.1E-03 |
| | | | Exp. Route Total | | | | | | | | 1E-05 | | | | | 1E-01 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 1.3E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.9E-07 | 1.5E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 1.4E-07 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 3.0E-06 | 1.6E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 1.0E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.2E-07 | 1.2E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 8.1E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.8E-08 | 9.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+01 | mg/kg | 7.0E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 9.8E-09 | 8.2E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 4.1E-04 |
| | | | | Carbazole | 1E-01 | mg/kg | 7.9E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 1.6E-10 | 9.2E-08 | mg/kg-day | N/A | N/A | N/A |

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Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 1.6E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 3.5E-07 | 1.8E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 9E-02 | mg/kg | 3.9E-09 | mg/kg-day | N/A | N/A | N/A | 4.6E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 1.1E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 6.0E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.3E-07 | 7.0E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 1E+00 | mg/kg | 7.8E-08 | mg/kg-day | N/A | N/A | N/A | 9.1E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 3.0E-05 |
| | | | | Aroclor-1242 | ND | mg/kg | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 2E-01 | mg/kg | 9.8E-09 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 2.0E-08 | 1.1E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 5.7E-03 |
| | | | | Aroclor-1260 | 2E-01 | mg/kg | 1.3E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 2.7E-08 | 1.6E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 7.8E-03 |
| | | | | Dieldrin | 9E-03 | mg/kg | 3.9E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 6.3E-09 | 4.6E-09 | mg/kg-day | 5.0E-05 | mg/kg-day | 9.2E-05 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 1.6E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 2.4E-07 | 1.9E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 6.2E-03 |
| | | | | Cadmium (other media) | 1E+01 | mg/kg | 5.7E-09 | mg/kg-day | N/A | N/A | N/A | 6.7E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 2.7E-03 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.5E-05 | mg/kg-day | N/A |
| | | | | Cobalt | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 3E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 2E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 2E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 5E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 4E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 4E-06 | | | | | 2E-02 |
| | | Exposure Point Total | | | | | | | | | 2E-05 | | | | | 1E-01 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | Total of Receptor Risks Across All Media | | N/A | | | Total of Receptor Hazards Across All Media | | N/A |

Notes

Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 3 for an older child (ages 6-12).

Highlighted cancer risk are calculated in Appendix F

TABLE 7.3.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Soil | Surface/Subsurface Soil | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 5.6E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.2E-07 | 6.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 5.4E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.2E-06 | 6.4E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 5.3E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.2E-07 | 6.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 3.0E-08 | mg/kg-day | N/A | N/A | N/A | 3.5E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 1.2E-05 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 3.0E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 6.5E-09 | 3.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 2.6E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 3.6E-08 | 3.0E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.5E-03 |
| | | | | Carbazole | 2E-01 | mg/kg | 3.5E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 7.0E-11 | 4.1E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 7.8E-09 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.7E-07 | 9.1E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 3.4E-09 | mg/kg-day | N/A | N/A | N/A | 4.0E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 1.0E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 2.4E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 5.3E-08 | 2.8E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 1.3E-08 | mg/kg-day | N/A | N/A | N/A | 1.5E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 7.6E-06 |
| | | | | Phenanthrene | 5E+00 | mg/kg | 8.1E-08 | mg/kg-day | N/A | N/A | N/A | 9.4E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 3.1E-05 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 2.9E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 2.9E-09 | 3.4E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 1.7E-03 |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 8.7E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 8.7E-09 | 1.0E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 5.1E-03 |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 1.2E-08 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 1.2E-08 | 1.4E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 7.2E-03 |
| | | | | Dieldrin | 2E-01 | mg/kg | 2.7E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 4.3E-08 | 3.2E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 6.3E-04 |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 1.1E-12 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 1.7E-07 | 1.3E-11 | mg/kg-day | 1.0E-09 | mg/kg-day | 1.3E-02 |
| | | | | Aluminum | 7E+03 | mg/kg | 1.2E-04 | mg/kg-day | N/A | N/A | N/A | 1.4E-03 | mg/kg-day | 1.0E+00 | mg/kg-day | 1.4E-03 |
| | | | | Antimony | 4E+01 | mg/kg | 7.4E-07 | mg/kg-day | N/A | N/A | N/A | 8.6E-06 | mg/kg-day | 4.0E-04 | mg/kg-day | 2.2E-02 |
| | | | | Arsenic | 1E+01 | mg/kg | 2.4E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 3.6E-07 | 2.8E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 9.4E-03 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 9.5E-08 | mg/kg-day | N/A | N/A | N/A | 1.1E-06 | mg/kg-day | 1.0E-03 | mg/kg-day | 1.1E-03 |
| | | | | Chromium | 2E+02 | mg/kg | 3.7E-06 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 5.6E-06 | 4.4E-05 | mg/kg-day | 3.0E-03 | mg/kg-day | 1.5E-02 |
| | | | | Cobalt | 6E+00 | mg/kg | 1.0E-07 | mg/kg-day | N/A | N/A | N/A | 1.2E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 4.1E-03 |
| | | | | Copper | 4E+02 | mg/kg | 7.2E-06 | mg/kg-day | N/A | N/A | N/A | 8.4E-05 | mg/kg-day | 4.0E-02 | mg/kg-day | 2.1E-03 |
| | | | | Iron | 3E+04 | mg/kg | 5.1E-04 | mg/kg-day | N/A | N/A | N/A | 5.9E-03 | mg/kg-day | 7.0E-01 | mg/kg-day | 8.5E-03 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | 6.7E-06 | mg/kg-day | N/A | N/A | N/A | 7.8E-05 | mg/kg-day | 7.0E-02 | mg/kg-day | 1.1E-03 |
| | | | | Mercury (other media) | 1E+00 | mg/kg | 1.9E-08 | mg/kg-day | N/A | N/A | N/A | 2.2E-07 | mg/kg-day | 1.0E-04 | mg/kg-day | 2.2E-03 |
| | | | | Nickel | 5E+01 | mg/kg | 8.6E-07 | mg/kg-day | N/A | N/A | N/A | 1.0E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 5.0E-04 |
| | | | | Thallium | 2E-01 | mg/kg | 3.8E-09 | mg/kg-day | N/A | N/A | N/A | 4.4E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 3.1E-07 | mg/kg-day | N/A | N/A | N/A | 3.6E-06 | mg/kg-day | 7.0E-03 | mg/kg-day | 5.2E-04 |
| | | | | Zinc | 9E+02 | mg/kg | 1.6E-05 | mg/kg-day | N/A | N/A | N/A | 1.9E-04 | mg/kg-day | 3.0E-01 | mg/kg-day | 6.4E-04 |
| | | | Exp. Route Total | | | | | | | | 8E-06 | | | | | 1E-01 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 1.3E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.8E-07 | 1.5E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 1.2E-07 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.7E-06 | 1.5E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 1.2E-07 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.7E-07 | 1.4E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 6.9E-08 | mg/kg-day | N/A | N/A | N/A | 8.1E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 2.7E-05 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 6.8E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.5E-08 | 8.0E-07 | mg/kg-day | N/A | N/A | N/A |

TABLE 7.3.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 4.5E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 6.3E-08 | 5.3E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.6E-03 |
| | | | | Carbazole | 2E-01 | mg/kg | 8.0E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 1.6E-10 | 9.4E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 1.8E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 3.9E-07 | 2.1E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 6.0E-09 | mg/kg-day | N/A | N/A | N/A | 7.0E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 1.8E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 5.6E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.2E-07 | 6.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 3.0E-08 | mg/kg-day | N/A | N/A | N/A | 3.5E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.7E-05 |
| | | | | Phenanthrene | 5E+00 | mg/kg | 1.8E-07 | mg/kg-day | N/A | N/A | N/A | 2.2E-06 | mg/kg-day | 3.0E-02 | mg/kg-day | 7.2E-05 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 7.2E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 7.2E-09 | 8.4E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 4.2E-03 |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 2.1E-08 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 2.1E-08 | 2.5E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 1.3E-02 |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 3.0E-08 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 3.0E-08 | 3.5E-07 | mg/kg-day | 2.0E-05 | mg/kg-day | 1.8E-02 |
| | | | | Dieldrin | 2E-01 | mg/kg | 4.8E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 7.6E-08 | 5.6E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 1.1E-03 |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 5.7E-13 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 8.9E-08 | 6.6E-12 | mg/kg-day | 1.0E-09 | mg/kg-day | 6.6E-03 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 4E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 1.3E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 1.9E-07 | 1.5E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 5.0E-03 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 1.7E-09 | mg/kg-day | N/A | N/A | N/A | 2.0E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 7.8E-04 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.5E-05 | mg/kg-day | N/A |
| | | | | Cobalt | 6E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 4E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 3E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 1E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Nickel | 5E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 2E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 9E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 4E-06 | | | | | 5E-02 |
| | | Exposure Point Total | | | | | | | | | 1E-05 | | | | | 1E-01 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Leachate | Leachate | Unnamed Island | Dermal | | | | | | | | | | | | | |
| | | | | 4-Methylphenol | 5E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 5.0E-03 | mg/kg-day | N/A |
| | | | | Acenaphthylene | 3E-02 | ug/L | 2.7E-09 | mg/kg-day | N/A | N/A | N/A | 3.2E-08 | mg/kg-day | 6.0E-02 | mg/kg-day | 5.3E-07 |
| | | | | Atrazine | 1E+00 | ug/L | N/A | N/A | 2.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.5E-02 | mg/kg-day | N/A |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 1E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 3E+00 | ug/L | 2.9E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 4.1E-09 | 3.4E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.7E-04 |

TABLE 7.3.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Chrysene | 3E-02 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | ND | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenzofuran | 3E-01 | ug/L | 3.7E-08 | mg/kg-day | N/A | N/A | N/A | 4.3E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 1.1E-04 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 9E-01 | ug/L | 4.2E-08 | mg/kg-day | N/A | N/A | N/A | 4.8E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.4E-05 |
| | | | | N-Nitrosodiphenylamine | 5E+00 | ug/L | N/A | N/A | 4.9E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Pentachlorophenol | ND | ug/L | N/A | N/A | 1.2E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Phenanthrene | 3E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | 2E+00 | ug/L | 8.4E-08 | mg/kg-day | 5.4E-03 | (mg/kg-day) $^{-1}$ | 4.5E-10 | 9.8E-07 | mg/kg-day | 7.0E-02 | mg/kg-day | 1.4E-05 |
| | | | | Benzene | 4E+00 | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 4.0E-03 | mg/kg-day | N/A |
| | | | | Chlorobenzene | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Ethylbenzene | ND | ug/L | N/A | N/A | 1.1E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 1.0E-01 | mg/kg-day | N/A |
| | | | | Xylene (total) | 1E+00 | ug/L | 5.2E-08 | mg/kg-day | N/A | N/A | N/A | 6.0E-07 | mg/kg-day | 2.0E-01 | mg/kg-day | 3.0E-06 |
| | | | | Total PCBs | 3E+00 | ug/L | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 1E-02 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | 1E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-BHC | 1E-03 | ug/L | N/A | N/A | 6.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 8.0E-03 | mg/kg-day | N/A |
| | | | | alpha-Chlordane | 4E-03 | ug/L | 5.3E-10 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 1.9E-10 | 6.2E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.2E-05 |
| | | | | Dieldrin | 2E-03 | ug/L | 8.5E-11 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 1.4E-09 | 9.9E-10 | mg/kg-day | 5.0E-05 | mg/kg-day | 2.0E-05 |
| | | | | Gamma-Chlordane | ND | ug/L | N/A | N/A | 3.5E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | Aluminum | 1E+02 | ug/L | 6.4E-08 | mg/kg-day | N/A | N/A | N/A | 7.5E-07 | mg/kg-day | 1.0E-02 | mg/kg-day | 7.5E-05 |
| | | | | Antimony | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 4E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Barium | 7E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.4E-02 | mg/kg-day | N/A |
| | | | | Beryllium | 2E-01 | ug/L | 7.1E-11 | mg/kg-day | N/A | N/A | N/A | 8.2E-10 | mg/kg-day | 1.4E-05 | mg/kg-day | 5.9E-05 |
| | | | | Cadmium (other media) | 8E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5E-05 | mg/kg-day | N/A |
| | | | | Chromium | 5E+00 | ug/L | 4.8E-09 | mg/kg-day | 1.3E-02 | (mg/kg-day) $^{-1}$ | 1.8E-10 | 5.6E-08 | mg/kg-day | 7.5E-05 | mg/kg-day | 7.5E-04 |
| | | | | Cobalt | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 2E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 4E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (water) | 3E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-05 | mg/kg-day | N/A |
| | | | | Nickel | 4E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |

TABLE 7.3.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Silver | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 1E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 6E-09 | | | | | 1E-03 |
| | | Exposure Point Total | | | | | | | | | 6E-09 | | | | | 1E-03 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Surface Water | Surface Water | Unnamed Island | Dermal (wading) | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 1E-01 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 1E-01 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 6E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 5E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | ND | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+00 | ug/L | 3.1E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 4.3E-09 | 3.6E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.8E-04 |
| | | | | Chrysene | 1E-01 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 5E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 6E-02 | ug/L | 4.1E-09 | mg/kg-day | N/A | N/A | N/A | 4.8E-08 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.4E-06 |
| | | | | Phenanthrene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | ND | ug/L | N/A | N/A | 5.4E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Benzene | ND | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 4.0E-03 | mg/kg-day | N/A |
| | | | | Bromodichloromethane | ND | ug/L | N/A | N/A | 6.2E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Aroclor-1260 | ND | ug/L | N/A | N/A | 1.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 3E-03 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | 3E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-Chlordane | 1E-03 | ug/L | 3.0E-10 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 1.1E-10 | 3.5E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 7.1E-06 |
| | | | | beta-BHC | ND | ug/L | N/A | N/A | 1.8E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 6.0E-04 | mg/kg-day | N/A |
| | | | | Dieldrin | ND | ug/L | N/A | N/A | 1.6E+01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-05 | mg/kg-day | N/A |
| | | | | Gamma-Chlordane | 4E-03 | ug/L | 9.2E-10 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 3.2E-10 | 1.1E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.1E-05 |
| | | | | Heptachlor Epoxide | 2E-03 | ug/L | 2.5E-10 | mg/kg-day | 9.1E+00 | (mg/kg-day) $^{-1}$ | 2.3E-09 | 2.9E-09 | mg/kg-day | 1.3E-05 | mg/kg-day | 2.3E-04 |
| | | | | Aluminum | 3E+03 | ug/L | 2.4E-06 | mg/kg-day | N/A | N/A | N/A | 2.8E-05 | mg/kg-day | 1.0E-02 | mg/kg-day | 2.8E-03 |
| | | | | Arsenic | 3E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Cadmium (other media) | 1E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5E-05 | mg/kg-day | N/A |
| | | | | Chromium | 1E+01 | ug/L | 2.0E-08 | mg/kg-day | 1.3E-02 | (mg/kg-day) $^{-1}$ | 7.4E-10 | 2.3E-07 | mg/kg-day | 7.5E-05 | mg/kg-day | 3.1E-03 |
| | | | | Cobalt | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | 4E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 1E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 6E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |

TABLE 7.3.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Mercury (water) | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-05 | mg/kg-day | N/A |
| | | | | Vanadium | 3E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 8E-09 | | | | | 6E-03 |
| | | Exposure Point Total | | | | | | | | | 8E-09 | | | | | 6E-03 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Sediment | Sediment | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 2.0E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 4.4E-08 | 2.4E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 2.1E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 4.6E-07 | 2.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 1.5E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.4E-08 | 1.8E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 1.2E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 2.7E-09 | 1.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+01 | mg/kg | 1.4E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 2.0E-09 | 1.6E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 8.2E-05 |
| | | | | Carbazole | 1E-01 | mg/kg | 1.2E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 2.4E-11 | 1.4E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 2.4E-09 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 5.3E-08 | 2.8E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 9E-02 | mg/kg | 7.9E-10 | mg/kg-day | N/A | N/A | N/A | 9.2E-09 | mg/kg-day | 4.0E-03 | mg/kg-day | 2.3E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 9.2E-09 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.0E-08 | 1.1E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 1E+00 | mg/kg | 1.2E-08 | mg/kg-day | N/A | N/A | N/A | 1.4E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 4.7E-06 |
| | | | | Aroclor-1242 | ND | mg/kg | N/A | N/A | 1.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 2E-01 | mg/kg | 1.4E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 1.4E-09 | 1.6E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 8.2E-04 |
| | | | | Aroclor-1260 | 2E-01 | mg/kg | 1.9E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 1.9E-09 | 2.2E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 1.1E-03 |
| | | | | Dieldrin | 9E-03 | mg/kg | 7.9E-11 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 1.3E-09 | 9.2E-10 | mg/kg-day | 5.0E-05 | mg/kg-day | 1.8E-05 |
| | | | | Aluminum | 7E+03 | mg/kg | 6.3E-05 | mg/kg-day | N/A | N/A | N/A | 7.4E-04 | mg/kg-day | 1.0E+00 | mg/kg-day | 7.4E-04 |
| | | | | Antimony | 9E+00 | mg/kg | 8.0E-08 | mg/kg-day | N/A | N/A | N/A | 9.3E-07 | mg/kg-day | 4.0E-04 | mg/kg-day | 2.3E-03 |
| | | | | Arsenic | 1E+01 | mg/kg | 1.1E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 1.6E-07 | 1.2E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 4.1E-03 |
| | | | | Cadmium (other media) | 1E+01 | mg/kg | 1.1E-07 | mg/kg-day | N/A | N/A | N/A | 1.3E-06 | mg/kg-day | 1.0E-03 | mg/kg-day | 1.3E-03 |
| | | | | Chromium | 2E+02 | mg/kg | 1.5E-06 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 2.2E-06 | 1.7E-05 | mg/kg-day | 3.0E-03 | mg/kg-day | 5.7E-03 |
| | | | | Cobalt | 9E+00 | mg/kg | 8.0E-08 | mg/kg-day | N/A | N/A | N/A | 9.4E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 3.1E-03 |
| | | | | Copper | 3E+02 | mg/kg | 2.9E-06 | mg/kg-day | N/A | N/A | N/A | 3.4E-05 | mg/kg-day | 4.0E-02 | mg/kg-day | 8.4E-04 |
| | | | | Iron | 2E+04 | mg/kg | 1.6E-04 | mg/kg-day | N/A | N/A | N/A | 1.9E-03 | mg/kg-day | 7.0E-01 | mg/kg-day | 2.7E-03 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 2E+02 | mg/kg | 2.1E-06 | mg/kg-day | N/A | N/A | N/A | 2.4E-05 | mg/kg-day | 7.0E-02 | mg/kg-day | 3.4E-04 |
| | | | | Mercury (other media) | 5E-01 | mg/kg | 4.6E-09 | mg/kg-day | N/A | N/A | N/A | 5.4E-08 | mg/kg-day | 1.0E-04 | mg/kg-day | 5.4E-04 |
| | | | | Thallium | 4E-01 | mg/kg | 3.1E-09 | mg/kg-day | N/A | N/A | N/A | 3.6E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 1.7E-07 | mg/kg-day | N/A | N/A | N/A | 1.9E-06 | mg/kg-day | 7.0E-03 | mg/kg-day | 2.8E-04 |
| | | | Exp. Route Total | | | | | | | | 3E-06 | | | | | 2E-02 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 6.6E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.4E-07 | 7.7E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 6.9E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.5E-06 | 8.0E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 5.0E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.1E-07 | 5.9E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 4.1E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 8.9E-09 | 4.7E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 2E+01 | mg/kg | 3.5E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 4.9E-09 | 4.1E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.0E-04 |
| | | | | Carbazole | 1E-01 | mg/kg | 3.9E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 7.9E-11 | 4.6E-08 | mg/kg-day | N/A | N/A | N/A |

TABLE 7.3.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 7.9E-09 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.7E-07 | 9.2E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 9E-02 | mg/kg | 2.0E-09 | mg/kg-day | N/A | N/A | N/A | 2.3E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 5.7E-06 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 3.0E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 6.6E-08 | 3.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 1E+00 | mg/kg | 3.9E-08 | mg/kg-day | N/A | N/A | N/A | 4.6E-07 | mg/kg-day | 3.0E-02 | mg/kg-day | 1.5E-05 |
| | | | | Aroclor-1242 | ND | mg/kg | N/A | N/A | 1.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 2E-01 | mg/kg | 4.9E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 4.9E-09 | 5.7E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 2.9E-03 |
| | | | | Aroclor-1260 | 2E-01 | mg/kg | 6.7E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 6.7E-09 | 7.8E-08 | mg/kg-day | 2.0E-05 | mg/kg-day | 3.9E-03 |
| | | | | Dieldrin | 9E-03 | mg/kg | 2.0E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 3.2E-09 | 2.3E-09 | mg/kg-day | 5.0E-05 | mg/kg-day | 4.6E-05 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 7.9E-08 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 1.2E-07 | 9.3E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 3.1E-03 |
| | | | | Cadmium (other media) | 1E+01 | mg/kg | 2.9E-09 | mg/kg-day | N/A | N/A | N/A | 3.3E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 1.3E-03 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.5E-05 | mg/kg-day | N/A |
| | | | | Cobalt | 9E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Copper | 3E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 2E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 2E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 5E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 4E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 2E-06 | | | | | 1E-02 |
| | | Exposure Point Total | | | | | | | | | 5E-06 | | | | | 4E-02 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| | | | | | | | | | | Total of Receptor Risks Across All Media | N/A | | | | Total of Receptor Hazards Across All Media | N/A |

Notes

Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 3 for an older child (ages 6-12).

Highlighted cancer risk are calculated in Appendix F

TABLE 7.4.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Soil | Surface/Subsurface Soil | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 7.4E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 5.4E-08 | 5.2E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 7.2E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 5.3E-07 | 5.0E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 7.0E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 5.1E-08 | 4.9E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 4.0E-08 | mg/kg-day | N/A | N/A | N/A | 2.8E-06 | mg/kg-day | 3.0E-01 | mg/kg-day | 9.3E-06 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 3.9E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 2.9E-09 | 2.8E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 3.4E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 4.8E-08 | 2.4E-04 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.2E-02 |
| | | | | Carbazole | 2E-01 | mg/kg | 4.6E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 9.3E-11 | 3.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 1.0E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 7.5E-08 | 7.2E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 4.5E-09 | mg/kg-day | N/A | N/A | N/A | 3.2E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 7.9E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 3.2E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.3E-08 | 2.2E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 1.7E-08 | mg/kg-day | N/A | N/A | N/A | 1.2E-06 | mg/kg-day | 2.0E-01 | mg/kg-day | 6.0E-06 |
| | | | | Phenanthrene | 5E+00 | mg/kg | 1.1E-07 | mg/kg-day | N/A | N/A | N/A | 7.5E-06 | mg/kg-day | 3.0E-01 | mg/kg-day | 2.5E-05 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 3.9E-09 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 7.7E-09 | 2.7E-07 | mg/kg-day | 6.0E-05 | mg/kg-day | 4.5E-03 |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 1.2E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 2.3E-08 | 8.1E-07 | mg/kg-day | 6.0E-05 | mg/kg-day | 1.3E-02 |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 1.6E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 3.3E-08 | 1.1E-06 | mg/kg-day | 6.0E-05 | mg/kg-day | 1.9E-02 |
| | | | | Dieldrin | 2E-01 | mg/kg | 3.6E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 5.7E-08 | 2.5E-07 | mg/kg-day | 5.0E-05 | mg/kg-day | 5.0E-03 |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 1.4E-12 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 2.2E-07 | 1.0E-10 | mg/kg-day | 2.0E-08 | mg/kg-day | 5.0E-03 |
| | | | | Aluminum | 7E+03 | mg/kg | 1.6E-04 | mg/kg-day | N/A | N/A | N/A | 1.1E-02 | mg/kg-day | 1.0E+00 | mg/kg-day | 1.1E-02 |
| | | | | Antimony | 4E+01 | mg/kg | 9.8E-07 | mg/kg-day | N/A | N/A | N/A | 6.8E-05 | mg/kg-day | 4.0E-04 | mg/kg-day | 1.7E-01 |
| | | | | Arsenic | 1E+01 | mg/kg | 3.2E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 4.8E-07 | 2.2E-05 | mg/kg-day | 3.0E-04 | mg/kg-day | 7.5E-02 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 1.3E-07 | mg/kg-day | N/A | N/A | N/A | 8.8E-06 | mg/kg-day | 1.0E-03 | mg/kg-day | 8.8E-03 |
| | | | | Chromium | 2E+02 | mg/kg | 5.0E-06 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 2.5E-06 | 3.5E-04 | mg/kg-day | 9.0E-03 | mg/kg-day | 3.9E-02 |
| | | | | Cobalt | 6E+00 | mg/kg | 1.4E-07 | mg/kg-day | N/A | N/A | N/A | 9.6E-06 | mg/kg-day | 3.0E-03 | mg/kg-day | 3.2E-03 |
| | | | | Copper | 4E+02 | mg/kg | 9.5E-06 | mg/kg-day | N/A | N/A | N/A | 6.7E-04 | mg/kg-day | 4.0E-02 | mg/kg-day | 1.7E-02 |
| | | | | Iron | 3E+04 | mg/kg | 6.7E-04 | mg/kg-day | N/A | N/A | N/A | 4.7E-02 | mg/kg-day | 7.0E-01 | mg/kg-day | 6.7E-02 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | 8.8E-06 | mg/kg-day | N/A | N/A | N/A | 6.2E-04 | mg/kg-day | 7.0E-02 | mg/kg-day | 8.8E-03 |
| | | | | Mercury (other media) | 1E+00 | mg/kg | 2.5E-08 | mg/kg-day | N/A | N/A | N/A | 1.7E-06 | mg/kg-day | 1.0E-04 | mg/kg-day | 1.7E-02 |
| | | | | Nickel | 5E+01 | mg/kg | 1.1E-06 | mg/kg-day | N/A | N/A | N/A | 8.0E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 4.0E-03 |
| | | | | Thallium | 2E-01 | mg/kg | 5.0E-09 | mg/kg-day | N/A | N/A | N/A | 3.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 4.1E-07 | mg/kg-day | N/A | N/A | N/A | 2.9E-05 | mg/kg-day | 7.0E-03 | mg/kg-day | 4.1E-03 |
| | | | | Zinc | 9E+02 | mg/kg | 2.2E-05 | mg/kg-day | N/A | N/A | N/A | 1.5E-03 | mg/kg-day | 3.0E-01 | mg/kg-day | 5.1E-03 |
| | | | Exp. Route Total | | | | | | | | 4E-06 | | | | | 5E-01 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 2.9E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.1E-08 | 2.0E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 2.8E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.1E-07 | 2.0E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 2.7E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.0E-08 | 1.9E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 1.6E-08 | mg/kg-day | N/A | N/A | N/A | 1.1E-06 | mg/kg-day | 3.0E-01 | mg/kg-day | 3.6E-06 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 1.5E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.1E-09 | 1.1E-06 | mg/kg-day | N/A | N/A | N/A |

TABLE 7.4.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 1.0E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 1.4E-08 | 7.1E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.6E-03 |
| | | | | Carbazole | 2E-01 | mg/kg | 1.8E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 3.6E-11 | 1.3E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 4.0E-09 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.9E-08 | 2.8E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 1.4E-09 | mg/kg-day | N/A | N/A | N/A | 9.5E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 2.4E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 1.3E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 9.1E-09 | 8.8E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 6.7E-09 | mg/kg-day | N/A | N/A | N/A | 4.7E-07 | mg/kg-day | 2.0E-01 | mg/kg-day | 2.3E-06 |
| | | | | Phenanthrene | 5E+00 | mg/kg | 4.2E-08 | mg/kg-day | N/A | N/A | N/A | 2.9E-06 | mg/kg-day | 3.0E-01 | mg/kg-day | 9.7E-06 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 1.6E-09 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 3.2E-09 | 1.1E-07 | mg/kg-day | 6.0E-05 | mg/kg-day | 1.9E-03 |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 4.8E-09 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 9.7E-09 | 3.4E-07 | mg/kg-day | 6.0E-05 | mg/kg-day | 5.6E-03 |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 6.8E-09 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 1.4E-08 | 4.8E-07 | mg/kg-day | 6.0E-05 | mg/kg-day | 8.0E-03 |
| | | | | Dieldrin | 2E-01 | mg/kg | 1.1E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 1.7E-08 | 7.5E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 1.5E-03 |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 1.3E-13 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 2.0E-08 | 9.0E-12 | mg/kg-day | 2.0E-08 | mg/kg-day | 4.5E-04 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 4E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 2.9E-08 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 4.3E-08 | 2.0E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 6.7E-03 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 3.8E-10 | mg/kg-day | N/A | N/A | N/A | 2.6E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 1.1E-03 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.3E-04 | mg/kg-day | N/A |
| | | | | Cobalt | 6E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-03 | mg/kg-day | N/A |
| | | | | Copper | 4E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 3E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 1E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Nickel | 5E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 2E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 9E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 4E-07 | | | | | 3E-02 |
| | | | Inhalation of fugitive dust | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 3.8E-09 | ug/m3 | 1.1E-04 | (ug/m3) $^{-1}$ | 4.2E-13 | 2.7E-07 | ug/m3 | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 3.7E-09 | ug/m3 | 1.1E-03 | (ug/m3) $^{-1}$ | 4.1E-12 | 2.6E-07 | ug/m3 | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 3.6E-09 | ug/m3 | 1.1E-04 | (ug/m3) $^{-1}$ | 4.0E-13 | 2.5E-07 | ug/m3 | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 2.1E-09 | ug/m3 | N/A | N/A | N/A | 1.5E-07 | ug/m3 | 3.0E+00 | ug/m3 | 4.9E-08 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 2.1E-09 | ug/m3 | 1.1E-04 | (ug/m3) $^{-1}$ | 2.3E-13 | 1.4E-07 | ug/m3 | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 1.8E-07 | ug/m3 | 2.4E-06 | (ug/m3) $^{-1}$ | 4.2E-13 | 1.2E-05 | ug/m3 | N/A | N/A | N/A |
| | | | | Carbazole | 2E-01 | mg/kg | 2.4E-10 | ug/m3 | N/A | N/A | N/A | 1.7E-08 | ug/m3 | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 5.4E-10 | ug/m3 | 1.2E-03 | (ug/m3) $^{-1}$ | 6.4E-13 | 3.8E-08 | ug/m3 | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 2.4E-10 | ug/m3 | N/A | N/A | N/A | 1.6E-08 | ug/m3 | N/A | N/A | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 1.7E-09 | ug/m3 | 1.1E-04 | (ug/m3) $^{-1}$ | 1.8E-13 | 1.2E-07 | ug/m3 | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 8.9E-10 | ug/m3 | 3.4E-05 | (ug/m3) $^{-1}$ | 3.0E-14 | 6.3E-08 | ug/m3 | 3.0E+00 | ug/m3 | 2.1E-08 |

TABLE 7.4.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Phenanthrene | 5E+00 | mg/kg | 5.5E-09 | ug/m3 | N/A | N/A | N/A | 3.9E-07 | ug/m3 | 3.0E+00 | ug/m3 | 1.3E-07 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 2.0E-10 | ug/m3 | 5.7E-04 | (ug/m3) $^{-1}$ | 1.1E-13 | 1.4E-08 | ug/m3 | N/A | N/A | N/A |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 6.0E-10 | ug/m3 | 5.7E-04 | (ug/m3) $^{-1}$ | 3.4E-13 | 4.2E-08 | ug/m3 | N/A | N/A | N/A |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 8.5E-10 | ug/m3 | 5.7E-04 | (ug/m3) $^{-1}$ | 4.8E-13 | 5.9E-08 | ug/m3 | N/A | N/A | N/A |
| | | | | Dieldrin | 2E-01 | mg/kg | 1.9E-10 | ug/m3 | 4.6E-03 | (ug/m3) $^{-1}$ | 8.5E-13 | 1.3E-08 | ug/m3 | N/A | N/A | N/A |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 7.4E-14 | ug/m3 | 3.8E+01 | (ug/m3) $^{-1}$ | 2.8E-12 | 5.2E-12 | ug/m3 | 4.0E-05 | ug/m3 | 1.3E-07 |
| | | | | Aluminum | 7E+03 | mg/kg | 8.2E-06 | ug/m3 | N/A | N/A | N/A | 5.7E-04 | ug/m3 | 5.0E+00 | ug/m3 | 1.1E-04 |
| | | | | Antimony | 4E+01 | mg/kg | 5.1E-08 | ug/m3 | N/A | N/A | N/A | 3.6E-06 | ug/m3 | N/A | N/A | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 1.7E-08 | ug/m3 | 4.3E-03 | (ug/m3) $^{-1}$ | 7.1E-11 | 1.2E-06 | ug/m3 | 1.5E-02 | ug/m3 | 7.8E-05 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 6.5E-09 | ug/m3 | 1.8E-03 | (ug/m3) $^{-1}$ | 1.2E-11 | 4.6E-07 | ug/m3 | 1.0E-02 | ug/m3 | 4.6E-05 |
| | | | | Chromium | 2E+02 | mg/kg | 2.6E-07 | ug/m3 | 8.4E-02 | (ug/m3) $^{-1}$ | 2.2E-08 | 1.8E-05 | ug/m3 | 3.0E-01 | ug/m3 | 6.0E-05 |
| | | | | Cobalt | 6E+00 | mg/kg | 7.2E-09 | ug/m3 | 9.0E-03 | (ug/m3) $^{-1}$ | 6.4E-11 | 5.0E-07 | ug/m3 | 2.0E-02 | ug/m3 | 2.5E-05 |
| | | | | Copper | 4E+02 | mg/kg | 5.0E-07 | ug/m3 | N/A | N/A | N/A | 3.5E-05 | ug/m3 | N/A | N/A | N/A |
| | | | | Iron | 3E+04 | mg/kg | 3.5E-05 | ug/m3 | N/A | N/A | N/A | 2.5E-03 | ug/m3 | N/A | N/A | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | 4.6E-07 | ug/m3 | N/A | N/A | N/A | 3.2E-05 | ug/m3 | 5.0E-02 | ug/m3 | 6.4E-04 |
| | | | | Mercury (other media) | 1E+00 | mg/kg | 1.3E-09 | ug/m3 | N/A | N/A | N/A | 9.0E-08 | ug/m3 | 3.0E-02 | ug/m3 | 3.0E-06 |
| | | | | Nickel | 5E+01 | mg/kg | 5.9E-08 | ug/m3 | 2.6E-04 | (ug/m3) $^{-1}$ | 1.5E-11 | 4.2E-06 | ug/m3 | 2.0E-01 | ug/m3 | 2.1E-05 |
| | | | | Thallium | 2E-01 | mg/kg | 2.6E-10 | ug/m3 | N/A | N/A | N/A | 1.8E-08 | ug/m3 | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 2.1E-08 | ug/m3 | N/A | N/A | N/A | 1.5E-06 | ug/m3 | N/A | N/A | N/A |
| | | | | Zinc | 9E+02 | mg/kg | 1.1E-06 | ug/m3 | N/A | N/A | N/A | 7.9E-05 | ug/m3 | N/A | N/A | N/A |
| | | | Exp. Route Total | | | | | | | | 2E-08 | | | | | 1E-03 |
| | | Exposure Point Total | | | | | | | | | 5E-06 | | | | | 5E-01 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Leachate | Leachate | Unnamed Island | Dermal | | | | | | | | | | | | | |
| | | | | 4-Methylphenol | 5E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 5.0E-03 | mg/kg-day | N/A |
| | | | | Acenaphthylene | 3E-02 | ug/L | 3.8E-10 | mg/kg-day | N/A | N/A | N/A | 2.6E-08 | mg/kg-day | 6.0E-01 | mg/kg-day | 4.4E-08 |
| | | | | Atrazine | 3E+00 | ug/L | N/A | N/A | 2.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.5E-02 | mg/kg-day | N/A |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 1E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 3E+00 | ug/L | 4.1E-08 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 5.8E-10 | 2.9E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.4E-04 |
| | | | | Chrysene | 3E-02 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | ND | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenzofuran | 3E-01 | ug/L | 5.1E-09 | mg/kg-day | N/A | N/A | N/A | 3.6E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 9.0E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 9E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-01 | mg/kg-day | N/A |
| | | | | N-Nitrosodiphenylamine | 5E+00 | ug/L | N/A | N/A | 4.9E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |

TABLE 7.4.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Pentachlorophenol | ND | ug/L | N/A | N/A | 1.2E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Phenanthrene | 3E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | 2E+00 | ug/L | N/A | N/A | 5.4E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Benzene | 4E+00 | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 1.2E-02 | mg/kg-day | N/A |
| | | | | Chlorobenzene | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Ethylbenzene | ND | ug/L | N/A | N/A | 1.1E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 1.0E+00 | mg/kg-day | N/A |
| | | | | Xylene (total) | 1E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-01 | mg/kg-day | N/A |
| | | | | Total PCBs | 3E+00 | ug/L | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 1E-02 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | 1E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-BHC | 1E-03 | ug/L | N/A | N/A | 6.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 8.0E-03 | mg/kg-day | N/A |
| | | | | alpha-Chlordane | 4E-03 | ug/L | 7.4E-11 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 2.6E-11 | 5.2E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.0E-05 |
| | | | | Dieldrin | 2E-03 | ug/L | N/A | N/A | 1.6E+01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-05 | mg/kg-day | N/A |
| | | | | Gamma-Chlordane | ND | ug/L | N/A | N/A | 3.5E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | Aluminum | 1E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 4E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Barium | 7E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.4E-02 | mg/kg-day | N/A |
| | | | | Beryllium | 2E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.4E-05 | mg/kg-day | N/A |
| | | | | Cadmium (other media) | 8E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5E-05 | mg/kg-day | N/A |
| | | | | Chromium | 5E+00 | ug/L | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.3E-04 | mg/kg-day | N/A |
| | | | | Cobalt | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-03 | mg/kg-day | N/A |
| | | | | Copper | 2E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 4E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (water) | 3E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-04 | mg/kg-day | N/A |
| | | | | Nickel | 4E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Silver | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 6E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 6E-10 | | | | | 2E-04 |
| | | Exposure Point Total | | | | | | | | | 6E-10 | | | | | 2E-04 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |

TABLE 7.4.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Soil | Outdoor (Trench) Air | Unnamed Island | Inhalation | | | | | | | | | | | | | |
| | | | | 1,1'-Biphenyl | 4E-02 | ug/m$^3$ | 6.9E-05 | ug/m3 | N/A | N/A | N/A | 4.9E-03 | ug/m3 | N/A | N/A | N/A |
| | | | | 2-Methylnaphthalene | 5E-01 | ug/m$^3$ | 7.3E-04 | ug/m3 | N/A | N/A | N/A | 5.1E-02 | ug/m3 | 3.0E+00 | ug/m3 | 1.7E-02 |
| | | | | Acenaphthene | 4E-02 | ug/m$^3$ | 6.5E-05 | ug/m3 | N/A | N/A | N/A | 4.5E-03 | ug/m3 | 3.0E+00 | ug/m3 | 1.5E-03 |
| | | | | Acenaphthylene | 1E-01 | ug/m$^3$ | 1.9E-04 | ug/m3 | N/A | N/A | N/A | 1.3E-02 | ug/m3 | 3.0E+00 | ug/m3 | 4.5E-03 |
| | | | | Acetophenone | 1E-01 | ug/m$^3$ | 2.3E-04 | ug/m3 | N/A | N/A | N/A | 1.6E-02 | ug/m3 | N/A | N/A | N/A |
| | | | | Benzaldehyde | 6E-01 | ug/m$^3$ | 9.8E-04 | ug/m3 | N/A | N/A | N/A | 6.9E-02 | ug/m3 | N/A | N/A | N/A |
| | | | | Naphthalene | 2E+00 | ug/m$^3$ | 2.4E-03 | ug/m3 | 3.4E-05 | (ug/m3)$^{-1}$ | 8.3E-08 | 1.7E-01 | ug/m3 | 3.0E+00 | ug/m3 | 5.7E-02 |
| | | | | Nitrobenzene | 2E+00 | ug/m$^3$ | 2.7E-03 | ug/m3 | 4.0E-05 | (ug/m3)$^{-1}$ | 1.1E-07 | 1.9E-01 | ug/m3 | 9.0E+00 | ug/m3 | 2.1E-02 |
| | | | | Phenanthrene | 1E-01 | ug/m$^3$ | 2.1E-04 | ug/m3 | N/A | N/A | N/A | 1.5E-02 | ug/m3 | 3.0E+00 | ug/m3 | 4.9E-03 |
| | | | | 1,1-Dichloroethene | 2E+01 | ug/m$^3$ | 3.7E-02 | ug/m3 | N/A | N/A | N/A | 2.6E+00 | ug/m3 | 2.0E+02 | ug/m3 | 1.3E-02 |
| | | | | 1,4-Dichlorobenzene | 3E+00 | ug/m$^3$ | 5.0E-03 | ug/m3 | 1.1E-05 | (ug/m3)$^{-1}$ | 5.5E-08 | 3.5E-01 | ug/m3 | 2.4E+03 | ug/m3 | 1.5E-04 |
| | | | | Benzene | 4E+00 | ug/m$^3$ | 6.4E-03 | ug/m3 | 7.8E-06 | (ug/m3)$^{-1}$ | 5.0E-08 | 4.5E-01 | ug/m3 | 9.0E+01 | ug/m3 | 5.0E-03 |
| | | | | Carbon disulfide | 3E+01 | ug/m$^3$ | 5.2E-02 | ug/m3 | N/A | N/A | N/A | 3.6E+00 | ug/m3 | 7.0E+02 | ug/m3 | 5.2E-03 |
| | | | | Carbon tetrachloride | 4E+00 | ug/m$^3$ | 7.2E-03 | ug/m3 | 6.0E-06 | (ug/m3)$^{-1}$ | 4.3E-08 | 5.0E-01 | ug/m3 | 1.0E+02 | ug/m3 | 5.0E-03 |
| | | | | Chlorobenzene | 4E+00 | ug/m$^3$ | 5.9E-03 | ug/m3 | N/A | N/A | N/A | 4.1E-01 | ug/m3 | 5.0E+02 | ug/m3 | 8.2E-04 |
| | | | | Cyclohexane, methyl- | 1E+02 | ug/m$^3$ | 1.7E-01 | ug/m3 | N/A | N/A | N/A | 1.2E+01 | ug/m3 | 3.0E+03 | ug/m3 | 4.1E-03 |
| | | | | Dichlorodifluoromethane | 1E+01 | ug/m$^3$ | 1.9E-02 | ug/m3 | N/A | N/A | N/A | 1.4E+00 | ug/m3 | 2.0E+03 | ug/m3 | 6.8E-04 |
| | | | | Methyl acetate | 1E+01 | ug/m$^3$ | 1.9E-02 | ug/m3 | N/A | N/A | N/A | 1.3E+00 | ug/m3 | N/A | N/A | N/A |
| | | | | Methylene chloride | 6E+00 | ug/m$^3$ | 1.1E-02 | ug/m3 | 4.7E-07 | (ug/m3)$^{-1}$ | 5.0E-09 | 7.4E-01 | ug/m3 | 1.0E+03 | ug/m3 | 7.4E-04 |
| | | | | Tetrachloroethene | 5E+00 | ug/m$^3$ | 8.0E-03 | ug/m3 | 5.9E-06 | (ug/m3)$^{-1}$ | 4.7E-08 | 5.6E-01 | ug/m3 | 2.7E+02 | ug/m3 | 2.1E-03 |
| | | | | Trichloroethene | 3E+00 | ug/m$^3$ | 4.3E-03 | ug/m3 | 2.0E-06 | (ug/m3)$^{-1}$ | 8.6E-09 | 3.0E-01 | ug/m3 | 1.0E+02 | ug/m3 | 3.0E-03 |
| | | | | Xylene (Total) | 3E+00 | ug/m$^3$ | 4.5E-03 | ug/m3 | N/A | N/A | N/A | 3.1E-01 | ug/m3 | 3.0E+02 | ug/m3 | 1.0E-03 |
| | | | Exp. Route Total | | | | | | | | 4E-07 | | | | | 1E-01 |
| | | Exposure Point Total | | | | | | | | | 4E-07 | | | | | 1E-01 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Groundwater | Groundwater | Shallow Groundwater | Ingestion | | | | | | | | | | | | | |
| | | | | Atrazine | 3E+00 | ug/L | 1.1E-08 | mg/kg-day | 2.3E-01 | (mg/kg-day)$^{-1}$ | 2.6E-09 | 7.8E-07 | mg/kg-day | 3.5E-02 | mg/kg-day | 2.2E-05 |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | 1.6E-10 | mg/kg-day | 7.3E-01 | (mg/kg-day)$^{-1}$ | 1.1E-10 | 1.1E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | 5.8E-11 | mg/kg-day | 7.3E+00 | (mg/kg-day)$^{-1}$ | 4.3E-10 | 4.1E-09 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 3E+00 | ug/L | 9.8E-09 | mg/kg-day | 1.4E-02 | (mg/kg-day)$^{-1}$ | 1.4E-10 | 6.9E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 3.4E-05 |
| | | | | Dibenzofuran | 3E-01 | ug/L | 9.9E-10 | mg/kg-day | N/A | N/A | N/A | 6.9E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 1.7E-05 |
| | | | | Naphthalene | 9E-01 | ug/L | 3.2E-09 | mg/kg-day | N/A | N/A | N/A | 2.3E-07 | mg/kg-day | 2.0E-01 | mg/kg-day | 1.1E-06 |
| | | | | N-Nitrosodiphenylamine | 5E+00 | ug/L | 1.6E-08 | mg/kg-day | 4.9E-03 | (mg/kg-day)$^{-1}$ | 8.0E-11 | 1.1E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 3E-01 | ug/L | 9.6E-10 | mg/kg-day | N/A | N/A | N/A | 6.7E-08 | mg/kg-day | 3.0E-01 | mg/kg-day | 2.2E-07 |
| | | | | 1,4-Dichlorobenzene | 2E+00 | ug/L | 6.4E-09 | mg/kg-day | 5.4E-03 | (mg/kg-day)$^{-1}$ | 3.5E-11 | 4.5E-07 | mg/kg-day | 7.0E-02 | mg/kg-day | 6.4E-06 |
| | | | | Benzene | 4E+00 | ug/L | 1.4E-08 | mg/kg-day | 5.5E-02 | (mg/kg-day)$^{-1}$ | 7.5E-10 | 9.5E-07 | mg/kg-day | 1.2E-02 | mg/kg-day | 7.9E-05 |
| | | | | Chlorobenzene | 1E+01 | ug/L | 4.2E-08 | mg/kg-day | N/A | N/A | N/A | 2.9E-06 | mg/kg-day | 7.0E-02 | mg/kg-day | 4.2E-05 |
| | | | | Aroclor-1242 | 3E-01 | ug/L | 9.8E-10 | mg/kg-day | 2.0E+00 | (mg/kg-day)$^{-1}$ | 2.0E-09 | 6.8E-08 | mg/kg-day | 6.0E-05 | mg/kg-day | 1.1E-03 |

TABLE 7.4.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Aroclor-1254 | 4E+00 | ug/L | 1.5E-08 | mg/kg-day | 2.0E+00 | (mg/kg-day) $^{-1}$ | 3.0E-08 | 1.0E-06 | mg/kg-day | 6.0E-05 | mg/kg-day | 1.7E-02 |
| | | | | Antimony | 2E+00 | ug/L | 7.1E-09 | mg/kg-day | N/A | N/A | N/A | 5.0E-07 | mg/kg-day | 4.0E-04 | mg/kg-day | 1.2E-03 |
| | | | | Arsenic | 4E+00 | ug/L | 1.4E-08 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 2.2E-08 | 1.0E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 3.4E-03 |
| | | | | Barium | 7E+02 | ug/L | 2.3E-06 | mg/kg-day | N/A | N/A | N/A | 1.6E-04 | mg/kg-day | 2.0E-01 | mg/kg-day | 8.2E-04 |
| | | | | Cadmium (drinking water) | 8E+00 | ug/L | 2.9E-08 | mg/kg-day | N/A | N/A | N/A | 2.0E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 4.1E-03 |
| | | | | Chromium | 5E+00 | ug/L | 1.8E-08 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 8.9E-09 | 1.2E-06 | mg/kg-day | 9.0E-03 | mg/kg-day | 1.4E-04 |
| | | | | Cobalt | 1E+01 | ug/L | 4.4E-08 | mg/kg-day | N/A | N/A | N/A | 3.1E-06 | mg/kg-day | 3.0E-03 | mg/kg-day | 1.0E-03 |
| | | | | Iron | 4E+04 | ug/L | 1.5E-04 | mg/kg-day | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | 7.0E-01 | mg/kg-day | 1.5E-02 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (drinking water) | 1E+03 | ug/L | 3.8E-06 | mg/kg-day | N/A | N/A | N/A | 2.6E-04 | mg/kg-day | 2.4E-02 | mg/kg-day | 1.1E-02 |
| | | | | Nickel | 4E+01 | ug/L | 1.4E-07 | mg/kg-day | N/A | N/A | N/A | 1.0E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 5.0E-04 |
| | | | | Thallium | 6E+00 | ug/L | 2.0E-08 | mg/kg-day | N/A | N/A | N/A | 1.4E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+00 | ug/L | 6.5E-09 | mg/kg-day | N/A | N/A | N/A | 4.5E-07 | mg/kg-day | 7.0E-03 | mg/kg-day | 6.5E-05 |
| | | | | Zinc | 1E+03 | ug/L | 4.4E-06 | mg/kg-day | N/A | N/A | N/A | 3.1E-04 | mg/kg-day | 3.0E-01 | mg/kg-day | 1.0E-03 |
| | | | Exp. Route Total | | | | | | | | 7E-08 | | | | | 6E-02 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Atrazine | 3E+00 | ug/L | N/A | N/A | 2.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.5E-02 | mg/kg-day | N/A |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 3E+00 | ug/L | 4.1E-08 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 5.8E-10 | 2.9E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.4E-04 |
| | | | | Dibenzofuran | 3E-01 | ug/L | 5.1E-09 | mg/kg-day | N/A | N/A | N/A | 3.6E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 9.0E-05 |
| | | | | Naphthalene | 9E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-01 | mg/kg-day | N/A |
| | | | | N-Nitrosodiphenylamine | 5E+00 | ug/L | N/A | N/A | 4.9E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Phenanthrene | 3E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | 2E+00 | ug/L | N/A | N/A | 5.4E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Benzene | 4E+00 | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 1.2E-02 | mg/kg-day | N/A |
| | | | | Chlorobenzene | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Aroclor-1242 | 3E-01 | ug/L | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 4E+00 | ug/L | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Antimony | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 4E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Barium | 7E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.4E-02 | mg/kg-day | N/A |
| | | | | Cadmium (drinking water) | 8E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5E-05 | mg/kg-day | N/A |
| | | | | Chromium | 5E+00 | ug/L | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.3E-04 | mg/kg-day | N/A |
| | | | | Cobalt | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-03 | mg/kg-day | N/A |
| | | | | Iron | 4E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (drinking water) | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 9.6E-04 | mg/kg-day | N/A |
| | | | | Nickel | 4E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 6E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

TABLE 7.4.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Vanadium | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 6E-10 | | | | | 2E-04 |
| | | Exposure Point Total | | | | | | | | | 7E-08 | | | | | 6E-02 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | Total of Receptor Risks Across All Media | N/A | | | | Total of Receptor Hazards Across All Media | N/A |

TABLE 7.4.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Soil | Surface/Subsurface Soil | Unnamed Island | Ingestion | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 3.7E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.7E-08 | 2.6E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 3.6E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.6E-07 | 2.5E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 3.5E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.5E-08 | 2.4E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 2.0E-08 | mg/kg-day | N/A | N/A | N/A | 1.4E-06 | mg/kg-day | 3.0E-01 | mg/kg-day | 4.6E-06 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 2.0E-08 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.4E-09 | 1.4E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 1.7E-06 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 2.4E-08 | 1.2E-04 | mg/kg-day | 2.0E-02 | mg/kg-day | 5.9E-03 |
| | | | | Carbazole | 2E-01 | mg/kg | 2.3E-09 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 4.6E-11 | 1.6E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 5.1E-09 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 3.7E-08 | 3.6E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 2.2E-09 | mg/kg-day | N/A | N/A | N/A | 1.6E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 3.9E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 1.6E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.2E-08 | 1.1E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 8.5E-09 | mg/kg-day | N/A | N/A | N/A | 6.0E-07 | mg/kg-day | 2.0E-01 | mg/kg-day | 3.0E-06 |
| | | | | Phenanthrene | 5E+00 | mg/kg | 5.3E-08 | mg/kg-day | N/A | N/A | N/A | 3.7E-06 | mg/kg-day | 3.0E-01 | mg/kg-day | 1.2E-05 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 1.9E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 1.9E-09 | 1.3E-07 | mg/kg-day | 6.0E-05 | mg/kg-day | 2.2E-03 |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 5.7E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 5.7E-09 | 4.0E-07 | mg/kg-day | 6.0E-05 | mg/kg-day | 6.7E-03 |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 8.1E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 8.1E-09 | 5.7E-07 | mg/kg-day | 6.0E-05 | mg/kg-day | 9.4E-03 |
| | | | | Dieldrin | 2E-01 | mg/kg | 1.8E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 2.8E-08 | 1.2E-07 | mg/kg-day | 5.0E-05 | mg/kg-day | 2.5E-03 |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 7.1E-13 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 1.1E-07 | 4.9E-11 | mg/kg-day | 2.0E-08 | mg/kg-day | 2.5E-03 |
| | | | | Aluminum | 7E+03 | mg/kg | 7.8E-05 | mg/kg-day | N/A | N/A | N/A | 5.5E-03 | mg/kg-day | 1.0E+00 | mg/kg-day | 5.5E-03 |
| | | | | Antimony | 4E+01 | mg/kg | 4.9E-07 | mg/kg-day | N/A | N/A | N/A | 3.4E-05 | mg/kg-day | 4.0E-04 | mg/kg-day | 8.5E-02 |
| | | | | Arsenic | 1E+01 | mg/kg | 1.6E-07 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 2.4E-07 | 1.1E-05 | mg/kg-day | 3.0E-04 | mg/kg-day | 3.7E-02 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 6.2E-08 | mg/kg-day | N/A | N/A | N/A | 4.4E-06 | mg/kg-day | 1.0E-03 | mg/kg-day | 4.4E-03 |
| | | | | Chromium | 2E+02 | mg/kg | 2.5E-06 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 1.2E-06 | 1.7E-04 | mg/kg-day | 9.0E-03 | mg/kg-day | 1.9E-02 |
| | | | | Cobalt | 6E+00 | mg/kg | 6.8E-08 | mg/kg-day | N/A | N/A | N/A | 4.8E-06 | mg/kg-day | 3.0E-03 | mg/kg-day | 1.6E-03 |
| | | | | Copper | 4E+02 | mg/kg | 4.7E-06 | mg/kg-day | N/A | N/A | N/A | 3.3E-04 | mg/kg-day | 4.0E-02 | mg/kg-day | 8.3E-03 |
| | | | | Iron | 3E+04 | mg/kg | 3.3E-04 | mg/kg-day | N/A | N/A | N/A | 2.3E-02 | mg/kg-day | 7.0E-01 | mg/kg-day | 3.3E-02 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | 4.4E-06 | mg/kg-day | N/A | N/A | N/A | 3.1E-04 | mg/kg-day | 7.0E-02 | mg/kg-day | 4.4E-03 |
| | | | | Mercury (other media) | 1E+00 | mg/kg | 1.2E-08 | mg/kg-day | N/A | N/A | N/A | 8.6E-07 | mg/kg-day | 1.0E-04 | mg/kg-day | 8.6E-03 |
| | | | | Nickel | 5E+01 | mg/kg | 5.7E-07 | mg/kg-day | N/A | N/A | N/A | 4.0E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.0E-03 |
| | | | | Thallium | 2E-01 | mg/kg | 2.5E-09 | mg/kg-day | N/A | N/A | N/A | 1.7E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 2.1E-07 | mg/kg-day | N/A | N/A | N/A | 1.4E-05 | mg/kg-day | 7.0E-03 | mg/kg-day | 2.1E-03 |
| | | | | Zinc | 9E+02 | mg/kg | 1.1E-05 | mg/kg-day | N/A | N/A | N/A | 7.5E-04 | mg/kg-day | 3.0E-01 | mg/kg-day | 2.5E-03 |
| | | | Exp. Route Total | | | | | | | | 2E-06 | | | | | 2E-01 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 1.4E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.0E-08 | 1.0E-06 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 1.4E-08 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.0E-07 | 9.8E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 1.4E-08 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 9.9E-09 | 9.5E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 7.7E-09 | mg/kg-day | N/A | N/A | N/A | 5.4E-07 | mg/kg-day | 3.0E-01 | mg/kg-day | 1.8E-06 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 7.6E-09 | mg/kg-day | 7.3E-02 | (mg/kg-day) $^{-1}$ | 5.6E-10 | 5.3E-07 | mg/kg-day | N/A | N/A | N/A |

TABLE 7.4.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 5.1E-07 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 7.1E-09 | 3.5E-05 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.8E-03 |
| | | | | Carbazole | 2E-01 | mg/kg | 9.0E-10 | mg/kg-day | 2.0E-02 | (mg/kg-day) $^{-1}$ | 1.8E-11 | 6.3E-08 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 2.0E-09 | mg/kg-day | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.5E-08 | 1.4E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 6.7E-10 | mg/kg-day | N/A | N/A | N/A | 4.7E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 1.2E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 6.2E-09 | mg/kg-day | 7.3E-01 | (mg/kg-day) $^{-1}$ | 4.5E-09 | 4.3E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 3.3E-09 | mg/kg-day | N/A | N/A | N/A | 2.3E-07 | mg/kg-day | 2.0E-01 | mg/kg-day | 1.2E-06 |
| | | | | Phenanthrene | 5E+00 | mg/kg | 2.1E-08 | mg/kg-day | N/A | N/A | N/A | 1.4E-06 | mg/kg-day | 3.0E-01 | mg/kg-day | 4.8E-06 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 8.0E-10 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 8.0E-10 | 5.6E-08 | mg/kg-day | 6.0E-05 | mg/kg-day | 9.4E-04 |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 2.4E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 2.4E-09 | 1.7E-07 | mg/kg-day | 6.0E-05 | mg/kg-day | 2.8E-03 |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 3.4E-09 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 3.4E-09 | 2.4E-07 | mg/kg-day | 6.0E-05 | mg/kg-day | 4.0E-03 |
| | | | | Dieldrin | 2E-01 | mg/kg | 5.3E-10 | mg/kg-day | 1.6E+01 | (mg/kg-day) $^{-1}$ | 8.5E-09 | 3.7E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 7.4E-04 |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 6.4E-14 | mg/kg-day | 1.6E+05 | (mg/kg-day) $^{-1}$ | 9.9E-09 | 4.4E-12 | mg/kg-day | 2.0E-08 | mg/kg-day | 2.2E-04 |
| | | | | Aluminum | 7E+03 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 4E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 1.4E-08 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 2.1E-08 | 1.0E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 3.3E-03 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 1.9E-10 | mg/kg-day | N/A | N/A | N/A | 1.3E-08 | mg/kg-day | 2.5E-05 | mg/kg-day | 5.2E-04 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.3E-04 | mg/kg-day | N/A |
| | | | | Cobalt | 6E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-03 | mg/kg-day | N/A |
| | | | | Copper | 4E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 3E+04 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (other media) | 1E+00 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-04 | mg/kg-day | N/A |
| | | | | Nickel | 5E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 2E-01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 9E+02 | mg/kg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 2E-07 | | | | | 1E-02 |
| | | | Inhalation of fugitive dust | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 1.9E-09 | ug/m3 | 1.1E-04 | (ug/m3) $^{-1}$ | 2.1E-13 | 1.3E-07 | ug/m3 | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 1.9E-09 | ug/m3 | 1.1E-03 | (ug/m3) $^{-1}$ | 2.0E-12 | 1.3E-07 | ug/m3 | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 1.8E-09 | ug/m3 | 1.1E-04 | (ug/m3) $^{-1}$ | 2.0E-13 | 1.3E-07 | ug/m3 | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 1.0E-09 | ug/m3 | N/A | N/A | N/A | 7.2E-08 | ug/m3 | 3.0E+00 | ug/m3 | 2.4E-08 |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 1.0E-09 | ug/m3 | 1.1E-04 | (ug/m3) $^{-1}$ | 1.1E-13 | 7.1E-08 | ug/m3 | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 1E+02 | mg/kg | 8.8E-08 | ug/m3 | 2.4E-06 | (ug/m3) $^{-1}$ | 2.1E-13 | 6.1E-06 | ug/m3 | N/A | N/A | N/A |
| | | | | Carbazole | 2E-01 | mg/kg | 1.2E-10 | ug/m3 | N/A | N/A | N/A | 8.4E-09 | ug/m3 | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 2.7E-10 | ug/m3 | 1.2E-03 | (ug/m3) $^{-1}$ | 3.2E-13 | 1.9E-08 | ug/m3 | N/A | N/A | N/A |
| | | | | Dibenzofuran | 2E-01 | mg/kg | 1.2E-10 | ug/m3 | N/A | N/A | N/A | 8.2E-09 | ug/m3 | N/A | N/A | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 8.3E-10 | ug/m3 | 1.1E-04 | (ug/m3) $^{-1}$ | 9.1E-14 | 5.8E-08 | ug/m3 | N/A | N/A | N/A |
| | | | | Naphthalene | 7E-01 | mg/kg | 4.4E-10 | ug/m3 | 3.4E-05 | (ug/m3) $^{-1}$ | 1.5E-14 | 3.1E-08 | ug/m3 | 3.0E+00 | ug/m3 | 1.0E-08 |

TABLE 7.4.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Phenanthrene | 5E+00 | mg/kg | 2.8E-09 | ug/m3 | N/A | N/A | N/A | 1.9E-07 | ug/m3 | 3.0E+00 | ug/m3 | 6.4E-08 |
| | | | | Aroclor-1242 | 2E-01 | mg/kg | 9.9E-11 | ug/m3 | 5.7E-04 | (ug/m3) $^{-1}$ | 5.7E-14 | 7.0E-09 | ug/m3 | N/A | N/A | N/A |
| | | | | Aroclor-1254 | 5E-01 | mg/kg | 3.0E-10 | ug/m3 | 5.7E-04 | (ug/m3) $^{-1}$ | 1.7E-13 | 2.1E-08 | ug/m3 | N/A | N/A | N/A |
| | | | | Aroclor-1260 | 7E-01 | mg/kg | 4.2E-10 | ug/m3 | 5.7E-04 | (ug/m3) $^{-1}$ | 2.4E-13 | 2.9E-08 | ug/m3 | N/A | N/A | N/A |
| | | | | Dieldrin | 2E-01 | mg/kg | 9.2E-11 | ug/m3 | 4.6E-03 | (ug/m3) $^{-1}$ | 4.2E-13 | 6.5E-09 | ug/m3 | N/A | N/A | N/A |
| | | | | Dioxin TEQ | 6E-05 | mg/kg | 3.7E-14 | ug/m3 | 3.8E+01 | (ug/m3) $^{-1}$ | 1.4E-12 | 2.6E-12 | ug/m3 | 4.0E-05 | ug/m3 | 6.4E-08 |
| | | | | Aluminum | 7E+03 | mg/kg | 4.1E-06 | ug/m3 | N/A | N/A | N/A | 2.8E-04 | ug/m3 | 5.0E+00 | ug/m3 | 5.7E-05 |
| | | | | Antimony | 4E+01 | mg/kg | 2.5E-08 | ug/m3 | N/A | N/A | N/A | 1.8E-06 | ug/m3 | N/A | N/A | N/A |
| | | | | Arsenic | 1E+01 | mg/kg | 8.2E-09 | ug/m3 | 4.3E-03 | (ug/m3) $^{-1}$ | 3.5E-11 | 5.8E-07 | ug/m3 | 1.5E-02 | ug/m3 | 3.8E-05 |
| | | | | Cadmium (other media) | 5E+00 | mg/kg | 3.2E-09 | ug/m3 | 1.8E-03 | (ug/m3) $^{-1}$ | 5.8E-12 | 2.3E-07 | ug/m3 | 1.0E-02 | ug/m3 | 2.3E-05 |
| | | | | Chromium | 2E+02 | mg/kg | 1.3E-07 | ug/m3 | 8.4E-02 | (ug/m3) $^{-1}$ | 1.1E-08 | 8.9E-06 | ug/m3 | 3.0E-01 | ug/m3 | 3.0E-05 |
| | | | | Cobalt | 6E+00 | mg/kg | 3.6E-09 | ug/m3 | 9.0E-03 | (ug/m3) $^{-1}$ | 3.2E-11 | 2.5E-07 | ug/m3 | 2.0E-02 | ug/m3 | 1.2E-05 |
| | | | | Copper | 4E+02 | mg/kg | 2.5E-07 | ug/m3 | N/A | N/A | N/A | 1.7E-05 | ug/m3 | N/A | N/A | N/A |
| | | | | Iron | 3E+04 | mg/kg | 1.7E-05 | ug/m3 | N/A | N/A | N/A | 1.2E-03 | ug/m3 | N/A | N/A | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 4E+02 | mg/kg | 2.3E-07 | ug/m3 | N/A | N/A | N/A | 1.6E-05 | ug/m3 | 5.0E-02 | ug/m3 | 3.2E-04 |
| | | | | Mercury (other media) | 1E+00 | mg/kg | 6.4E-10 | ug/m3 | N/A | N/A | N/A | 4.5E-08 | ug/m3 | 3.0E-02 | ug/m3 | 1.5E-06 |
| | | | | Nickel | 5E+01 | mg/kg | 2.9E-08 | ug/m3 | 2.6E-04 | (ug/m3) $^{-1}$ | 7.6E-12 | 2.1E-06 | ug/m3 | 2.0E-01 | ug/m3 | 1.0E-05 |
| | | | | Thallium | 2E-01 | mg/kg | 1.3E-10 | ug/m3 | N/A | N/A | N/A | 9.1E-09 | ug/m3 | N/A | N/A | N/A |
| | | | | Vanadium | 2E+01 | mg/kg | 1.1E-08 | ug/m3 | N/A | N/A | N/A | 7.5E-07 | ug/m3 | N/A | N/A | N/A |
| | | | | Zinc | 9E+02 | mg/kg | 5.6E-07 | ug/m3 | N/A | N/A | N/A | 3.9E-05 | ug/m3 | N/A | N/A | N/A |
| | | | Exp. Route Total | | | | | | | | 1E-08 | | | | | 5E-04 |
| | | Exposure Point Total | | | | | | | | | 2E-06 | | | | | 3E-01 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Leachate | Leachate | Unnamed Island | Dermal | | | | | | | | | | | | | |
| | | | | 4-Methylphenol | 5E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 5.0E-03 | mg/kg-day | N/A |
| | | | | Acenaphthylene | 3E-02 | ug/L | 1.9E-10 | mg/kg-day | N/A | N/A | N/A | 1.3E-08 | mg/kg-day | 6.0E-01 | mg/kg-day | 2.2E-08 |
| | | | | Atrazine | 1E+00 | ug/L | N/A | N/A | 2.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.5E-02 | mg/kg-day | N/A |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(g,h,i)perylene | 1E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | | Benzo(k)fluoranthene | 2E-02 | ug/L | N/A | N/A | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 3E+00 | ug/L | 2.0E-08 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 2.9E-10 | 1.4E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 7.1E-05 |
| | | | | Chrysene | 3E-02 | ug/L | N/A | N/A | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | ND | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Dibenzofuran | 3E-01 | ug/L | 2.5E-09 | mg/kg-day | N/A | N/A | N/A | 1.8E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 4.4E-05 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Naphthalene | 9E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-01 | mg/kg-day | N/A |
| | | | | N-Nitrosodiphenylamine | 5E+00 | ug/L | N/A | N/A | 4.9E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |

TABLE 7.4.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Pentachlorophenol | ND | ug/L | N/A | N/A | 1.2E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-02 | mg/kg-day | N/A |
| | | | | Phenanthrene | 3E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | 2E+00 | ug/L | N/A | N/A | 5.4E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Benzene | 4E+00 | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 1.2E-02 | mg/kg-day | N/A |
| | | | | Chlorobenzene | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Ethylbenzene | ND | ug/L | N/A | N/A | 1.1E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 1.0E+00 | mg/kg-day | N/A |
| | | | | Xylene (total) | 1E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-01 | mg/kg-day | N/A |
| | | | | Total PCBs | 3E+00 | ug/L | N/A | N/A | 2.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | 4,4'-DDD | 1E-02 | ug/L | N/A | N/A | 2.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDE | 1E-03 | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | 4,4'-DDT | ND | ug/L | N/A | N/A | 3.4E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | alpha-BHC | 1E-03 | ug/L | N/A | N/A | 6.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 8.0E-03 | mg/kg-day | N/A |
| | | | | alpha-Chlordane | 4E-03 | ug/L | 3.7E-11 | mg/kg-day | 3.5E-01 | (mg/kg-day) $^{-1}$ | 1.3E-11 | 2.6E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 5.1E-06 |
| | | | | Dieldrin | 2E-03 | ug/L | N/A | N/A | 1.6E+01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-05 | mg/kg-day | N/A |
| | | | | Gamma-Chlordane | ND | ug/L | N/A | N/A | 3.5E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 5.0E-04 | mg/kg-day | N/A |
| | | | | Aluminum | 1E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.0E-02 | mg/kg-day | N/A |
| | | | | Antimony | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 4E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Barium | 7E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.4E-02 | mg/kg-day | N/A |
| | | | | Beryllium | 2E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.4E-05 | mg/kg-day | N/A |
| | | | | Cadmium (other media) | 8E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5E-05 | mg/kg-day | N/A |
| | | | | Chromium | 5E+00 | ug/L | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.3E-04 | mg/kg-day | N/A |
| | | | | Cobalt | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-03 | mg/kg-day | N/A |
| | | | | Copper | 2E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 4.0E-02 | mg/kg-day | N/A |
| | | | | Cyanide | ND | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-02 | mg/kg-day | N/A |
| | | | | Iron | 4E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (other media) | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Mercury (water) | 3E-02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.1E-04 | mg/kg-day | N/A |
| | | | | Nickel | 4E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Silver | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 1E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Vanadium | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 3E-10 | | | | | 1E-04 |
| | | Exposure Point Total | | | | | | | | | 3E-10 | | | | | 1E-04 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |

TABLE 7.4.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Soil | Outdoor (Trench) Air | Unnamed Island | Inhalation | | | | | | | | | | | | | |
| | | | | 1,1'-Biphenyl | 4E-02 | ug/m$^3$ | 3.4E-05 | ug/m3 | N/A | N/A | N/A | 2.4E-03 | ug/m3 | N/A | N/A | N/A |
| | | | | 2-Methylnaphthalene | 5E-01 | ug/m$^3$ | 3.6E-04 | ug/m3 | N/A | N/A | N/A | 2.5E-02 | ug/m3 | 3.0E+00 | ug/m3 | 8.5E-03 |
| | | | | Acenaphthene | 4E-02 | ug/m$^3$ | 3.2E-05 | ug/m3 | N/A | N/A | N/A | 2.2E-03 | ug/m3 | 3.0E+00 | ug/m3 | 7.5E-04 |
| | | | | Acenaphthylene | 1E-01 | ug/m$^3$ | 9.5E-05 | ug/m3 | N/A | N/A | N/A | 6.7E-03 | ug/m3 | 3.0E+00 | ug/m3 | 2.2E-03 |
| | | | | Acetophenone | 1E-01 | ug/m$^3$ | 1.1E-04 | ug/m3 | N/A | N/A | N/A | 8.0E-03 | ug/m3 | N/A | N/A | N/A |
| | | | | Benzaldehyde | 6E-01 | ug/m$^3$ | 4.9E-04 | ug/m3 | N/A | N/A | N/A | 3.4E-02 | ug/m3 | N/A | N/A | N/A |
| | | | | Naphthalene | 2E+00 | ug/m$^3$ | 1.2E-03 | ug/m3 | 3.4E-05 | (ug/m3)$^{-1}$ | 4.1E-08 | 8.5E-02 | ug/m3 | 3.0E+00 | ug/m3 | 2.8E-02 |
| | | | | Nitrobenzene | 2E+00 | ug/m$^3$ | 1.3E-03 | ug/m3 | 4.0E-05 | (ug/m3)$^{-1}$ | 5.4E-08 | 9.4E-02 | ug/m3 | 9.0E+00 | ug/m3 | 1.0E-02 |
| | | | | Phenanthrene | 1E-01 | ug/m$^3$ | 1.0E-04 | ug/m3 | N/A | N/A | N/A | 7.2E-03 | ug/m3 | 3.0E+00 | ug/m3 | 2.4E-03 |
| | | | | 1,1-Dichloroethene | 2E+01 | ug/m$^3$ | 1.8E-02 | ug/m3 | N/A | N/A | N/A | 1.3E+00 | ug/m3 | 2.0E+02 | ug/m3 | 6.3E-03 |
| | | | | 1,4-Dichlorobenzene | 3E+00 | ug/m$^3$ | 2.5E-03 | ug/m3 | 1.1E-05 | (ug/m3)$^{-1}$ | 2.7E-08 | 1.7E-01 | ug/m3 | 2.4E+03 | ug/m3 | 7.2E-05 |
| | | | | Benzene | 4E+00 | ug/m$^3$ | 3.2E-03 | ug/m3 | 7.8E-06 | (ug/m3)$^{-1}$ | 2.5E-08 | 2.2E-01 | ug/m3 | 9.0E+01 | ug/m3 | 2.5E-03 |
| | | | | Carbon disulfide | 3E+01 | ug/m$^3$ | 2.6E-02 | ug/m3 | N/A | N/A | N/A | 1.8E+00 | ug/m3 | 7.0E+02 | ug/m3 | 2.6E-03 |
| | | | | Carbon tetrachloride | 4E+00 | ug/m$^3$ | 3.6E-03 | ug/m3 | 6.0E-06 | (ug/m3)$^{-1}$ | 2.1E-08 | 2.5E-01 | ug/m3 | 1.0E+02 | ug/m3 | 2.5E-03 |
| | | | | Chlorobenzene | 4E+00 | ug/m$^3$ | 2.9E-03 | ug/m3 | N/A | N/A | N/A | 2.0E-01 | ug/m3 | 5.0E+02 | ug/m3 | 4.1E-04 |
| | | | | Cyclohexane, methyl- | 1E+02 | ug/m$^3$ | 8.7E-02 | ug/m3 | N/A | N/A | N/A | 6.1E+00 | ug/m3 | 3.0E+03 | ug/m3 | 2.0E-03 |
| | | | | Dichlorodifluoromethane | 1E+01 | ug/m$^3$ | 9.6E-03 | ug/m3 | N/A | N/A | N/A | 6.7E-01 | ug/m3 | 2.0E+03 | ug/m3 | 3.4E-04 |
| | | | | Methyl acetate | 1E+01 | ug/m$^3$ | 9.2E-03 | ug/m3 | N/A | N/A | N/A | 6.5E-01 | ug/m3 | N/A | N/A | N/A |
| | | | | Methylene chloride | 6E+00 | ug/m$^3$ | 5.2E-03 | ug/m3 | 4.7E-07 | (ug/m3)$^{-1}$ | 2.5E-09 | 3.7E-01 | ug/m3 | 1.0E+03 | ug/m3 | 3.7E-04 |
| | | | | Tetrachloroethene | 5E+00 | ug/m$^3$ | 4.0E-03 | ug/m3 | 5.9E-06 | (ug/m3)$^{-1}$ | 2.3E-08 | 2.8E-01 | ug/m3 | 2.7E+02 | ug/m3 | 1.0E-03 |
| | | | | Trichloroethene | 3E+00 | ug/m$^3$ | 2.1E-03 | ug/m3 | 2.0E-06 | (ug/m3)$^{-1}$ | 4.3E-09 | 1.5E-01 | ug/m3 | 1.0E+02 | ug/m3 | 1.5E-03 |
| | | | | Xylene (Total) | 3E+00 | ug/m$^3$ | 2.2E-03 | ug/m3 | N/A | N/A | N/A | 1.6E-01 | ug/m3 | 3.0E+02 | ug/m3 | 5.2E-04 |
| | | | Exp. Route Total | | | | | | | | 2E-07 | | | | | 7E-02 |
| | | Exposure Point Total | | | | | | | | | 2E-07 | | | | | 7E-02 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| Groundwater | Groundwater | Shallow Groundwater | Ingestion | | | | | | | | | | | | | |
| | | | | Atrazine | 1E+00 | ug/L | 1.9E-09 | mg/kg-day | 2.3E-01 | (mg/kg-day)$^{-1}$ | 4.3E-10 | 1.3E-07 | mg/kg-day | 3.5E-02 | mg/kg-day | 3.7E-06 |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | 7.7E-11 | mg/kg-day | 7.3E-01 | (mg/kg-day)$^{-1}$ | 5.7E-11 | 5.4E-09 | mg/kg-day | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | 2.9E-11 | mg/kg-day | 7.3E+00 | (mg/kg-day)$^{-1}$ | 2.1E-10 | 2.0E-09 | mg/kg-day | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 3E+00 | ug/L | 4.9E-09 | mg/kg-day | 1.4E-02 | (mg/kg-day)$^{-1}$ | 6.8E-11 | 3.4E-07 | mg/kg-day | 2.0E-02 | mg/kg-day | 1.7E-05 |
| | | | | Dibenzofuran | 3E-01 | ug/L | 4.9E-10 | mg/kg-day | N/A | N/A | N/A | 3.4E-08 | mg/kg-day | 4.0E-03 | mg/kg-day | 8.6E-06 |
| | | | | Naphthalene | 9E-01 | ug/L | 1.6E-09 | mg/kg-day | N/A | N/A | N/A | 1.1E-07 | mg/kg-day | 2.0E-01 | mg/kg-day | 5.6E-07 |
| | | | | N-Nitrosodiphenylamine | 5E+00 | ug/L | 8.1E-09 | mg/kg-day | 4.9E-03 | (mg/kg-day)$^{-1}$ | 4.0E-11 | 5.7E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Phenanthrene | 3E-01 | ug/L | 4.7E-10 | mg/kg-day | N/A | N/A | N/A | 3.3E-08 | mg/kg-day | 3.0E-01 | mg/kg-day | 1.1E-07 |
| | | | | 1,4-Dichlorobenzene | 2E+00 | ug/L | 3.2E-09 | mg/kg-day | 5.4E-03 | (mg/kg-day)$^{-1}$ | 1.7E-11 | 2.2E-07 | mg/kg-day | 7.0E-02 | mg/kg-day | 3.2E-06 |
| | | | | Benzene | 4E+00 | ug/L | 6.7E-09 | mg/kg-day | 5.5E-02 | (mg/kg-day)$^{-1}$ | 3.7E-10 | 4.7E-07 | mg/kg-day | 1.2E-02 | mg/kg-day | 3.9E-05 |
| | | | | Chlorobenzene | 1E+01 | ug/L | 2.1E-08 | mg/kg-day | N/A | N/A | N/A | 1.5E-06 | mg/kg-day | 7.0E-02 | mg/kg-day | 2.1E-05 |
| | | | | Aroclor-1242 | 7E-02 | ug/L | 1.2E-10 | mg/kg-day | 1.0E+00 | (mg/kg-day)$^{-1}$ | 1.2E-10 | 8.7E-09 | mg/kg-day | 6.0E-05 | mg/kg-day | 1.5E-04 |

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CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Aroclor-1254 | 4E-01 | ug/L | 7.2E-10 | mg/kg-day | 1.0E+00 | (mg/kg-day) $^{-1}$ | 7.2E-10 | 5.0E-08 | mg/kg-day | 6.0E-05 | mg/kg-day | 8.4E-04 |
| | | | | Antimony | 2E+00 | ug/L | 3.5E-09 | mg/kg-day | N/A | N/A | N/A | 2.5E-07 | mg/kg-day | 4.0E-04 | mg/kg-day | 6.2E-04 |
| | | | | Arsenic | 4E+00 | ug/L | 7.2E-09 | mg/kg-day | 1.5E+00 | (mg/kg-day) $^{-1}$ | 1.1E-08 | 5.0E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.7E-03 |
| | | | | Barium | 7E+02 | ug/L | 1.2E-06 | mg/kg-day | N/A | N/A | N/A | 8.1E-05 | mg/kg-day | 2.0E-01 | mg/kg-day | 4.0E-04 |
| | | | | Cadmium (drinking water) | 8E+00 | ug/L | 1.4E-08 | mg/kg-day | N/A | N/A | N/A | 1.0E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.0E-03 |
| | | | | Chromium | 5E+00 | ug/L | 8.9E-09 | mg/kg-day | 5.0E-01 | (mg/kg-day) $^{-1}$ | 4.4E-09 | 6.2E-07 | mg/kg-day | 9.0E-03 | mg/kg-day | 6.9E-05 |
| | | | | Cobalt | 1E+01 | ug/L | 2.2E-08 | mg/kg-day | N/A | N/A | N/A | 1.5E-06 | mg/kg-day | 3.0E-03 | mg/kg-day | 5.1E-04 |
| | | | | Iron | 4E+04 | ug/L | 7.4E-05 | mg/kg-day | N/A | N/A | N/A | 5.2E-03 | mg/kg-day | 7.0E-01 | mg/kg-day | 7.4E-03 |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (drinking water) | 1E+03 | ug/L | 1.9E-06 | mg/kg-day | N/A | N/A | N/A | 1.3E-04 | mg/kg-day | 2.4E-02 | mg/kg-day | 5.5E-03 |
| | | | | Nickel | 4E+01 | ug/L | 7.1E-08 | mg/kg-day | N/A | N/A | N/A | 5.0E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.5E-04 |
| | | | | Thallium | 1E+00 | ug/L | 1.9E-09 | mg/kg-day | N/A | N/A | N/A | 1.4E-07 | mg/kg-day | N/A | N/A | N/A |
| | | | | Vanadium | 2E+00 | ug/L | 3.2E-09 | mg/kg-day | N/A | N/A | N/A | 2.2E-07 | mg/kg-day | 7.0E-03 | mg/kg-day | 3.2E-05 |
| | | | | Zinc | 1E+03 | ug/L | 2.2E-06 | mg/kg-day | N/A | N/A | N/A | 1.5E-04 | mg/kg-day | 3.0E-01 | mg/kg-day | 5.1E-04 |
| | | | Exp. Route Total | | | | | | | | 2E-08 | | | | | 2E-02 |
| | | | Dermal | | | | | | | | | | | | | |
| | | | | Atrazine | 1E+00 | ug/L | N/A | N/A | 2.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.5E-02 | mg/kg-day | N/A |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | bis(2-Ethylhexyl)phthalate | 3E+00 | ug/L | 2.0E-08 | mg/kg-day | 1.4E-02 | (mg/kg-day) $^{-1}$ | 2.9E-10 | 1.4E-06 | mg/kg-day | 2.0E-02 | mg/kg-day | 7.1E-05 |
| | | | | Dibenzofuran | 3E-01 | ug/L | 2.5E-09 | mg/kg-day | N/A | N/A | N/A | 1.8E-07 | mg/kg-day | 4.0E-03 | mg/kg-day | 4.4E-05 |
| | | | | Naphthalene | 9E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.0E-01 | mg/kg-day | N/A |
| | | | | N-Nitrosodiphenylamine | 5E+00 | ug/L | N/A | N/A | 4.9E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | Phenanthrene | 3E-01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | | 1,4-Dichlorobenzene | 2E+00 | ug/L | N/A | N/A | 5.4E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Benzene | 4E+00 | ug/L | N/A | N/A | 5.5E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 1.2E-02 | mg/kg-day | N/A |
| | | | | Chlorobenzene | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-02 | mg/kg-day | N/A |
| | | | | Aroclor-1242 | 7E-02 | ug/L | N/A | N/A | 1.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Aroclor-1254 | 4E-01 | ug/L | N/A | N/A | 1.0E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Antimony | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.0E-05 | mg/kg-day | N/A |
| | | | | Arsenic | 4E+00 | ug/L | N/A | N/A | 1.5E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 3.0E-04 | mg/kg-day | N/A |
| | | | | Barium | 7E+02 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.4E-02 | mg/kg-day | N/A |
| | | | | Cadmium (drinking water) | 8E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5E-05 | mg/kg-day | N/A |
| | | | | Chromium | 5E+00 | ug/L | N/A | N/A | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A | 2.3E-04 | mg/kg-day | N/A |
| | | | | Cobalt | 1E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-03 | mg/kg-day | N/A |
| | | | | Iron | 4E+04 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 7.0E-01 | mg/kg-day | N/A |
| | | | | Lead | | | | | | | | | | | | |
| | | | | Manganese (drinking water) | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 9.6E-04 | mg/kg-day | N/A |
| | | | | Nickel | 4E+01 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 8.0E-04 | mg/kg-day | N/A |
| | | | | Thallium | 1E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

TABLE 7.4.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Vanadium | 2E+00 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1.8E-04 | mg/kg-day | N/A |
| | | | | Zinc | 1E+03 | ug/L | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 3.0E-01 | mg/kg-day | N/A |
| | | | Exp. Route Total | | | | | | | | 3E-10 | | | | | 1E-04 |
| | | Exposure Point Total | | | | | | | | | 2E-08 | | | | | 2E-02 |
| | Exposure Medium Total | | | | | | | | | | N/A | | | | | N/A |
| Medium Total | | | | | | | | | | | N/A | | | | | N/A |
| | | | | | | | | | | | | | | | | |
| | | | | | | | Total of Receptor Risks Across All Media | | | | N/A | Total of Receptor Hazards Across All Media | | | | N/A |

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Soil | Surface Soil | Unnamed Island | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 2E-07 | - - | 1E-07 | - - | 4E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(a)pyrene | 2E-06 | - - | 1E-06 | - - | 3E-06 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | 3E-07 | - - | 2E-07 | - - | 5E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | 1E-08 | - - | 7E-09 | - - | 2E-08 | N/A | N/A | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | 4E-08 | - - | 2E-08 | - - | 6E-08 | Liver | 1E-03 | - - | 4E-04 | 1E-03 |
| | | | Carbazole | 4E-10 | - - | 2E-10 | - - | 6E-10 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenz(a,h)anthracene | 4E-07 | - - | 2E-07 | - - | 6E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenzofuran | N/A | - - | N/A | - - | N/A | Kidney | 3E-05 | - - | 1E-05 | 4E-05 |
| | | | Indeno(1,2,3-cd)pyrene | 1E-07 | - - | 7E-08 | - - | 2E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Phenanthrene | N/A | - - | N/A | - - | N/A | Kidney | 4E-05 | - - | 2E-05 | 6E-05 |
| | | | Aroclor-1242 | 4E-08 | - - | 2E-08 | - - | 6E-08 | General Toxicity/Immune System | 7E-03 | - - | 4E-03 | 1E-02 |
| | | | Aroclor-1254 | 6E-08 | - - | 4E-08 | - - | 1E-07 | General Toxicity/Immune System | 1E-02 | - - | 6E-03 | 2E-02 |
| | | | Aroclor-1260 | 8E-08 | - - | 5E-08 | - - | 1E-07 | General Toxicity/Immune System | 1E-02 | - - | 9E-03 | 2E-02 |
| | | | Dieldrin | 3E-07 | - - | 1E-07 | - - | 5E-07 | Liver | 3E-03 | - - | 1E-03 | 4E-03 |
| | | | Dioxin TEQ | 7E-07 | - - | 8E-08 | - - | 7E-07 | Developmental | 3E-02 | - - | 4E-03 | 3E-02 |
| | | | Aluminum | N/A | - - | N/A | - - | N/A | Developmental | 4E-03 | - - | N/A | 4E-03 |
| | | | Antimony | N/A | - - | N/A | - - | N/A | General Toxicity | 1E-02 | - - | N/A | 1E-02 |
| | | | Arsenic | 1E-06 | - - | 2E-07 | - - | 2E-06 | Skin | 2E-02 | - - | 3E-03 | 2E-02 |
| | | | Cadmium (other media) | N/A | - - | N/A | - - | N/A | Kidney | 4E-03 | - - | 7E-04 | 5E-03 |
| | | | Chromium | 2E-05 | - - | N/A | - - | 2E-05 | GI System | 3E-02 | - - | N/A | 3E-02 |
| | | | Cobalt | N/A | - - | N/A | - - | N/A | Endocrine | 1E-02 | - - | N/A | 1E-02 |
| | | | Copper | N/A | - - | N/A | - - | N/A | GI System | 5E-03 | - - | N/A | 5E-03 |
| | | | Iron | N/A | - - | N/A | - - | N/A | Liver/GI System | 2E-02 | - - | N/A | 2E-02 |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | N/A | - - | N/A | - - | N/A | CNS | 3E-03 | - - | N/A | 3E-03 |
| | | | Mercury (other media) | N/A | - - | N/A | - - | N/A | CNS | 3E-03 | - - | N/A | 3E-03 |
| | | | Nickel | N/A | - - | N/A | - - | N/A | General Toxicity | 1E-03 | - - | N/A | 1E-03 |
| | | | Thallium | N/A | - - | N/A | - - | N/A | N/A | N/A | - - | N/A | N/A |
| | | | Vanadium | N/A | - - | N/A | - - | N/A | Kidney | 1E-03 | - - | N/A | 1E-03 |
| | | | Chemical Total | 2E-05 | - - | 2E-06 | - - | 2E-05 | | 2E-01 | - - | 3E-02 | 2E-01 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 2E-05 | | | | | 2E-01 |
| | Exposure Medium Total | | | | | | | 2E-05 | | | | | 2E-01 |
| Medium Total | | | | | | | | 2E-05 | | | | | 2E-01 |
| Leachate | Leachate | Unnamed Island | | | | | | | | | | | |
| | | | 4-Methylphenol | - - | - - | N/A | - - | N/A | CNS | - - | - - | N/A | N/A |
| | | | Acenaphthylene | - - | - - | N/A | - - | N/A | Liver | - - | - - | 1E-06 | 1E-06 |

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Atrazine | - - | - - | N/A | - - | N/A | General Toxicity/Cardiovascular | - - | - - | N/A | N/A |
| | | | Benzo(a)anthracene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(a)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(g,h,i)perylene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | - - | - - | 1E-08 | - - | 1E-08 | Liver | - - | - - | 3E-04 | 3E-04 |
| | | | Chrysene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Dibenz(a,h)anthracene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Dibenzofuran | - - | - - | N/A | - - | N/A | Kidney | - - | - - | 2E-04 | 2E-04 |
| | | | Indeno(1,2,3-cd)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Naphthalene | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | 5E-05 | 5E-05 |
| | | | N-Nitrosodiphenylamine | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Pentachlorophenol | - - | - - | N/A | - - | N/A | Liver/Kidney | - - | - - | N/A | N/A |
| | | | Phenanthrene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | 1,4-Dichlorobenzene | - - | - - | 1E-09 | - - | 1E-09 | Liver | - - | - - | 3E-05 | 3E-05 |
| | | | Benzene | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Chlorobenzene | - - | - - | N/A | - - | N/A | Liver/Kidney | - - | - - | N/A | N/A |
| | | | Ethylbenzene | - - | - - | N/A | - - | N/A | Liver/Kidney | - - | - - | N/A | N/A |
| | | | Xylene (total) | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | 6E-06 | 6E-06 |
| | | | Total PCBs | - - | - - | N/A | - - | N/A | General Toxicity/Immune System | - - | - - | N/A | N/A |
| | | | 4,4'-DDD | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDE | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDT | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | alpha-BHC | - - | - - | 7E-10 | - - | 7E-10 | Liver | - - | - - | 9E-08 | 9E-08 |
| | | | alpha-Chlordane | - - | - - | 6E-10 | - - | 6E-10 | Liver | - - | - - | 2E-05 | 2E-05 |
| | | | Dieldrin | - - | - - | 4E-09 | - - | 4E-09 | Liver | - - | - - | 4E-05 | 4E-05 |
| | | | Gamma-Chlordane | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Aluminum | - - | - - | N/A | - - | N/A | Developmental | - - | - - | 1E-04 | 1E-04 |
| | | | Antimony | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | N/A | N/A |
| | | | Arsenic | - - | - - | N/A | - - | N/A | Skin | - - | - - | N/A | N/A |
| | | | Barium | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Beryllium | - - | - - | N/A | - - | N/A | GI System | - - | - - | 1E-04 | 1E-04 |
| | | | Cadmium (other media) | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Chromium | - - | - - | 5E-10 | - - | 5E-10 | GI System | - - | - - | 1E-03 | 1E-03 |
| | | | Cobalt | - - | - - | N/A | - - | N/A | Endocrine | - - | - - | N/A | N/A |
| | | | Copper | - - | - - | N/A | - - | N/A | GI System | - - | - - | N/A | N/A |
| | | | Cyanide | - - | - - | N/A | - - | N/A | Endocrine/CNS | - - | - - | N/A | N/A |
| | | | Iron | - - | - - | N/A | - - | N/A | Liver/GI System | - - | - - | N/A | N/A |

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | - - | - - | N/A | - - | N/A | CNS | - - | - - | N/A | N/A |
| | | | Mercury (water) | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Nickel | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | N/A | N/A |
| | | | Silver | - - | - - | N/A | - - | N/A | Skin | - - | - - | N/A | N/A |
| | | | Thallium | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Vanadium | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Zinc | - - | - - | N/A | - - | N/A | Blood | - - | - - | N/A | N/A |
| | | | Chemical Total | - - | - - | 2E-08 | - - | 2E-08 | | - - | - - | 2E-03 | 2E-03 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 2E-08 | | | | | 2E-03 |
| | Exposure Medium Total | | | | | | | 2E-08 | | | | | 2E-03 |
| Medium Total | | | | | | | | 2E-08 | | | | | 2E-03 |
| Surface Water | Surface Water | Unnamed Island | | | | | | | | | | | |
| | | | Benzo(a)anthracene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(a)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(g,h,i)perylene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | - - | - - | 2E-08 | - - | 2E-08 | Liver | - - | - - | 5E-04 | 5E-04 |
| | | | Chrysene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Indeno(1,2,3-cd)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Naphthalene | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | 2E-05 | 2E-05 |
| | | | Phenanthrene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | 1,4-Dichlorobenzene | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Benzene | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Bromodichloromethane | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Aroclor-1260 | - - | - - | N/A | - - | N/A | General Toxicity/Immune System | - - | - - | N/A | N/A |
| | | | 4,4'-DDD | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDE | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDT | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | alpha-Chlordane | - - | - - | 1E-09 | - - | 1E-09 | Liver | - - | - - | 4E-05 | 4E-05 |
| | | | beta-BHC | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Dieldrin | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Gamma-Chlordane | - - | - - | 1E-09 | - - | 1E-09 | Liver | - - | - - | 5E-05 | 5E-05 |
| | | | Heptachlor Epoxide | - - | - - | 3E-08 | - - | 3E-08 | Liver | - - | - - | 2E-03 | 2E-03 |
| | | | Aluminum | - - | - - | N/A | - - | N/A | Developmental | - - | - - | 7E-03 | 7E-03 |
| | | | Arsenic | - - | - - | N/A | - - | N/A | Skin | - - | - - | N/A | N/A |

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Cadmium (other media) | - - | - - | N/A | - - | N/A | Kidney | - - | - - | 1E-03 | 1E-03 |
| | | | Chromium | - - | - - | 3E-09 | - - | 3E-09 | GI System | - - | - - | 8E-03 | 8E-03 |
| | | | Cobalt | - - | - - | N/A | - - | N/A | Endocrine | - - | - - | N/A | N/A |
| | | | Copper | - - | - - | N/A | - - | N/A | GI System | - - | - - | N/A | N/A |
| | | | Cyanide | - - | - - | N/A | - - | N/A | Endocrine/CNS | - - | - - | N/A | N/A |
| | | | Iron | - - | - - | N/A | - - | N/A | Liver/GI System | - - | - - | N/A | N/A |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | - - | - - | N/A | - - | N/A | CNS | - - | - - | N/A | N/A |
| | | | Mercury (water) | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Vanadium | - - | - - | N/A | - - | N/A | Kidney | - - | - - | 3E-04 | 3E-04 |
| | | | Chemical Total | - - | - - | 6E-08 | - - | 6E-08 | | - - | - - | 2E-02 | 2E-02 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 6E-08 | | | | | 2E-02 |
| | Exposure Medium Total | | | | | | | 6E-08 | | | | | 2E-02 |
| Medium Total | | | | | | | | 6E-08 | | | | | 2E-02 |
| Sediment | Sediment | Unnamed Island | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 2E-07 | - - | 5E-07 | - - | 7E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(a)pyrene | 2E-06 | - - | 6E-06 | - - | 7E-06 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | 1E-07 | - - | 4E-07 | - - | 5E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | 1E-08 | - - | 3E-08 | - - | 4E-08 | N/A | N/A | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | 9E-09 | - - | 2E-08 | - - | 3E-08 | Liver | 2E-04 | - - | 5E-04 | 7E-04 |
| | | | Carbazole | 1E-10 | - - | 3E-10 | - - | 4E-10 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenz(a,h)anthracene | 2E-07 | - - | 6E-07 | - - | 9E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenzofuran | N/A | - - | N/A | - - | N/A | Kidney | 6E-06 | - - | 1E-05 | 2E-05 |
| | | | Indeno(1,2,3-cd)pyrene | 8E-08 | - - | 2E-07 | - - | 3E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Phenanthrene | N/A | - - | N/A | - - | N/A | Kidney | 1E-05 | - - | 4E-05 | 5E-05 |
| | | | | | | | | | | | | | |
| | | | Aroclor-1242 | N/A | - - | N/A | - - | N/A | General Toxicity/Immune System | N/A | - - | N/A | N/A |
| | | | Aroclor-1254 | 1E-08 | - - | 4E-08 | - - | 5E-08 | General Toxicity/Immune System | 2E-03 | - - | 7E-03 | 1E-02 |
| | | | Aroclor-1260 | 2E-08 | - - | 6E-08 | - - | 7E-08 | General Toxicity/Immune System | 3E-03 | - - | 1E-02 | 1E-02 |
| | | | Dieldrin | 6E-09 | - - | 1E-08 | - - | 2E-08 | Liver | 5E-05 | - - | 1E-04 | 2E-04 |
| | | | | | | | | | | | | | |
| | | | Aluminum | N/A | - - | N/A | - - | N/A | Developmental | 2E-03 | - - | N/A | 2E-03 |
| | | | Antimony | N/A | - - | N/A | - - | N/A | General Toxicity | 6E-03 | - - | N/A | 6E-03 |
| | | | Arsenic | 7E-07 | - - | 5E-07 | - - | 1E-06 | Skin | 1E-02 | - - | 8E-03 | 2E-02 |
| | | | Cadmium (other media) | N/A | - - | N/A | - - | N/A | Kidney | 4E-03 | - - | 3E-03 | 7E-03 |
| | | | Chromium | 9E-06 | - - | N/A | - - | 9E-06 | GI System | 2E-02 | - - | N/A | 2E-02 |
| | | | Cobalt | N/A | - - | N/A | - - | N/A | Endocrine | 9E-03 | - - | N/A | 9E-03 |
| | | | Copper | N/A | - - | N/A | - - | N/A | GI System | 2E-03 | - - | N/A | 2E-03 |
| | | | Iron | N/A | - - | N/A | - - | N/A | Liver/GI System | 8E-03 | - - | N/A | 8E-03 |
| | | | Lead | | | | | | | | | | |

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Manganese (other media) | N/A | - - | N/A | - - | N/A | CNS | 1E-03 | - - | N/A | 1E-03 |
| | | | Mercury (other media) | N/A | - - | N/A | - - | N/A | CNS | 2E-03 | - - | N/A | 2E-03 |
| | | | Thallium | N/A | - - | N/A | - - | N/A | N/A | N/A | - - | N/A | N/A |
| | | | Vanadium | N/A | - - | N/A | - - | N/A | Kidney | 8E-04 | - - | N/A | 8E-04 |
| | | | Chemical Total | 1E-05 | - - | 8E-06 | - - | 2E-05 | | 7E-02 | - - | 3E-02 | 1E-01 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 2E-05 | | | | | 1E-01 |
| | Exposure Medium Total | | | | | | | 2E-05 | | | | | 1E-01 |
| Medium Total | | | | | | | | 2E-05 | | | | | 1E-01 |
| Receptor Total | | | | | | | | 4E-05 | | | | | 3E-01 |

- - = Not Evaluated
N/A = Not Applicable
Note that if information provided in the Draft Dioxin Reassessment is applied, the risks for dioxin will be approximately 6 times higher than shown.

Total Risk Across All Media: 4E-05

Total Hazard Across All Media: 3E-01

| | |
|---|---|
| Total Blood HI = | N/A |
| Total Cardiovascular HI = | N/A |
| Total Reproductive HI = | N/A |
| Total General Toxicity HI = | 9E-02 |
| Total GI System HI = | 9E-02 |
| Total Immune System HI = | 7E-02 |
| Total Kidney HI = | 2E-02 |
| Total Liver HI = | 4E-02 |
| Total CNS HI = | 8E-03 |
| Total Skin HI = | 4E-02 |
| Total Spleen HI = | N/A |
| Total Respiratory HI = | N/A |
| Total Developmental HI = | 5E-02 |
| Total Endocrine HI = | 2E-02 |

TABLE 9.1.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Soil | Surface Soil | Unnamed Island | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 6E-08 | - - | 6E-08 | - - | 1E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(a)pyrene | 5E-07 | - - | 6E-07 | - - | 1E-06 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | 8E-08 | - - | 8E-08 | - - | 2E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | 3E-09 | - - | 4E-09 | - - | 7E-09 | N/A | N/A | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | 1E-08 | - - | 9E-09 | - - | 2E-08 | Liver | 3E-04 | - - | 2E-04 | 5E-04 |
| | | | Carbazole | 1E-10 | - - | 1E-10 | - - | 2E-10 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenz(a,h)anthracene | 1E-07 | - - | 1E-07 | - - | 2E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenzofuran | N/A | - - | N/A | - - | N/A | Kidney | 8E-06 | - - | 6E-06 | 1E-05 |
| | | | Indeno(1,2,3-cd)pyrene | 3E-08 | - - | 3E-08 | - - | 7E-08 | N/A | N/A | - - | N/A | N/A |
| | | | Phenanthrene | N/A | - - | N/A | - - | N/A | Kidney | 1E-05 | - - | 1E-05 | 2E-05 |
| | | | Aroclor-1242 | 5E-10 | - - | 6E-10 | - - | 1E-09 | General Toxicity/Immune System | 2E-04 | - - | 2E-04 | 4E-04 |
| | | | Aroclor-1254 | 8E-09 | - - | 9E-09 | - - | 2E-08 | General Toxicity/Immune System | 3E-03 | - - | 3E-03 | 6E-03 |
| | | | Aroclor-1260 | 1E-08 | - - | 1E-08 | - - | 2E-08 | General Toxicity/Immune System | 4E-03 | - - | 4E-03 | 8E-03 |
| | | | Dieldrin | 8E-08 | - - | 7E-08 | - - | 2E-07 | Liver | 7E-04 | - - | 6E-04 | 1E-03 |
| | | | Dioxin TEQ | 2E-07 | - - | 4E-08 | - - | 2E-07 | Developmental | 7E-03 | - - | 2E-03 | 9E-03 |
| | | | Aluminum | N/A | - - | N/A | - - | N/A | Developmental | 9E-04 | - - | N/A | 9E-04 |
| | | | Antimony | N/A | - - | N/A | - - | N/A | General Toxicity | 3E-03 | - - | N/A | 3E-03 |
| | | | Arsenic | 4E-07 | - - | 9E-08 | - - | 4E-07 | Skin | 5E-03 | - - | 1E-03 | 7E-03 |
| | | | Cadmium (other media) | N/A | - - | N/A | - - | N/A | Kidney | 1E-03 | - - | 3E-04 | 1E-03 |
| | | | Chromium | 4E-06 | - - | N/A | - - | 4E-06 | GI System | 7E-03 | - - | N/A | 7E-03 |
| | | | Cobalt | N/A | - - | N/A | - - | N/A | Endocrine | 3E-03 | - - | N/A | 3E-03 |
| | | | Copper | N/A | - - | N/A | - - | N/A | GI System | 1E-03 | - - | N/A | 1E-03 |
| | | | Iron | N/A | - - | N/A | - - | N/A | Liver/GI System | 5E-03 | - - | N/A | 5E-03 |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | N/A | - - | N/A | - - | N/A | CNS | 7E-04 | - - | N/A | 7E-04 |
| | | | Mercury (other media) | N/A | - - | N/A | - - | N/A | CNS | 8E-04 | - - | N/A | 8E-04 |
| | | | Nickel | N/A | - - | N/A | - - | N/A | General Toxicity | 3E-04 | - - | N/A | 3E-04 |
| | | | Thallium | N/A | - - | N/A | - - | N/A | N/A | N/A | - - | N/A | N/A |
| | | | Vanadium | N/A | - - | N/A | - - | N/A | Kidney | 4E-04 | - - | N/A | 4E-04 |
| | | | Chemical Total | 5E-06 | - - | 1E-06 | - - | 6E-06 | | 4E-02 | - - | 1E-02 | 6E-02 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 6E-06 | | | | | 6E-02 |
| | Exposure Medium Total | | | | | | | 6E-06 | | | | | 6E-02 |
| Medium Total | | | | | | | | 6E-06 | | | | | 6E-02 |
| Leachate | Leachate | Unnamed Island | | | | | | | | | | | |
| | | | 4-Methylphenol | - - | - - | N/A | - - | N/A | CNS | - - | - - | N/A | N/A |
| | | | Acenaphthylene | - - | - - | N/A | - - | N/A | Liver | - - | - - | 5E-07 | 5E-07 |

TABLE 9.1.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Atrazine | - - | - - | N/A | - - | N/A | General Toxicity/Cardiovascular | - - | - - | N/A | N/A |
| | | | Benzo(a)anthracene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(a)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(g,h,i)perylene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | - - | - - | 7E-09 | - - | 7E-09 | Liver | - - | - - | 2E-04 | 2E-04 |
| | | | Chrysene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Dibenz(a,h)anthracene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Dibenzofuran | - - | - - | N/A | - - | N/A | Kidney | - - | - - | 1E-04 | 1E-04 |
| | | | Indeno(1,2,3-cd)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Naphthalene | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | 2E-05 | 2E-05 |
| | | | N-Nitrosodiphenylamine | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Pentachlorophenol | - - | - - | N/A | - - | N/A | Liver/Kidney | - - | - - | N/A | N/A |
| | | | Phenanthrene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | 1,4-Dichlorobenzene | - - | - - | 7E-10 | - - | 7E-10 | Liver | - - | - - | 1E-05 | 1E-05 |
| | | | Benzene | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Chlorobenzene | - - | - - | N/A | - - | N/A | Liver/Kidney | - - | - - | N/A | N/A |
| | | | Ethylbenzene | - - | - - | N/A | - - | N/A | Liver/Kidney | - - | - - | N/A | N/A |
| | | | Xylene (total) | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | 3E-06 | 3E-06 |
| | | | Total PCBs | - - | - - | N/A | - - | N/A | General Toxicity/Immune System | - - | - - | N/A | N/A |
| | | | 4,4'-DDD | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDE | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDT | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | alpha-BHC | - - | - - | 3E-10 | - - | 3E-10 | Liver | - - | - - | 5E-08 | 5E-08 |
| | | | alpha-Chlordane | - - | - - | 3E-10 | - - | 3E-10 | Liver | - - | - - | 1E-05 | 1E-05 |
| | | | Dieldrin | - - | - - | 2E-09 | - - | 2E-09 | Liver | - - | - - | 2E-05 | 2E-05 |
| | | | Gamma-Chlordane | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Aluminum | - - | - - | N/A | - - | N/A | Developmental | - - | - - | 7E-05 | 7E-05 |
| | | | Antimony | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | N/A | N/A |
| | | | Arsenic | - - | - - | N/A | - - | N/A | Skin | - - | - - | N/A | N/A |
| | | | Barium | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Beryllium | - - | - - | N/A | - - | N/A | GI System | - - | - - | 6E-05 | 6E-05 |
| | | | Cadmium (other media) | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Chromium | - - | - - | 2E-10 | - - | 2E-10 | GI System | - - | - - | 7E-04 | 7E-04 |
| | | | Cobalt | - - | - - | N/A | - - | N/A | Endocrine | - - | - - | N/A | N/A |
| | | | Copper | - - | - - | N/A | - - | N/A | GI System | - - | - - | N/A | N/A |
| | | | Cyanide | - - | - - | N/A | - - | N/A | Endocrine/CNS | - - | - - | N/A | N/A |
| | | | Iron | - - | - - | N/A | - - | N/A | Liver/GI System | - - | - - | N/A | N/A |

TABLE 9.1.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | - - | - - | N/A | - - | N/A | CNS | - - | - - | N/A | N/A |
| | | | Mercury (water) | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Nickel | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | N/A | N/A |
| | | | Silver | - - | - - | N/A | - - | N/A | Skin | - - | - - | N/A | N/A |
| | | | Thallium | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Vanadium | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Zinc | - - | - - | N/A | - - | N/A | Blood | - - | - - | N/A | N/A |
| | | | Chemical Total | - - | - - | 1E-08 | - - | 1E-08 | | - - | - - | 1E-03 | 1E-03 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 1E-08 | | | | | 1E-03 |
| | Exposure Medium Total | | | | | | | 1E-08 | | | | | 1E-03 |
| Medium Total | | | | | | | | 1E-08 | | | | | 1E-03 |
| Surface Water | Surface Water | Unnamed Island | | | | | | | | | | | |
| | | | Benzo(a)anthracene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(a)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(g,h,i)perylene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | - - | - - | 9E-09 | - - | 9E-09 | Liver | - - | - - | 2E-04 | 2E-04 |
| | | | Chrysene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Indeno(1,2,3-cd)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Naphthalene | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | 3E-06 | 3E-06 |
| | | | Phenanthrene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | 1,4-Dichlorobenzene | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Benzene | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Bromodichloromethane | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Aroclor-1260 | - - | - - | N/A | - - | N/A | General Toxicity/Immune System | - - | - - | N/A | N/A |
| | | | 4,4'-DDD | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDE | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDT | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | alpha-Chlordane | - - | - - | 2E-10 | - - | 2E-10 | Liver | - - | - - | 9E-06 | 9E-06 |
| | | | beta-BHC | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Dieldrin | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Gamma-Chlordane | - - | - - | 7E-10 | - - | 7E-10 | Liver | - - | - - | 3E-05 | 3E-05 |
| | | | Heptachlor Epoxide | - - | - - | 5E-09 | - - | 5E-09 | Liver | - - | - - | 3E-04 | 3E-04 |
| | | | Aluminum | - - | - - | N/A | - - | N/A | Developmental | - - | - - | 4E-03 | 4E-03 |
| | | | Arsenic | - - | - - | N/A | - - | N/A | Skin | - - | - - | N/A | N/A |

TABLE 9.1.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Cadmium (other media) | - - | - - | N/A | - - | N/A | Kidney | - - | - - | 6E-04 | 6E-04 |
| | | | Chromium | - - | - - | 1E-09 | - - | 1E-09 | GI System | - - | - - | 4E-03 | 4E-03 |
| | | | Cobalt | - - | - - | N/A | - - | N/A | Endocrine | - - | - - | N/A | N/A |
| | | | Copper | - - | - - | N/A | - - | N/A | GI System | - - | - - | N/A | N/A |
| | | | Cyanide | - - | - - | N/A | - - | N/A | Endocrine/CNS | - - | - - | N/A | N/A |
| | | | Iron | - - | - - | N/A | - - | N/A | Liver/GI System | - - | - - | N/A | N/A |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | - - | - - | N/A | - - | N/A | CNS | - - | - - | N/A | N/A |
| | | | Mercury (water) | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Vanadium | - - | - - | N/A | - - | N/A | Kidney | - - | - - | 2E-04 | 2E-04 |
| | | | Chemical Total | - - | - - | 2E-08 | - - | 2E-08 | | - - | - - | 9E-03 | 9E-03 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 2E-08 | | | | | 9E-03 |
| | Exposure Medium Total | | | | | | | 2E-08 | | | | | 9E-03 |
| Medium Total | | | | | | | | 2E-08 | | | | | 9E-03 |
| Sediment | Sediment | Unnamed Island | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 4E-08 | - - | 3E-07 | - - | 3E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(a)pyrene | 5E-07 | - - | 3E-06 | - - | 3E-06 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | 3E-08 | - - | 2E-07 | - - | 2E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | 3E-09 | - - | 2E-08 | - - | 2E-08 | N/A | N/A | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | 2E-09 | - - | 1E-08 | - - | 1E-08 | Liver | 6E-05 | - - | 3E-04 | 3E-04 |
| | | | Carbazole | 3E-11 | - - | 2E-10 | - - | 2E-10 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenz(a,h)anthracene | 5E-08 | - - | 3E-07 | - - | 4E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenzofuran | N/A | - - | N/A | - - | N/A | Kidney | 2E-06 | - - | 7E-06 | 9E-06 |
| | | | Indeno(1,2,3-cd)pyrene | 2E-08 | - - | 1E-07 | - - | 1E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Phenanthrene | N/A | - - | N/A | - - | N/A | Kidney | 3E-06 | - - | 2E-05 | 2E-05 |
| | | | | | | | | | | | | | |
| | | | Aroclor-1242 | N/A | - - | N/A | - - | N/A | General Toxicity/Immune System | N/A | - - | N/A | N/A |
| | | | Aroclor-1254 | 2E-09 | - - | 1E-08 | - - | 1E-08 | General Toxicity/Immune System | 6E-04 | - - | 4E-03 | 4E-03 |
| | | | Aroclor-1260 | 2E-09 | - - | 1E-08 | - - | 2E-08 | General Toxicity/Immune System | 8E-04 | - - | 5E-03 | 6E-03 |
| | | | Dieldrin | 1E-09 | - - | 7E-09 | - - | 8E-09 | Liver | 1E-05 | - - | 6E-05 | 7E-05 |
| | | | | | | | | | | | | | |
| | | | Aluminum | N/A | - - | N/A | - - | N/A | Developmental | 5E-04 | - - | N/A | 5E-04 |
| | | | Antimony | N/A | - - | N/A | - - | N/A | General Toxicity | 2E-03 | - - | N/A | 2E-03 |
| | | | Arsenic | 2E-07 | - - | 3E-07 | - - | 4E-07 | Skin | 3E-03 | - - | 4E-03 | 7E-03 |
| | | | Cadmium (other media) | N/A | - - | N/A | - - | N/A | Kidney | 9E-04 | - - | 2E-03 | 3E-03 |
| | | | Chromium | 2E-06 | - - | N/A | - - | 2E-06 | GI System | 4E-03 | - - | N/A | 4E-03 |
| | | | Cobalt | N/A | - - | N/A | - - | N/A | Endocrine | 2E-03 | - - | N/A | 2E-03 |
| | | | Copper | N/A | - - | N/A | - - | N/A | GI System | 6E-04 | - - | N/A | 6E-04 |
| | | | Iron | N/A | - - | N/A | - - | N/A | Liver/GI System | 2E-03 | - - | N/A | 2E-03 |
| | | | Lead | | | | | | | | | | |

TABLE 9.1.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Manganese (other media) | N/A | - - | N/A | - - | N/A | CNS | 2E-04 | - - | N/A | 2E-04 |
| | | | Mercury (other media) | N/A | - - | N/A | - - | N/A | CNS | 4E-04 | - - | N/A | 4E-04 |
| | | | Thallium | N/A | - - | N/A | - - | N/A | N/A | N/A | - - | N/A | N/A |
| | | | Vanadium | N/A | - - | N/A | - - | N/A | Kidney | 2E-04 | - - | N/A | 2E-04 |
| | | | Chemical Total | 3E-06 | - - | 4E-06 | - - | 7E-06 | | 2E-02 | - - | 1E-02 | 3E-02 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 7E-06 | | | | | 3E-02 |
| | Exposure Medium Total | | | | | | | 7E-06 | | | | | 3E-02 |
| Medium Total | | | | | | | | 7E-06 | | | | | 3E-02 |
| Receptor Total | | | | | | | | 1E-05 | | | | | 1E-01 |

- - = Not Evaluated

N/A = Not Applicable

Note that if information provided in the Draft Dioxin Reassessment is applied, the risks for dioxin will be approximately 6 times higher than shown.

Total Risk Across All Media: 1E-05

Total Hazard Across All Media: 1E-01

| | |
|---|---|
| Total Blood HI = | N/A |
| Total Cardiovascular HI = | N/A |
| Total Reproductive HI = | N/A |
| Total General Toxicity HI = | 3E-02 |
| Total GI System HI = | 2E-02 |
| Total Immune System HI = | 2E-02 |
| Total Kidney HI = | 5E-03 |
| Total Liver HI = | 1E-02 |
| Total CNS HI = | 2E-03 |
| Total Skin HI = | 1E-02 |
| Total Spleen HI = | N/A |
| Total Respiratory HI = | N/A |
| Total Developmental HI = | 1E-02 |
| Total Endocrine HI = | 5E-03 |

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk Older Child + Adult | | | | | Non-Carcinogenic Hazard Quotient Older Child | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Soil | Surface/ Subsurface Soil | Unnamed Island | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 8E-07 | - - | 7E-07 | - - | 2E-06 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(a)pyrene | 8E-06 | - - | 7E-06 | - - | 2E-05 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | 8E-07 | - - | 7E-07 | - - | 1E-06 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(g,h,i)perylene | N/A | - - | N/A | - - | N/A | Kidney | 5E-05 | - - | 5E-05 | 1E-04 |
| | | | Benzo(k)fluoranthene | 4E-08 | - - | 4E-08 | - - | 8E-08 | N/A | N/A | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | 4E-07 | - - | 2E-07 | - - | 7E-07 | Liver | 6E-03 | - - | 5E-03 | 1E-02 |
| | | | Carbazole | 8E-10 | - - | 6E-10 | - - | 1E-09 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenz(a,h)anthracene | 1E-06 | - - | 1E-06 | - - | 2E-06 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenzofuran | N/A | - - | N/A | - - | N/A | Kidney | 4E-05 | - - | 4E-05 | 7E-05 |
| | | | Indeno(1,2,3-cd)pyrene | 4E-07 | - - | 3E-07 | - - | 7E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Naphthalene | N/A | - - | N/A | - - | N/A | General Toxicity | 3E-05 | - - | 3E-05 | 7E-05 |
| | | | Phenanthrene | N/A | - - | N/A | - - | N/A | Kidney | 1E-04 | - - | 1E-04 | 3E-04 |
| | | | Aroclor-1242 | 7E-08 | - - | 5E-08 | - - | 1E-07 | General Toxicity/Immune System | 7E-03 | - - | 8E-03 | 2E-02 |
| | | | Aroclor-1254 | 2E-07 | - - | 2E-07 | - - | 4E-07 | General Toxicity/Immune System | 2E-02 | - - | 3E-02 | 5E-02 |
| | | | Aroclor-1260 | 3E-07 | - - | 2E-07 | - - | 5E-07 | General Toxicity/Immune System | 3E-02 | - - | 4E-02 | 6E-02 |
| | | | Dieldrin | 5E-07 | - - | 3E-07 | - - | 8E-07 | Liver | 3E-03 | - - | 2E-03 | 5E-03 |
| | | | Dioxin TEQ | 2E-06 | - - | 3E-07 | - - | 2E-06 | Developmental | 5E-02 | - - | 1E-02 | 6E-02 |
| | | | Aluminum | N/A | - - | N/A | - - | N/A | Developmental | 6E-03 | - - | N/A | 6E-03 |
| | | | Antimony | N/A | - - | N/A | - - | N/A | General Toxicity | 9E-02 | - - | N/A | 9E-02 |
| | | | Arsenic | 4E-06 | - - | 7E-07 | - - | 5E-06 | Skin | 4E-02 | - - | 1E-02 | 5E-02 |
| | | | Cadmium (other media) | N/A | - - | N/A | - - | N/A | Kidney | 4E-03 | - - | 2E-03 | 6E-03 |
| | | | Chromium | 4E-05 | - - | N/A | - - | 4E-05 | GI System | 6E-02 | - - | N/A | 6E-02 |
| | | | Cobalt | N/A | - - | N/A | - - | N/A | Endocrine | 2E-02 | - - | N/A | 2E-02 |
| | | | Copper | N/A | - - | N/A | - - | N/A | GI System | 8E-03 | - - | N/A | 8E-03 |
| | | | Iron | N/A | - - | N/A | - - | N/A | Liver/GI System | 3E-02 | - - | N/A | 3E-02 |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | N/A | - - | N/A | - - | N/A | CNS | 4E-03 | - - | N/A | 4E-03 |
| | | | Mercury (other media) | N/A | - - | N/A | - - | N/A | CNS | 9E-03 | - - | N/A | 9E-03 |
| | | | Nickel | N/A | - - | N/A | - - | N/A | General Toxicity | 2E-03 | - - | N/A | 2E-03 |
| | | | Thallium | N/A | - - | N/A | - - | N/A | N/A | N/A | - - | N/A | N/A |
| | | | Vanadium | N/A | - - | N/A | - - | N/A | Kidney | 2E-03 | - - | N/A | 2E-03 |
| | | | Zinc | N/A | - - | N/A | - - | N/A | Blood | 3E-03 | - - | N/A | 3E-03 |
| | | | Chemical Total | 6E-05 | - - | 1E-05 | - - | 7E-05 | | 4E-01 | - - | 1E-01 | 5E-01 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 7E-05 | | | | | 5E-01 |
| | Exposure Medium Total | | | | | | | 7E-05 | | | | | 5E-01 |
| Medium Total | | | | | | | | 7E-05 | | | | | 5E-01 |

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk Older Child + Adult | | | | | Non-Carcinogenic Hazard Quotient Older Child | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Leachate | Leachate | Unnamed Island | | | | | | | | | | | |
| | | | 4-Methylphenol | - - | - - | N/A | - - | N/A | CNS | - - | - - | N/A | N/A |
| | | | Acenaphthylene | - - | - - | N/A | - - | N/A | Liver | - - | - - | 1E-06 | 1E-06 |
| | | | Atrazine | - - | - - | N/A | - - | N/A | General Toxicity/Cardiovascular | - - | - - | N/A | N/A |
| | | | Benzo(a)anthracene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(a)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(g,h,i)perylene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | - - | - - | 4E-08 | - - | 4E-08 | Liver | - - | - - | 3E-04 | 3E-04 |
| | | | Chrysene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Dibenz(a,h)anthracene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Dibenzofuran | - - | - - | N/A | - - | N/A | Kidney | - - | - - | 2E-04 | 2E-04 |
| | | | Indeno(1,2,3-cd)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Naphthalene | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | 5E-05 | 5E-05 |
| | | | N-Nitrosodiphenylamine | - - | - - | 3E-09 | - - | 3E-09 | N/A | - - | - - | N/A | N/A |
| | | | Pentachlorophenol | - - | - - | N/A | - - | N/A | Liver/Kidney | - - | - - | N/A | N/A |
| | | | Phenanthrene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | 1,4-Dichlorobenzene | - - | - - | 4E-09 | - - | 4E-09 | Liver | - - | - - | 3E-05 | 3E-05 |
| | | | Benzene | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Chlorobenzene | - - | - - | N/A | - - | N/A | Liver/Kidney | - - | - - | N/A | N/A |
| | | | Ethylbenzene | - - | - - | N/A | - - | N/A | Liver/Kidney | - - | - - | N/A | N/A |
| | | | Xylene (total) | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | 6E-06 | 6E-06 |
| | | | Total PCBs | - - | - - | N/A | - - | N/A | General Toxicity/Immune System | - - | - - | N/A | N/A |
| | | | 4,4'-DDD | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDE | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDT | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | alpha-BHC | - - | - - | 1E-09 | - - | 1E-09 | Liver | - - | - - | N/A | N/A |
| | | | alpha-Chlordane | - - | - - | 2E-09 | - - | 2E-09 | Liver | - - | - - | 2E-05 | 2E-05 |
| | | | Dieldrin | - - | - - | 1E-08 | - - | 1E-08 | Liver | - - | - - | 4E-05 | 4E-05 |
| | | | Gamma-Chlordane | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Aluminum | - - | - - | N/A | - - | N/A | Developmental | - - | - - | 1E-04 | 1E-04 |
| | | | Antimony | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | N/A | N/A |
| | | | Arsenic | - - | - - | N/A | - - | N/A | Skin | - - | - - | N/A | N/A |
| | | | Barium | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Beryllium | - - | - - | N/A | - - | N/A | GI System | - - | - - | 1E-04 | 1E-04 |
| | | | Cadmium (other media) | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Chromium | - - | - - | 8E-10 | - - | 8E-10 | GI System | - - | - - | 1E-03 | 1E-03 |

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk Older Child + Adult | | | | | Non-Carcinogenic Hazard Quotient Older Child | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Cobalt | - - | - - | N/A | - - | N/A | Endocrine | - - | - - | N/A | N/A |
| | | | Copper | - - | - - | N/A | - - | N/A | GI System | - - | - - | N/A | N/A |
| | | | Cyanide | - - | - - | N/A | - - | N/A | Endocrine/CNS | - - | - - | N/A | N/A |
| | | | Iron | - - | - - | N/A | - - | N/A | Liver/GI System | - - | - - | N/A | N/A |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | - - | - - | N/A | - - | N/A | CNS | - - | - - | N/A | N/A |
| | | | Mercury (water) | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Nickel | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | N/A | N/A |
| | | | Silver | - - | - - | N/A | - - | N/A | Skin | - - | - - | N/A | N/A |
| | | | Thallium | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Vanadium | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Zinc | - - | - - | N/A | - - | N/A | Blood | - - | - - | N/A | N/A |
| | | | Chemical Total | - - | - - | 6E-08 | - - | 6E-08 | | - - | - - | 2E-03 | 2E-03 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 6E-08 | | | | | 2E-03 |
| | Exposure Medium Total | | | | | | | 6E-08 | | | | | 2E-03 |
| Medium Total | | | | | | | | 6E-08 | | | | | 2E-03 |
| Surface Water | Surface Water | Unnamed Island (wading) | | | | | | | | | | | |
| | | | Benzo(a)anthracene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(a)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(g,h,i)perylene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | - - | - - | 4E-08 | - - | 4E-08 | Liver | - - | - - | 4E-04 | 4E-04 |
| | | | Chrysene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Indeno(1,2,3-cd)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Naphthalene | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | 2E-05 | 2E-05 |
| | | | Phenanthrene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | 1,4-Dichlorobenzene | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Benzene | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Bromodichloromethane | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Aroclor-1260 | - - | - - | N/A | - - | N/A | General Toxicity/Immune System | - - | - - | N/A | N/A |
| | | | 4,4'-DDD | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDE | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDT | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | alpha-Chlordane | - - | - - | 2E-09 | - - | 2E-09 | Liver | - - | - - | 3E-05 | 3E-05 |
| | | | beta-BHC | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Dieldrin | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk Older Child + Adult | | | | | Non-Carcinogenic Hazard Quotient Older Child | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Gamma-Chlordane | - - | - - | 3E-09 | - - | 3E-09 | Liver | - - | - - | 4E-05 | 4E-05 |
| | | | Heptachlor Epoxide | - - | - - | 7E-08 | - - | 7E-08 | Liver | - - | - - | 2E-03 | 2E-03 |
| | | | Aluminum | - - | - - | N/A | - - | N/A | Developmental | - - | - - | 6E-03 | 6E-03 |
| | | | Arsenic | - - | - - | N/A | - - | N/A | Skin | - - | - - | N/A | N/A |
| | | | Cadmium (other media) | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Chromium | - - | - - | 3E-09 | - - | 3E-09 | GI System | - - | - - | 6E-03 | 6E-03 |
| | | | Cobalt | - - | - - | N/A | - - | N/A | Endocrine | - - | - - | N/A | N/A |
| | | | Copper | - - | - - | N/A | - - | N/A | GI System | - - | - - | N/A | N/A |
| | | | Cyanide | - - | - - | N/A | - - | N/A | Endocrine/CNS | - - | - - | N/A | N/A |
| | | | Iron | - - | - - | N/A | - - | N/A | Liver/GI System | - - | - - | N/A | N/A |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | - - | - - | N/A | - - | N/A | CNS | - - | - - | N/A | N/A |
| | | | Mercury (water) | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Vanadium | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Chemical Total | - - | - - | 1E-07 | - - | 1E-07 | | - - | - - | 1E-02 | 1E-02 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 1E-07 | | | | | 1E-02 |
| | Exposure Medium Total | | | | | | | 1E-07 | | | | | 1E-02 |
| Medium Total | | | | | | | | 1E-07 | | | | | 1E-02 |
| Sediment | Sediment | Unnamed Island | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 3E-07 | - - | 6E-07 | - - | 9E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(a)pyrene | 3E-06 | - - | 7E-06 | - - | 1E-05 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | 2E-07 | - - | 5E-07 | - - | 7E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | 2E-08 | - - | 4E-08 | - - | 6E-08 | N/A | N/A | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | 2E-08 | - - | 4E-08 | - - | 7E-08 | Liver | 3E-04 | - - | 4E-04 | 7E-04 |
| | | | Carbazole | 3E-10 | - - | 7E-10 | - - | 1E-09 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenz(a,h)anthracene | 4E-07 | - - | 8E-07 | - - | 1E-06 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenzofuran | N/A | - - | N/A | - - | N/A | Kidney | 9E-06 | - - | 1E-05 | 2E-05 |
| | | | Indeno(1,2,3-cd)pyrene | 1E-07 | - - | 3E-07 | - - | 4E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Phenanthrene | N/A | - - | N/A | - - | N/A | Kidney | 2E-05 | - - | 3E-05 | 5E-05 |
| | | | Aroclor-1242 | N/A | - - | N/A | - - | N/A | General Toxicity/Immune System | N/A | - - | N/A | N/A |
| | | | Aroclor-1254 | 3E-08 | - - | 9E-08 | - - | 1E-07 | General Toxicity/Immune System | 3E-03 | - - | 6E-03 | 9E-03 |
| | | | Aroclor-1260 | 5E-08 | - - | 1E-07 | - - | 2E-07 | General Toxicity/Immune System | 4E-03 | - - | 8E-03 | 1E-02 |
| | | | Dieldrin | 2E-08 | - - | 3E-08 | - - | 4E-08 | Liver | 7E-05 | - - | 9E-05 | 2E-04 |
| | | | Aluminum | N/A | - - | N/A | - - | N/A | Developmental | 3E-03 | - - | N/A | 3E-03 |
| | | | Antimony | N/A | - - | N/A | - - | N/A | General Toxicity | 9E-03 | - - | N/A | 9E-03 |
| | | | Arsenic | 2E-06 | - - | 1E-06 | - - | 3E-06 | Skin | 2E-02 | - - | 6E-03 | 2E-02 |
| | | | Cadmium (other media) | N/A | - - | N/A | - - | N/A | Kidney | 5E-03 | - - | 3E-03 | 8E-03 |

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk Older Child + Adult | | | | | Non-Carcinogenic Hazard Quotient Older Child | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Chromium | 1E-05 | - - | N/A | - - | 1E-05 | GI System | 2E-02 | - - | N/A | 2E-02 |
| | | | Cobalt | N/A | - - | N/A | - - | N/A | Endocrine | 1E-02 | - - | N/A | 1E-02 |
| | | | Copper | N/A | - - | N/A | - - | N/A | GI System | 3E-03 | - - | N/A | 3E-03 |
| | | | Iron | N/A | - - | N/A | - - | N/A | Liver/GI System | 1E-02 | - - | N/A | 1E-02 |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | N/A | - - | N/A | - - | N/A | CNS | 1E-03 | - - | N/A | 1E-03 |
| | | | Mercury (other media) | N/A | - - | N/A | - - | N/A | CNS | 2E-03 | - - | N/A | 2E-03 |
| | | | Thallium | N/A | - - | N/A | - - | N/A | N/A | N/A | - - | N/A | N/A |
| | | | Vanadium | N/A | - - | N/A | - - | N/A | Kidney | 1E-03 | - - | N/A | 1E-03 |
| | | | Chemical Total | 2E-05 | - - | 1E-05 | - - | 3E-05 | | 1E-01 | - - | 2E-02 | 1E-01 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 3E-05 | | | | | 1E-01 |
| | Exposure Medium Total | | | | | | | 3E-05 | | | | | 1E-01 |
| Medium Total | | | | | | | | 3E-05 | | | | | 1E-01 |
| Receptor Total | | | | | | | | 1E-04 | | | | | 6E-01 |

- - = Not Evaluated
N/A = Not Applicable
Note that if information provided in the Draft Dioxin Reassessment is applied, the risks for dioxin will be approximately 6 times higher than shown.

Total Risk Across All Media: 1E-04

Total Hazard Across All Media: 6E-01

| | |
|---|---|
| Total Blood HI = | 3E-03 |
| Total Cardiovascular HI = | N/A |
| Total Reproductive HI = | N/A |
| Total General Toxicity HI = | 2E-01 |
| Total GI System HI = | 1E-01 |
| Total Immune System HI = | 1E-01 |
| Total Kidney HI = | 2E-02 |
| Total Liver HI = | 6E-02 |
| Total CNS HI = | 2E-02 |
| Total Skin HI = | 7E-02 |
| Total Spleen HI = | N/A |
| Total Respiratory HI = | N/A |
| Total Developmental HI = | 8E-02 |
| Total Endocrine HI = | 3E-02 |

TABLE 9.2.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk Older Child + Adult | | | | | Non-Carcinogenic Hazard Quotient Older Child | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Soil | Surface/ Subsurface Soil | Unnamed Island | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 2E-07 | - - | 4E-07 | - - | 5E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(a)pyrene | 2E-06 | - - | 3E-06 | - - | 5E-06 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | 2E-07 | - - | 3E-07 | - - | 5E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(g,h,i)perylene | N/A | - - | N/A | - - | N/A | Kidney | 1E-05 | - - | 3E-05 | 4E-05 |
| | | | Benzo(k)fluoranthene | 1E-08 | - - | 2E-08 | - - | 3E-08 | N/A | N/A | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | 1E-07 | - - | 1E-07 | - - | 2E-07 | Liver | 1E-03 | - - | 3E-03 | 4E-03 |
| | | | Carbazole | 2E-10 | - - | 3E-10 | - - | 5E-10 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenz(a,h)anthracene | 3E-07 | - - | 5E-07 | - - | 8E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenzofuran | N/A | - - | N/A | - - | N/A | Kidney | 1E-05 | - - | 2E-05 | 3E-05 |
| | | | Indeno(1,2,3-cd)pyrene | 8E-08 | - - | 2E-07 | - - | 2E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Naphthalene | N/A | - - | N/A | - - | N/A | General Toxicity | 8E-06 | - - | 2E-05 | 2E-05 |
| | | | Phenanthrene | N/A | - - | N/A | - - | N/A | Kidney | 3E-05 | - - | 7E-05 | 1E-04 |
| | | | Aroclor-1242 | 8E-09 | - - | 1E-08 | - - | 2E-08 | General Toxicity/Immune System | 2E-03 | - - | 4E-03 | 6E-03 |
| | | | Aroclor-1254 | 2E-08 | - - | 4E-08 | - - | 6E-08 | General Toxicity/Immune System | 5E-03 | - - | 1E-02 | 2E-02 |
| | | | Aroclor-1260 | 3E-08 | - - | 5E-08 | - - | 9E-08 | General Toxicity/Immune System | 7E-03 | - - | 2E-02 | 2E-02 |
| | | | Dieldrin | 1E-07 | - - | 1E-07 | - - | 2E-07 | Liver | 6E-04 | - - | 1E-03 | 2E-03 |
| | | | Dioxin TEQ | 4E-07 | - - | 2E-07 | - - | 6E-07 | Developmental | 1E-02 | - - | 7E-03 | 2E-02 |
| | | | Aluminum | N/A | - - | N/A | - - | N/A | Developmental | 1E-03 | - - | N/A | 1E-03 |
| | | | Antimony | N/A | - - | N/A | - - | N/A | General Toxicity | 2E-02 | - - | N/A | 2E-02 |
| | | | Arsenic | 1E-06 | - - | 3E-07 | - - | 1E-06 | Skin | 9E-03 | - - | 5E-03 | 1E-02 |
| | | | Cadmium (other media) | N/A | - - | N/A | - - | N/A | Kidney | 1E-03 | - - | 8E-04 | 2E-03 |
| | | | Chromium | 9E-06 | - - | N/A | - - | 9E-06 | GI System | 1E-02 | - - | N/A | 1E-02 |
| | | | Cobalt | N/A | - - | N/A | - - | N/A | Endocrine | 4E-03 | - - | N/A | 4E-03 |
| | | | Copper | N/A | - - | N/A | - - | N/A | GI System | 2E-03 | - - | N/A | 2E-03 |
| | | | Iron | N/A | - - | N/A | - - | N/A | Liver/GI System | 8E-03 | - - | N/A | 8E-03 |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | N/A | - - | N/A | - - | N/A | CNS | 1E-03 | - - | N/A | 1E-03 |
| | | | Mercury (other media) | N/A | - - | N/A | - - | N/A | CNS | 2E-03 | - - | N/A | 2E-03 |
| | | | Nickel | N/A | - - | N/A | - - | N/A | General Toxicity | 5E-04 | - - | N/A | 5E-04 |
| | | | Thallium | N/A | - - | N/A | - - | N/A | N/A | N/A | - - | N/A | N/A |
| | | | Vanadium | N/A | - - | N/A | - - | N/A | Kidney | 5E-04 | - - | N/A | 5E-04 |
| | | | Zinc | N/A | - - | N/A | - - | N/A | Blood | 6E-04 | - - | N/A | 6E-04 |
| | | | Chemical Total | 1E-05 | - - | 6E-06 | - - | 2E-05 | | 1E-01 | - - | 5E-02 | 1E-01 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 2E-05 | | | | | 1E-01 |
| | Exposure Medium Total | | | | | | | 2E-05 | | | | | 1E-01 |
| Medium Total | | | | | | | | 2E-05 | | | | | 1E-01 |

TABLE 9.2.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk Older Child + Adult | | | | | Non-Carcinogenic Hazard Quotient Older Child | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Leachate | Leachate | Unnamed Island | | | | | | | | | | | |
| | | | 4-Methylphenol | - - | - - | N/A | - - | N/A | CNS | - - | - - | N/A | N/A |
| | | | Acenaphthylene | - - | - - | N/A | - - | N/A | Liver | - - | - - | 5E-07 | 5E-07 |
| | | | Atrazine | - - | - - | N/A | - - | N/A | General Toxicity/Cardiovascular | - - | - - | N/A | N/A |
| | | | Benzo(a)anthracene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(a)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(g,h,i)perylene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | - - | - - | 2E-08 | - - | 2E-08 | Liver | - - | - - | 2E-04 | 2E-04 |
| | | | Chrysene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Dibenz(a,h)anthracene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Dibenzofuran | - - | - - | N/A | - - | N/A | Kidney | - - | - - | 1E-04 | 1E-04 |
| | | | Indeno(1,2,3-cd)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Naphthalene | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | 2E-05 | 2E-05 |
| | | | N-Nitrosodiphenylamine | - - | - - | 1E-09 | - - | 1E-09 | N/A | - - | - - | N/A | N/A |
| | | | Pentachlorophenol | - - | - - | N/A | - - | N/A | Liver/Kidney | - - | - - | N/A | N/A |
| | | | Phenanthrene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | 1,4-Dichlorobenzene | - - | - - | 2E-09 | - - | 2E-09 | Liver | - - | - - | 1E-05 | 1E-05 |
| | | | Benzene | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Chlorobenzene | - - | - - | N/A | - - | N/A | Liver/Kidney | - - | - - | N/A | N/A |
| | | | Ethylbenzene | - - | - - | N/A | - - | N/A | Liver/Kidney | - - | - - | N/A | N/A |
| | | | Xylene (total) | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | 3E-06 | 3E-06 |
| | | | Total PCBs | - - | - - | N/A | - - | N/A | General Toxicity/Immune System | - - | - - | N/A | N/A |
| | | | 4,4'-DDD | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDE | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDT | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | alpha-BHC | - - | - - | 6E-10 | - - | 6E-10 | Liver | - - | - - | N/A | N/A |
| | | | alpha-Chlordane | - - | - - | 7E-10 | - - | 7E-10 | Liver | - - | - - | 1E-05 | 1E-05 |
| | | | Dieldrin | - - | - - | 5E-09 | - - | 5E-09 | Liver | - - | - - | 2E-05 | 2E-05 |
| | | | Gamma-Chlordane | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Aluminum | - - | - - | N/A | - - | N/A | Developmental | - - | - - | 7E-05 | 7E-05 |
| | | | Antimony | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | N/A | N/A |
| | | | Arsenic | - - | - - | N/A | - - | N/A | Skin | - - | - - | N/A | N/A |
| | | | Barium | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Beryllium | - - | - - | N/A | - - | N/A | GI System | - - | - - | 6E-05 | 6E-05 |
| | | | Cadmium (other media) | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Chromium | - - | - - | 3E-10 | - - | 3E-10 | GI System | - - | - - | 7E-04 | 7E-04 |
| | | | Cobalt | - - | - - | N/A | - - | N/A | Endocrine | - - | - - | N/A | N/A |

TABLE 9.2.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk Older Child + Adult | | | | | Non-Carcinogenic Hazard Quotient Older Child | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Copper | - - | - - | N/A | - - | N/A | GI System | - - | - - | N/A | N/A |
| | | | Cyanide | - - | - - | N/A | - - | N/A | Endocrine/CNS | - - | - - | N/A | N/A |
| | | | Iron | - - | - - | N/A | - - | N/A | Liver/GI System | - - | - - | N/A | N/A |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | - - | - - | N/A | - - | N/A | CNS | - - | - - | N/A | N/A |
| | | | Mercury (water) | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Nickel | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | N/A | N/A |
| | | | Silver | - - | - - | N/A | - - | N/A | Skin | - - | - - | N/A | N/A |
| | | | Thallium | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Vanadium | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Zinc | - - | - - | N/A | - - | N/A | Blood | - - | - - | N/A | N/A |
| | | | Chemical Total | - - | - - | 3E-08 | - - | 3E-08 | | - - | - - | 1E-03 | 1E-03 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 3E-08 | | | | | 1E-03 |
| | Exposure Medium Total | | | | | | | 3E-08 | | | | | 1E-03 |
| Medium Total | | | | | | | | 3E-08 | | | | | 1E-03 |
| Surface Water | Surface Water | Unnamed Island (wading) | | | | | | | | | | | |
| | | | Benzo(a)anthracene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(a)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Benzo(g,h,i)perylene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | - - | - - | 2E-08 | - - | 2E-08 | Liver | - - | - - | 2E-04 | 2E-04 |
| | | | Chrysene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Indeno(1,2,3-cd)pyrene | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | Naphthalene | - - | - - | N/A | - - | N/A | General Toxicity | - - | - - | 2E-06 | 2E-06 |
| | | | Phenanthrene | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | 1,4-Dichlorobenzene | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Benzene | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Bromodichloromethane | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Aroclor-1260 | - - | - - | N/A | - - | N/A | General Toxicity/Immune System | - - | - - | N/A | N/A |
| | | | 4,4'-DDD | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDE | - - | - - | N/A | - - | N/A | N/A | - - | - - | N/A | N/A |
| | | | 4,4'-DDT | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | alpha-Chlordane | - - | - - | 4E-10 | - - | 4E-10 | Liver | - - | - - | 7E-06 | 7E-06 |
| | | | beta-BHC | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Dieldrin | - - | - - | N/A | - - | N/A | Liver | - - | - - | N/A | N/A |
| | | | Gamma-Chlordane | - - | - - | 1E-09 | - - | 1E-09 | Liver | - - | - - | 2E-05 | 2E-05 |
| | | | Heptachlor Epoxide | - - | - - | 9E-09 | - - | 9E-09 | Liver | - - | - - | 2E-04 | 2E-04 |

TABLE 9.2.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk Older Child + Adult | | | | | Non-Carcinogenic Hazard Quotient Older Child | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Aluminum | - - | - - | N/A | - - | N/A | Developmental | - - | - - | 3E-03 | 3E-03 |
| | | | Arsenic | - - | - - | N/A | - - | N/A | Skin | - - | - - | N/A | N/A |
| | | | Cadmium (other media) | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Chromium | - - | - - | 1E-09 | - - | 1E-09 | GI System | - - | - - | 3E-03 | 3E-03 |
| | | | Cobalt | - - | - - | N/A | - - | N/A | Endocrine | - - | - - | N/A | N/A |
| | | | Copper | - - | - - | N/A | - - | N/A | GI System | - - | - - | N/A | N/A |
| | | | Cyanide | - - | - - | N/A | - - | N/A | Endocrine/CNS | - - | - - | N/A | N/A |
| | | | Iron | - - | - - | N/A | - - | N/A | Liver/GI System | - - | - - | N/A | N/A |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | - - | - - | N/A | - - | N/A | CNS | - - | - - | N/A | N/A |
| | | | Mercury (water) | - - | - - | N/A | - - | N/A | Immune System | - - | - - | N/A | N/A |
| | | | Vanadium | - - | - - | N/A | - - | N/A | Kidney | - - | - - | N/A | N/A |
| | | | Chemical Total | - - | - - | 3E-08 | - - | 3E-08 | | - - | - - | 6E-03 | 6E-03 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 3E-08 | | | | | 6E-03 |
| | Exposure Medium Total | | | | | | | 3E-08 | | | | | 6E-03 |
| Medium Total | | | | | | | | 3E-08 | | | | | 6E-03 |
| Sediment | Sediment | Unnamed Island | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 7E-08 | - - | 3E-07 | - - | 4E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(a)pyrene | 7E-07 | - - | 3E-06 | - - | 4E-06 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(b)fluoranthene | 5E-08 | - - | 2E-07 | - - | 3E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(k)fluoranthene | 4E-09 | - - | 2E-08 | - - | 2E-08 | N/A | N/A | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | 5E-09 | - - | 2E-08 | - - | 2E-08 | Liver | 8E-05 | - - | 2E-04 | 3E-04 |
| | | | Carbazole | 6E-11 | - - | 3E-10 | - - | 4E-10 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenz(a,h)anthracene | 8E-08 | - - | 3E-07 | - - | 4E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Dibenzofuran | N/A | - - | N/A | - - | N/A | Kidney | 2E-06 | - - | 6E-06 | 8E-06 |
| | | | Indeno(1,2,3-cd)pyrene | 3E-08 | - - | 1E-07 | - - | 2E-07 | N/A | N/A | - - | N/A | N/A |
| | | | Phenanthrene | N/A | - - | N/A | - - | N/A | Kidney | 5E-06 | - - | 2E-05 | 2E-05 |
| | | | Aroclor-1242 | N/A | - - | N/A | - - | N/A | General Toxicity/Immune System | N/A | - - | N/A | N/A |
| | | | Aroclor-1254 | 4E-09 | - - | 2E-08 | - - | 2E-08 | General Toxicity/Immune System | 8E-04 | - - | 3E-03 | 4E-03 |
| | | | Aroclor-1260 | 5E-09 | - - | 3E-08 | - - | 3E-08 | General Toxicity/Immune System | 1E-03 | - - | 4E-03 | 5E-03 |
| | | | Dieldrin | 3E-09 | - - | 1E-08 | - - | 2E-08 | Liver | 2E-05 | - - | 5E-05 | 6E-05 |
| | | | Aluminum | N/A | - - | N/A | - - | N/A | Developmental | 7E-04 | - - | N/A | 7E-04 |
| | | | Antimony | N/A | - - | N/A | - - | N/A | General Toxicity | 2E-03 | - - | N/A | 2E-03 |
| | | | Arsenic | 4E-07 | - - | 5E-07 | - - | 9E-07 | Skin | 4E-03 | - - | 3E-03 | 7E-03 |
| | | | Cadmium (other media) | N/A | - - | N/A | - - | N/A | Kidney | 1E-03 | - - | 1E-03 | 3E-03 |
| | | | Chromium | 3E-06 | - - | N/A | - - | 3E-06 | GI System | 6E-03 | - - | N/A | 6E-03 |
| | | | Cobalt | N/A | - - | N/A | - - | N/A | Endocrine | 3E-03 | - - | N/A | 3E-03 |

TABLE 9.2.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk Older Child + Adult | | | | | Non-Carcinogenic Hazard Quotient Older Child | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Copper | N/A | - - | N/A | - - | N/A | GI System | 8E-04 | - - | N/A | 8E-04 |
| | | | Iron | N/A | - - | N/A | - - | N/A | Liver/GI System | 3E-03 | - - | N/A | 3E-03 |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | N/A | - - | N/A | - - | N/A | CNS | 3E-04 | - - | N/A | 3E-04 |
| | | | Mercury (other media) | N/A | - - | N/A | - - | N/A | CNS | 5E-04 | - - | N/A | 5E-04 |
| | | | Thallium | N/A | - - | N/A | - - | N/A | N/A | N/A | - - | N/A | N/A |
| | | | Vanadium | N/A | - - | N/A | - - | N/A | Kidney | 3E-04 | - - | N/A | 3E-04 |
| | | | Chemical Total | 5E-06 | - - | 5E-06 | - - | 9E-06 | | 2E-02 | - - | 1E-02 | 4E-02 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 9E-06 | | | | | 4E-02 |
| | Exposure Medium Total | | | | | | | 9E-06 | | | | | 4E-02 |
| Medium Total | | | | | | | | 9E-06 | | | | | 4E-02 |
| Receptor Total | | | | | | | | 3E-05 | | | | | 2E-01 |

- - = Not Evaluated

N/A = Not Applicable

Note that if information provided in the Draft Dioxin Reassessment is applied, the risks for dioxin will be approximately 6 times higher than shown.

Total Risk Across All Media: 3E-05

Total Hazard Across All Media: 2E-01

| | |
|---|---|
| Total Blood HI = | 6E-04 |
| Total Cardiovascular HI = | N/A |
| Total Reproductive HI = | N/A |
| Total General Toxicity HI = | 8E-02 |
| Total GI System HI = | 4E-02 |
| Total Immune System HI = | 6E-02 |
| Total Kidney HI = | 6E-03 |
| Total Liver HI = | 2E-02 |
| Total CNS HI = | 4E-03 |
| Total Skin HI = | 2E-02 |
| Total Spleen HI = | N/A |
| Total Respiratory HI = | N/A |
| Total Developmental HI = | 2E-02 |
| Total Endocrine HI = | 7E-03 |

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Soil | Surface + Subsurface Soil | Unnamed Island | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 5E-08 | 4E-13 | 2E-08 | - - | 7E-08 | N/A | N/A | N/A | N/A | N/A |
| | | | Benzo(a)pyrene | 5E-07 | 4E-12 | 2E-07 | - - | 7E-07 | N/A | N/A | N/A | N/A | N/A |
| | | | Benzo(b)fluoranthene | 5E-08 | 4E-13 | 2E-08 | - - | 7E-08 | N/A | N/A | N/A | N/A | N/A |
| | | | Benzo(g,h,i)perylene | N/A | N/A | N/A | - - | N/A | Kidney | 9E-06 | 5E-08 | 4E-06 | 1E-05 |
| | | | Benzo(k)fluoranthene | 3E-09 | 2E-13 | 1E-09 | - - | 4E-09 | N/A | N/A | N/A | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | 5E-08 | 4E-13 | 1E-08 | - - | 6E-08 | Liver | 1E-02 | N/A | 4E-03 | 2E-02 |
| | | | Carbazole | 9E-11 | N/A | 4E-11 | - - | 1E-10 | N/A | N/A | N/A | N/A | N/A |
| | | | Dibenz(a,h)anthracene | 8E-08 | 6E-13 | 3E-08 | - - | 1E-07 | N/A | N/A | N/A | N/A | N/A |
| | | | Dibenzofuran | N/A | N/A | N/A | - - | N/A | Kidney | 8E-05 | N/A | 2E-05 | 1E-04 |
| | | | Indeno(1,2,3-cd)pyrene | 2E-08 | 2E-13 | 9E-09 | - - | 3E-08 | N/A | N/A | N/A | N/A | N/A |
| | | | Naphthalene | N/A | 3E-14 | N/A | - - | 3E-14 | General Toxicity | 6E-06 | 2E-08 | 2E-06 | 8E-06 |
| | | | Phenanthrene | N/A | N/A | N/A | - - | N/A | Kidney | 2E-05 | 1E-07 | 1E-05 | 3E-05 |
| | | | Aroclor-1242 | 8E-09 | 1E-13 | 3E-09 | - - | 1E-08 | General Toxicity/Immune System | 4E-03 | N/A | 2E-03 | 6E-03 |
| | | | Aroclor-1254 | 2E-08 | 3E-13 | 1E-08 | - - | 3E-08 | General Toxicity/Immune System | 1E-02 | N/A | 6E-03 | 2E-02 |
| | | | Aroclor-1260 | 3E-08 | 5E-13 | 1E-08 | - - | 5E-08 | General Toxicity/Immune System | 2E-02 | N/A | 8E-03 | 3E-02 |
| | | | Dieldrin | 6E-08 | 9E-13 | 2E-08 | - - | 7E-08 | Liver | 5E-03 | N/A | 2E-03 | 7E-03 |
| | | | Dioxin TEQ | 2E-07 | 3E-12 | 2E-08 | - - | 2E-07 | Immune System | 5E-03 | 1E-07 | 4E-04 | 5E-03 |
| | | | Aluminum | N/A | N/A | N/A | - - | N/A | Developmental | 1E-02 | 1E-04 | N/A | 1E-02 |
| | | | Antimony | N/A | N/A | N/A | - - | N/A | General Toxicity | 2E-01 | N/A | N/A | 2E-01 |
| | | | Arsenic | 5E-07 | 7E-11 | 4E-08 | - - | 5E-07 | Skin | 7E-02 | 8E-05 | 7E-03 | 8E-02 |
| | | | Cadmium (other media) | N/A | 1E-11 | N/A | - - | 1E-11 | Kidney | 9E-03 | 5E-05 | 1E-03 | 1E-02 |
| | | | Chromium | 2E-06 | 2E-08 | N/A | - - | 2E-06 | GI System | 4E-02 | 6E-05 | N/A | 4E-02 |
| | | | Cobalt | N/A | 6E-11 | N/A | - - | 6E-11 | Endocrine | 3E-03 | 3E-05 | N/A | 3E-03 |
| | | | Copper | N/A | N/A | N/A | - - | N/A | GI System | 2E-02 | N/A | N/A | 2E-02 |
| | | | Iron | N/A | N/A | N/A | - - | N/A | Liver/GI System | 7E-02 | N/A | N/A | 7E-02 |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | N/A | N/A | N/A | - - | N/A | CNS | 9E-03 | 6E-04 | N/A | 9E-03 |
| | | | Mercury (other media) | N/A | N/A | N/A | - - | N/A | CNS | 2E-02 | 3E-06 | N/A | 2E-02 |
| | | | Nickel | N/A | 2E-11 | N/A | - - | 2E-11 | General Toxicity | 4E-03 | 2E-05 | N/A | 4E-03 |
| | | | Thallium | N/A | N/A | N/A | - - | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | Vanadium | N/A | N/A | N/A | - - | N/A | Kidney | 4E-03 | N/A | N/A | 4E-03 |
| | | | Zinc | N/A | N/A | N/A | - - | N/A | Blood | 5E-03 | N/A | N/A | 5E-03 |
| | | | Chemical Total | 4E-06 | 2E-08 | 4E-07 | - - | 5E-06 | | 5E-01 | 1E-03 | 3E-02 | 5E-01 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 5E-06 | | | | | 5E-01 |
| | Exposure Medium Total | | | | | | | 5E-06 | | | | | 5E-01 |

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | Outdoor (Trench) Air | Unnamed Island | | | | | | | | | | | |
| | | | 1,1'-Biphenyl | - - | N/A | - - | - - | N/A | N/A | - - | N/A | - - | N/A |
| | | | 2-Methylnaphthalene | - - | N/A | - - | - - | N/A | Respiratory | - - | 2E-02 | - - | 2E-02 |
| | | | Acenaphthene | - - | N/A | - - | - - | N/A | Respiratory | - - | 2E-03 | - - | 2E-03 |
| | | | Acenaphthylene | - - | N/A | - - | - - | N/A | Respiratory | - - | 4E-03 | - - | 4E-03 |
| | | | Acetophenone | - - | N/A | - - | - - | N/A | N/A | - - | N/A | - - | N/A |
| | | | Benzaldehyde | - - | N/A | - - | - - | N/A | N/A | - - | N/A | - - | N/A |
| | | | Naphthalene | - - | 8E-08 | - - | - - | 8E-08 | Respiratory | - - | 6E-02 | - - | 6E-02 |
| | | | Nitrobenzene | - - | 1E-07 | - - | - - | 1E-07 | Respiratory | - - | 2E-02 | - - | 2E-02 |
| | | | Phenanthrene | - - | N/A | - - | - - | N/A | Respiratory | - - | 5E-03 | - - | 5E-03 |
| | | | 1,1-Dichloroethene | - - | N/A | - - | - - | N/A | Liver | - - | 1E-02 | - - | 1E-02 |
| | | | 1,4-Dichlorobenzene | - - | 5E-08 | - - | - - | 5E-08 | Liver | - - | 1E-04 | - - | 1E-04 |
| | | | Benzene | - - | 5E-08 | - - | - - | 5E-08 | Immune System | - - | 5E-03 | - - | 5E-03 |
| | | | Carbon disulfide | - - | N/A | - - | - - | N/A | CNS | - - | 5E-03 | - - | 5E-03 |
| | | | Carbon tetrachloride | - - | 4E-08 | - - | - - | 4E-08 | Liver | - - | 5E-03 | - - | 5E-03 |
| | | | Chlorobenzene | - - | N/A | - - | - - | N/A | Liver/Kidney | - - | 8E-04 | - - | 8E-04 |
| | | | Cyclohexane, methyl- | - - | N/A | - - | - - | N/A | Kidney | - - | 4E-03 | - - | 4E-03 |
| | | | Dichlorodifluoromethane | - - | N/A | - - | - - | N/A | Liver | - - | 7E-04 | - - | 7E-04 |
| | | | Methyl acetate | - - | N/A | - - | - - | N/A | N/A | - - | N/A | - - | N/A |
| | | | Methylene chloride | - - | 5E-09 | - - | - - | 5E-09 | Liver | - - | 7E-04 | - - | 7E-04 |
| | | | Tetrachloroethene | - - | 5E-08 | - - | - - | 5E-08 | CNS | - - | 2E-03 | - - | 2E-03 |
| | | | Trichloroethene | - - | 9E-09 | - - | - - | 9E-09 | CNS | - - | 3E-03 | - - | 3E-03 |
| | | | Xylene (Total) | - - | N/A | - - | - - | N/A | CNS | - - | 1E-03 | - - | 1E-03 |
| | | | Chemical Total | - - | 4E-07 | - - | - - | 4E-07 | | - - | 1E-01 | - - | 1E-01 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 4E-07 | | | | | 1E-01 |
| | Exposure Medium Total | | | | | | | 4E-07 | | | | | 1E-01 |
| Medium Total | | | | | | | | 5E-06 | | | | | 7E-01 |
| Groundwater | Groundwater | Shallow Monitoring Wells | | | | | | | | | | | |
| | | | Atrazine | 3E-09 | - - | N/A | - - | 3E-09 | General Toxicity/Cardiovascular | 2E-05 | - - | N/A | 2E-05 |
| | | | Benzo(a)anthracene | 1E-10 | - - | N/A | - - | 1E-10 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(a)pyrene | 4E-10 | - - | N/A | - - | 4E-10 | N/A | N/A | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | 1E-10 | - - | 6E-10 | - - | 7E-10 | Liver | 3E-05 | - - | 1E-04 | 2E-04 |
| | | | Dibenzofuran | N/A | - - | N/A | - - | N/A | Kidney | 2E-05 | - - | 9E-05 | 1E-04 |
| | | | Naphthalene | N/A | - - | N/A | - - | N/A | General Toxicity | 1E-06 | - - | N/A | 1E-06 |
| | | | N-Nitrosodiphenylamine | 8E-11 | - - | N/A | - - | 8E-11 | N/A | N/A | - - | N/A | N/A |
| | | | Phenanthrene | N/A | - - | N/A | - - | N/A | Kidney | 2E-07 | - - | N/A | 2E-07 |
| | | | 1,4-Dichlorobenzene | 3E-11 | - - | N/A | - - | 3E-11 | Liver | 6E-06 | - - | N/A | 6E-06 |
| | | | Benzene | 7E-10 | - - | N/A | - - | 7E-10 | Immune System | 8E-05 | - - | N/A | 8E-05 |
| | | | Chlorobenzene | N/A | - - | N/A | - - | N/A | Liver/Kidney | 4E-05 | - - | N/A | 4E-05 |

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Aroclor-1242 | 2E-09 | - - | N/A | - - | 2E-09 | General Toxicity/Immune System | 1E-03 | - - | N/A | 1E-03 |
| | | | Aroclor-1254 | 3E-08 | - - | N/A | - - | 3E-08 | General Toxicity/Immune System | 2E-02 | - - | N/A | 2E-02 |
| | | | Antimony | N/A | - - | N/A | - - | N/A | General Toxicity | 1E-03 | - - | N/A | 1E-03 |
| | | | Arsenic | 2E-08 | - - | N/A | - - | 2E-08 | Skin | 3E-03 | - - | N/A | 3E-03 |
| | | | Barium | N/A | - - | N/A | - - | N/A | Kidney | 8E-04 | - - | N/A | 8E-04 |
| | | | Cadmium (drinking water) | N/A | - - | N/A | - - | N/A | Kidney | 4E-03 | - - | N/A | 4E-03 |
| | | | Chromium | 9E-09 | - - | N/A | - - | 9E-09 | GI System | 1E-04 | - - | N/A | 1E-04 |
| | | | Cobalt | N/A | - - | N/A | - - | N/A | Endocrine | 1E-03 | - - | N/A | 1E-03 |
| | | | Iron | N/A | - - | N/A | - - | N/A | Liver/GI System | 1E-02 | - - | N/A | 1E-02 |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (drinking water) | N/A | - - | N/A | - - | N/A | CNS | 1E-02 | - - | N/A | 1E-02 |
| | | | Nickel | N/A | - - | N/A | - - | N/A | General Toxicity | 5E-04 | - - | N/A | 5E-04 |
| | | | Thallium | N/A | - - | N/A | - - | N/A | N/A | N/A | - - | N/A | N/A |
| | | | Vanadium | N/A | - - | N/A | - - | N/A | Kidney | 6E-05 | - - | N/A | 6E-05 |
| | | | Zinc | N/A | - - | N/A | - - | N/A | Blood | 1E-03 | - - | N/A | 1E-03 |
| | | | Chemical Total | 7E-08 | - - | 6E-10 | - - | 7E-08 | | 6E-02 | - - | 2E-04 | 6E-02 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 7E-08 | | | | | 6E-02 |
| | Exposure Medium Total | | | | | | | 7E-08 | | | | | 6E-02 |
| Medium Total | | | | | | | | 7E-08 | | | | | 6E-02 |
| Receptor Total | | | | | | | | 5E-06 | | | | | 7E-01 |

- - = Not Evaluated
N/A = Not Applicable
Note that if information provided in the Draft Dioxin Reassessment is applied, the risks for dioxin will be approximately 6 times higher than shown.

Total Risk Across All Media: 5E-06

Total Hazard Across All Media: 7E-01

| | |
|---|---|
| Total Blood HI = | 6E-03 |
| Total Cardiovascular HI = | 2E-05 |
| Total Reproductive HI = | N/A |
| Total General Toxicity HI = | 2E-01 |
| Total GI System HI = | 1E-01 |
| Total Immune System HI = | 8E-02 |
| Total Kidney HI = | 2E-02 |
| Total Liver HI = | 1E-01 |
| Total CNS HI = | 5E-02 |
| Total Skin HI = | 8E-02 |
| Total Spleen HI = | N/A |
| Total Respiratory HI = | 1E-01 |
| Total Developmental HI = | 1E-02 |
| Total Endocrine HI = | 4E-03 |

TABLE 9.3.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Soil | Surface + Subsurface Soil | Unnamed Island | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 3E-08 | 2E-13 | 1E-08 | - - | 4E-08 | N/A | N/A | N/A | N/A | N/A |
| | | | Benzo(a)pyrene | 3E-07 | 2E-12 | 1E-07 | - - | 4E-07 | N/A | N/A | N/A | N/A | N/A |
| | | | Benzo(b)fluoranthene | 3E-08 | 2E-13 | 1E-08 | - - | 4E-08 | N/A | N/A | N/A | N/A | N/A |
| | | | Benzo(g,h,i)perylene | N/A | N/A | N/A | - - | N/A | Kidney | 5E-06 | 2E-08 | 2E-06 | 6E-06 |
| | | | Benzo(k)fluoranthene | 1E-09 | 1E-13 | 6E-10 | - - | 2E-09 | N/A | N/A | N/A | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | 2E-08 | 2E-13 | 7E-09 | - - | 3E-08 | Liver | 6E-03 | N/A | 2E-03 | 8E-03 |
| | | | Carbazole | 5E-11 | N/A | 2E-11 | - - | 6E-11 | N/A | N/A | N/A | N/A | N/A |
| | | | Dibenz(a,h)anthracene | 4E-08 | 3E-13 | 1E-08 | - - | 5E-08 | N/A | N/A | N/A | N/A | N/A |
| | | | Dibenzofuran | N/A | N/A | N/A | - - | N/A | Kidney | 4E-05 | N/A | 1E-05 | 5E-05 |
| | | | Indeno(1,2,3-cd)pyrene | 1E-08 | 9E-14 | 5E-09 | - - | 2E-08 | N/A | N/A | N/A | N/A | N/A |
| | | | Naphthalene | N/A | 2E-14 | N/A | - - | 2E-14 | General Toxicity | 3E-06 | 1E-08 | 1E-06 | 4E-06 |
| | | | Phenanthrene | N/A | N/A | N/A | - - | N/A | Kidney | 1E-05 | 6E-08 | 5E-06 | 2E-05 |
| | | | Aroclor-1242 | 2E-09 | 6E-14 | 8E-10 | - - | 3E-09 | General Toxicity/Immune System | 2E-03 | N/A | 9E-04 | 3E-03 |
| | | | Aroclor-1254 | 6E-09 | 2E-13 | 2E-09 | - - | 8E-09 | General Toxicity/Immune System | 7E-03 | N/A | 3E-03 | 9E-03 |
| | | | Aroclor-1260 | 8E-09 | 2E-13 | 3E-09 | - - | 1E-08 | General Toxicity/Immune System | 9E-03 | N/A | 4E-03 | 1E-02 |
| | | | Dieldrin | 3E-08 | 4E-13 | 9E-09 | - - | 4E-08 | Liver | 2E-03 | N/A | 7E-04 | 3E-03 |
| | | | Dioxin TEQ | 1E-07 | 1E-12 | 1E-08 | - - | 1E-07 | Immune System | 2E-03 | 6E-08 | 2E-04 | 3E-03 |
| | | | Aluminum | N/A | N/A | N/A | - - | N/A | Developmental | 5E-03 | 6E-05 | N/A | 6E-03 |
| | | | Antimony | N/A | N/A | N/A | - - | N/A | General Toxicity | 8E-02 | N/A | N/A | 8E-02 |
| | | | Arsenic | 2E-07 | 4E-11 | 2E-08 | - - | 3E-07 | Skin | 4E-02 | 4E-05 | 3E-03 | 4E-02 |
| | | | Cadmium (other media) | N/A | 6E-12 | N/A | - - | 6E-12 | Kidney | 4E-03 | 2E-05 | 5E-04 | 5E-03 |
| | | | Chromium | 1E-06 | 1E-08 | N/A | - - | 1E-06 | GI System | 2E-02 | 3E-05 | N/A | 2E-02 |
| | | | Cobalt | N/A | 3E-11 | N/A | - - | 3E-11 | Endocrine | 2E-03 | 1E-05 | N/A | 2E-03 |
| | | | Copper | N/A | N/A | N/A | - - | N/A | GI System | 8E-03 | N/A | N/A | 8E-03 |
| | | | Iron | N/A | N/A | N/A | - - | N/A | Liver/GI System | 3E-02 | N/A | N/A | 3E-02 |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (other media) | N/A | N/A | N/A | - - | N/A | CNS | 4E-03 | 3E-04 | N/A | 5E-03 |
| | | | Mercury (other media) | N/A | N/A | N/A | - - | N/A | CNS | 9E-03 | 1E-06 | N/A | 9E-03 |
| | | | Nickel | N/A | 8E-12 | N/A | - - | 8E-12 | General Toxicity | 2E-03 | 1E-05 | N/A | 2E-03 |
| | | | Thallium | N/A | N/A | N/A | - - | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | Vanadium | N/A | N/A | N/A | - - | N/A | Kidney | 2E-03 | N/A | N/A | 2E-03 |
| | | | Zinc | N/A | N/A | N/A | - - | N/A | Blood | 3E-03 | N/A | N/A | 3E-03 |
| | | | Chemical Total | 2E-06 | 1E-08 | 2E-07 | - - | 2E-06 | | 2E-01 | 5E-04 | 1E-02 | 3E-01 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 2E-06 | | | | | 3E-01 |
| | Exposure Medium Total | | | | | | | 2E-06 | | | | | 3E-01 |

TABLE 9.3.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | Outdoor (Trench) Air | Unnamed Island | | | | | | | | | | | |
| | | | 1,1'-Biphenyl | - - | N/A | - - | - - | N/A | N/A | - - | N/A | - - | N/A |
| | | | 2-Methylnaphthalene | - - | N/A | - - | - - | N/A | Respiratory | - - | 8E-03 | - - | 8E-03 |
| | | | Acenaphthene | - - | N/A | - - | - - | N/A | Respiratory | - - | 7E-04 | - - | 7E-04 |
| | | | Acenaphthylene | - - | N/A | - - | - - | N/A | Respiratory | - - | 2E-03 | - - | 2E-03 |
| | | | Acetophenone | - - | N/A | - - | - - | N/A | N/A | - - | N/A | - - | N/A |
| | | | Benzaldehyde | - - | N/A | - - | - - | N/A | N/A | - - | N/A | - - | N/A |
| | | | Naphthalene | - - | 4E-08 | - - | - - | 4E-08 | Respiratory | - - | 3E-02 | - - | 3E-02 |
| | | | Nitrobenzene | - - | 5E-08 | - - | - - | 5E-08 | Respiratory | - - | 1E-02 | - - | 1E-02 |
| | | | Phenanthrene | - - | N/A | - - | - - | N/A | Respiratory | - - | 2E-03 | - - | 2E-03 |
| | | | 1,1-Dichloroethene | - - | N/A | - - | - - | N/A | Liver | - - | 6E-03 | - - | 6E-03 |
| | | | 1,4-Dichlorobenzene | - - | 3E-08 | - - | - - | 3E-08 | Liver | - - | 7E-05 | - - | 7E-05 |
| | | | Benzene | - - | 2E-08 | - - | - - | 2E-08 | Immune System | - - | 2E-03 | - - | 2E-03 |
| | | | Carbon disulfide | - - | N/A | - - | - - | N/A | CNS | - - | 3E-03 | - - | 3E-03 |
| | | | Carbon tetrachloride | - - | 2E-08 | - - | - - | 2E-08 | Liver | - - | 2E-03 | - - | 2E-03 |
| | | | Chlorobenzene | - - | N/A | - - | - - | N/A | Liver/Kidney | - - | 4E-04 | - - | 4E-04 |
| | | | Cyclohexane, methyl- | - - | N/A | - - | - - | N/A | Kidney | - - | 2E-03 | - - | 2E-03 |
| | | | Dichlorodifluoromethane | - - | N/A | - - | - - | N/A | Liver | - - | 3E-04 | - - | 3E-04 |
| | | | Methyl acetate | - - | N/A | - - | - - | N/A | N/A | - - | N/A | - - | N/A |
| | | | Methylene chloride | - - | 2E-09 | - - | - - | 2E-09 | Liver | - - | 4E-04 | - - | 4E-04 |
| | | | Tetrachloroethene | - - | 2E-08 | - - | - - | 2E-08 | CNS | - - | 1E-03 | - - | 1E-03 |
| | | | Trichloroethene | - - | 4E-09 | - - | - - | 4E-09 | CNS | - - | 2E-03 | - - | 2E-03 |
| | | | Xylene (Total) | - - | N/A | - - | - - | N/A | CNS | - - | 5E-04 | - - | 5E-04 |
| | | | Chemical Total | - - | 2E-07 | - - | - - | 2E-07 | | - - | 7E-02 | - - | 7E-02 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 2E-07 | | | | | 7E-02 |
| | Exposure Medium Total | | | | | | | 2E-07 | | | | | 7E-02 |
| Medium Total | | | | | | | | 2E-06 | | | | | 3E-01 |
| Groundwater | Groundwater | Shallow Monitoring Wells | | | | | | | | | | | |
| | | | Atrazine | 4E-10 | - - | N/A | - - | 4E-10 | General Toxicity/Cardiovascular | 4E-06 | - - | N/A | 4E-06 |
| | | | Benzo(a)anthracene | 6E-11 | - - | N/A | - - | 6E-11 | N/A | N/A | - - | N/A | N/A |
| | | | Benzo(a)pyrene | 2E-10 | - - | N/A | - - | 2E-10 | N/A | N/A | - - | N/A | N/A |
| | | | bis(2-Ethylhexyl)phthalate | 7E-11 | - - | 3E-10 | - - | 4E-10 | Liver | 2E-05 | - - | 7E-05 | 9E-05 |
| | | | Dibenzofuran | N/A | - - | N/A | - - | N/A | Kidney | 9E-06 | - - | 4E-05 | 5E-05 |
| | | | Naphthalene | N/A | - - | N/A | - - | N/A | General Toxicity | 6E-07 | - - | N/A | 6E-07 |
| | | | N-Nitrosodiphenylamine | 4E-11 | - - | N/A | - - | 4E-11 | N/A | N/A | - - | N/A | N/A |
| | | | Phenanthrene | N/A | - - | N/A | - - | N/A | Kidney | 1E-07 | - - | N/A | 1E-07 |
| | | | 1,4-Dichlorobenzene | 2E-11 | - - | N/A | - - | 2E-11 | Liver | 3E-06 | - - | N/A | 3E-06 |
| | | | Benzene | 4E-10 | - - | N/A | - - | 4E-10 | Immune System | 4E-05 | - - | N/A | 4E-05 |
| | | | Chlorobenzene | N/A | - - | N/A | - - | N/A | Liver/Kidney | 2E-05 | - - | N/A | 2E-05 |

TABLE 9.3.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | External (Radiation) | Exposure Routes Total | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| | | | Aroclor-1242 | 1E-10 | - - | N/A | - - | 1E-10 | General Toxicity/Immune System | 1E-04 | - - | N/A | 1E-04 |
| | | | Aroclor-1254 | 7E-10 | - - | N/A | - - | 7E-10 | General Toxicity/Immune System | 8E-04 | - - | N/A | 8E-04 |
| | | | Antimony | N/A | - - | N/A | - - | N/A | General Toxicity | 6E-04 | - - | N/A | 6E-04 |
| | | | Arsenic | 1E-08 | - - | N/A | - - | 1E-08 | Skin | 2E-03 | - - | N/A | 2E-03 |
| | | | Barium | N/A | - - | N/A | - - | N/A | Kidney | 4E-04 | - - | N/A | 4E-04 |
| | | | Cadmium (drinking water) | N/A | - - | N/A | - - | N/A | Kidney | 2E-03 | - - | N/A | 2E-03 |
| | | | Chromium | 4E-09 | - - | N/A | - - | 4E-09 | GI System | 7E-05 | - - | N/A | 7E-05 |
| | | | Cobalt | N/A | - - | N/A | - - | N/A | Endocrine | 5E-04 | - - | N/A | 5E-04 |
| | | | Iron | N/A | - - | N/A | - - | N/A | Liver/GI System | 7E-03 | - - | N/A | 7E-03 |
| | | | Lead | | | | | | | | | | |
| | | | Manganese (drinking water) | N/A | - - | N/A | - - | N/A | CNS | 5E-03 | - - | N/A | 5E-03 |
| | | | Nickel | N/A | - - | N/A | - - | N/A | General Toxicity | 3E-04 | - - | N/A | 3E-04 |
| | | | Thallium | N/A | - - | N/A | - - | N/A | N/A | N/A | - - | N/A | N/A |
| | | | Vanadium | N/A | - - | N/A | - - | N/A | Kidney | 3E-05 | - - | N/A | 3E-05 |
| | | | Zinc | N/A | - - | N/A | - - | N/A | Blood | 5E-04 | - - | N/A | 5E-04 |
| | | | Chemical Total | 2E-08 | - - | 3E-10 | - - | 2E-08 | | 2E-02 | - - | 1E-04 | 2E-02 |
| | | | | | | | | | | | | | |
| | | | Radionuclide Total | | | | | | | | | | |
| | | Exposure Point Total | | | | | | 2E-08 | | | | | 2E-02 |
| | Exposure Medium Total | | | | | | | 2E-08 | | | | | 2E-02 |
| Medium Total | | | | | | | | 2E-08 | | | | | 2E-02 |
| Receptor Total | | | | | | | | 2E-06 | | | | | 4E-01 |

- - = Not Evaluated

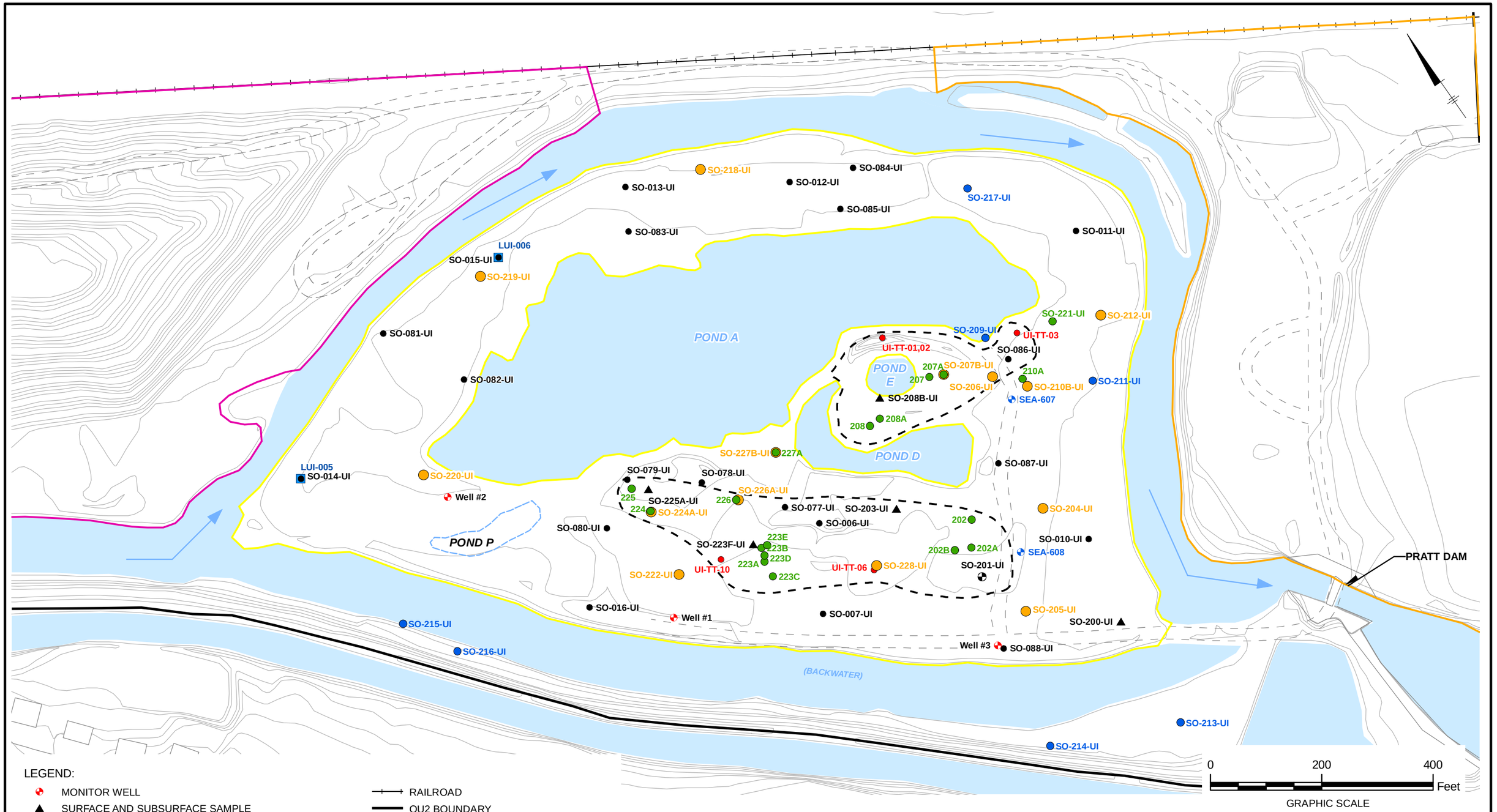
N/A = Not Applicable

Note that if information provided in the Draft Dioxin Reassessment is applied, the risks for dioxin will be approximately 6 times higher than shown.

Total Risk Across All Media: 2E-06

Total Hazard Across All Media: 4E-01

| | |
|---|---|
| Total Blood HI = | 3E-03 |
| Total Cardiovascular HI = | 4E-06 |
| Total Reproductive HI = | N/A |
| Total General Toxicity HI = | 1E-01 |
| Total GI System HI = | 7E-02 |
| Total Immune System HI = | 3E-02 |
| Total Kidney HI = | 1E-02 |
| Total Liver HI = | 6E-02 |
| Total CNS HI = | 2E-02 |
| Total Skin HI = | 4E-02 |
| Total Spleen HI = | N/A |
| Total Respiratory HI = | 5E-02 |
| Total Developmental HI = | 6E-03 |
| Total Endocrine HI = | 2E-03 |




LEGEND:

- MONITOR WELL
- SURFACE AND SUBSURFACE SAMPLE
- OBSERVATION
- SURFACE SOIL SAMPLE
- SUBSURFACE SOIL SAMPLE
- SUBSURFACE/TEMP WELL
- PHASE 1A MONITORING WELL
- PHASE 1A SURFACE SOIL SAMPLE LOCATION
- PHASE 1A SOIL SAMPLE LOCATION - DEPTH UNSPECIFIED
- PHASE 1B SOIL SAMPLE LOCATION
- RAILROAD
- OU2 BOUNDARY
- HISTORICAL ACCESS ROAD
- WATER
- HISTORICAL POND
- BURIED WASTE
- J.M. MILLS LANDFILL
- UNNAMED ISLAND
- SOLID WASTE TRANSFER STATION (NFO NUNES DISPOSAL, INC.)
- DIRECTION OF SURFACE WATER FLOW

NOTES:

1. SAMPLE LOCATIONS AND BASEMAPPING ARE IN THE COORDINATE SYSTEM: STATE PLANE RHODE ISLAND NAD 83 FEET. LOCATIONS HAVE BEEN RECORDED IN THE FIELD USING GPS.

2. SOME HISTORICAL SUBSURFACE SOIL LOCATIONS HAVE MULTIPLE DEPTH INTERVALS COLLECTED. SAMPLE IDs FOR SOIL SAMPLES COLLECTED AT DEPTH DIFFER FROM THEIR SAMPLE STATION ID.

3. BURIED WASTE AREA DELINEATION IS BASED ON AN INTERPRETATION BY SHIELD ENVIRONMENTAL ASSOCIATES, INC (GEOPHYSICAL AND MIP SURVEY LOCATIONS, PLATE 2, FEBRUARY 2006).

PETERSON PURITAN SUPERFUND SITE - OU2
CUMBERLAND AND LINCOLN, RHODE ISLAND
**UNNAMED ISLAND INVESTIGATION - NOVEMBER 2009**

## SOIL SAMPLE LOCATIONS

ARCADIS

FIGURE
1

CITY:CLE DIV/GROUP:AIT DB:L.GREENE LD: PIC: PM: TM: TR:
Project (Project #)Peterson/Puritan B0037902.0000.00500
G:\GIS\Project Files\Peterson_Puritan\UnnamedIslandWorkplan\mxd\SoilSampPhase1aand1b-topobasemap.mxd - 6/14/2010 @ 9:56:50 AM

# APPENDIX A

# SAMPLE GROUPINGS USED TO DEVELOP EXPOSURE POINT CONCENTRATIONS

**Peterson Puritan Superfund Site - Operable Unit 2**
**Summary of Surface Soil Samples**

| | |
|---|---|
| Scenario Timeframe: | Current/Future |
| Exposure Area: | Unnamed Island |
| Exposure Medium: | Surface Soil |
| Receptor(s): | Trespasser, Recreational User, Construction Worker |
| Pathway(s): | Ingestion, dermal |

| Location ID<br>Sample ID | Sample<br>Depth | Date<br>Collected |
|---|---|---|
| LUI-005<br>LUI-005 | NA | 12/08/05 |
| LUI-006<br>LUI-006 | NA | 12/08/05 |
| SO-006-UI<br>SO-006-UI | 0 - 1 | 08/19/03 |
| SO-007-UI<br>SO-007-UI | 0 - 1 | 08/19/03 |
| SO-010-UI<br>SO-010-UI | 0 - 1 | 08/20/03 |
| SO-011-UI<br>SO-011-UI | 0 - 1 | 08/20/03 |
| SO-012-UI<br>SO-012-UI | 0 - 1 | 08/20/03 |
| SO-013-UI<br>SO-013-UI | 0 - 1 | 08/20/03 |
| SO-014-UI<br>SO-014-UI | 0 - 1 | 08/20/03 |
| SO-015-UI<br>SO-015-UI | 0 - 1 | 08/20/03 |
| SO-016-UI<br>SO-016-UI | 0 - 1 | 08/20/03 |
| SO-077-UI<br>SO-077-UI | 0 - 1 | 09/10/04 |
| SO-078-UI<br>SO-078-UI | 0 - 1 | 09/10/04 |
| SO-079-UI<br>SO-079-UI | 0 - 1 | 09/10/04 |
| SO-080-UI<br>SO-080-UI | 0 - 1 | 09/10/04 |
| SO-081-UI<br>SO-081-UI | 0 - 1 | 09/10/04 |
| SO-082-UI<br>SO-082-UI | 0 - 1 | 09/10/04 |
| SO-083-UI<br>SO-083-UI | 0 - 1 | 09/10/04 |
| SO-084-UI<br>SO-084-UI | 0 - 1 | 09/09/04 |
| SO-084-UI<br>SO-089-UI | 0 - 1 | 11/27/04 |
| SO-085-UI<br>SO-085-UI | 0 - 1 | 09/09/04 |
| SO-085-UI<br>SO-090-UI | 0 - 1 | 11/27/04 |
| SO-085-UI<br>SO-FD-20 | 0 - 1 | 11/27/04 |
| SO-086-UI<br>SO-086-UI | 0 - 1 | 09/09/04 |
| SO-087-UI<br>SO-087-UI | 0 - 1 | 09/09/04 |
| SO-088-UI<br>SO-088-UI | 0 - 1 | 09/10/04 |
| UI-TT-01,02<br>SO-W03-UI | NA | 08/20/03 |
| UI-TT-03<br>SO-W04-UI | NA | 08/20/03 |
| UI-TT-03<br>SO-FD02 | NA | 08/20/03 |
| UI-TT-06<br>SO-W01-UI | NA | 08/19/03 |
| UI-TT-10<br>SO-W02-UI | NA | 08/19/03 |
| SO-200-UI<br>SO-200-UI (0-1') | 0-1 | 11/18/09 |
| SO-203-UI<br>SO-203-U1-0-1' | 0-1 | 11/18/09 |

**Peterson Puritan Superfund Site - Operable Unit 2**
**Summary of Surface Soil Samples**

| | |
|---|---|
| Scenario Timeframe: | Current/Future |
| Exposure Area: | Unnamed Island |
| Exposure Medium: | Surface Soil |
| Receptor(s): | Trespasser, Recreational User, Construction Worker |
| Pathway(s): | Ingestion, dermal |

| Location ID<br>Sample ID | Sample<br>Depth | Date<br>Collected |
|---|---|---|
| SO-208B-UI<br>SO-208B-UI (0-1') | 0-1 | 11/19/09 |
| SO-209-UI<br>SO-209-UI (0-1') | 0-1 | 11/20/09 |
| SO-211-UI<br>SO-211-UI (0-1') | 0-1 | 11/20/09 |
| SO-213-UI<br>SO-213-U1-0-1' | 0-1 | 11/20/09 |
| SO-214-UI<br>SO-214-U1-0-1' | 0-1 | 11/20/09 |
| SO-215-UI<br>SO-215-U1-0-1' | 0-1 | 11/20/09 |
| SO-216-UI<br>SO-216-U1-0-1' | 0-1 | 11/20/09 |
| SO-217-UI<br>SO-217-UI (0-1') | 0-1 | 11/20/09 |
| SO-223F-UI<br>SO-223F-UI-0-1' | 0-1 | 11/24/09 |
| SO-225A-UI<br>SO-225A-UI-0-1' | 0-1 | 11/24/09 |
| SO-225A-UI<br>DUP-2 | 0-1 | 11/24/09 |

**Notes:**
Shaded samples collected for use as background and have not been quantitatively evaluated in this supplemental HHRA.

**Peterson Puritan Superfund Site - Operable Unit 2**
**Summary of Subsurface Soil Samples**

| | |
|---|---|
| Scenario Timeframe: | Future |
| Exposure Area: | Unnamed Island |
| Exposure Medium: | Subsurface Soil |
| Receptor(s): | Recreational User, Construction Worker |
| Pathway(s): | Ingestion, dermal |

| Location ID<br>Sample ID | Sample<br>Depth | Date<br>Collected |
|---|---|---|
| SO-200-UI<br>SO-200-UI (5-6') | 5-6 | 11/18/09 |
| SO-201-UI<br>SO-201-UI (4-6') | 4-6 | 11/24/09 |
| SO-203-UI<br>SO-203-UI (5-7') | 5-7 | 11/18/09 |
| SO-204-UI<br>SO-204-UI (2-4') | 2-4 | 11/19/09 |
| SO-205-UI<br>SO-205-UI (2-4') | 2-4 | 11/19/09 |
| SO-205-UI<br>SO-205-U1-3-4.5 | 3-4.5 | 11/19/09 |
| SO-206-UI<br>SO-206-UI (2-3') | 2-3 | 11/19/09 |
| SO-207B-UI<br>SO-207B-UI (1-2') | 1-2 | 11/19/09 |
| SO-207B-UI<br>SO-207B-UI (2-3') | 2-3 | 11/19/09 |
| SO-208B-UI<br>SO-208B-UI (1-5') | 1-5 | 11/19/09 |
| SO-210B-UI<br>SO-210B-UI (1.25-4') | 1.25-4 | 11/20/09 |
| SO-212-UI<br>SO-212-UI (1-4.5') | 1-4.5 | 11/20/09 |
| SO-212-UI<br>DUPLICATE | 1-4.5 | 11/20/09 |
| SO-218-UI<br>SO-218-UI-1-5' | 1-5 | 11/23/09 |
| SO-219-UI<br>SO-219-UI-1-5' | 1-5 | 11/23/09 |
| SO-219-UI<br>DUPLICATE 3 | 1-5 | 11/23/09 |
| SO-220-UI<br>SO-220-UI-1-4.5' | 1-4.5 | 11/23/09 |
| SO-222-UI<br>SO-222-UI-1-3' | 1-3 | 11/23/09 |
| SO-223F-UI<br>SO-223F-UI-11-12' | 11-12 | 11/23/09 |
| SO-224A-UI<br>SO-224A-UI-1-5' | 1-5 | 11/23/09 |
| SO-225A-UI<br>SO-225A-UI-1.5-5' | 1.5-5 | 11/24/09 |
| SO-226A-UI<br>SO-226A-UI-6-8' | 6-8 | 11/24/09 |
| SO-227B-UI<br>SO-227B-UI-1-5' | 1-5 | 11/24/09 |
| SO-228-UI<br>SO-228-UI-12-14' | 12-14 | 11/24/09 |

**Peterson Puritan Superfund Site - Operable Unit 2**
**Summary of Sediment Samples**

| | |
|---|---|
| Scenario Timeframe: | Current/Future |
| Exposure Area: | Unnamed Island Ponds (Ponds A, D, E, P, Excavator) |
| Exposure Medium: | Sediment |
| Receptor(s): | Trespasser, Recreational User |
| Pathway(s): | Ingestion, dermal |

| Location ID<br>Sample ID | Sample<br>Depth | Date<br>Collected | Depth (ft) of Water<br>at Collection |
|---|---|---|---|
| **SE-001-UI**<br>**SE-001-UI** | **0 - 1** | **08/28/03** | 2 |
| **SE-003-UI**<br>**SE-003-UI** | **0 - 1** | **08/29/03** | nearshore |
| **SE-003-UI**<br>**SE-FD01** | **0 - 1** | **08/29/03** | 2 |
| **SE-004-UI**<br>**SE-004-UI** | **0 - 1** | **08/29/03** | 0 |
| **SE-005-UI**<br>**SE-005-UI** | **0 - 1** | **08/29/03** | 2 |
| **SE-006-UI**<br>**SE-006-UI** | **0 - 1** | **08/29/03** | 2 |
| **SE-007-UI**<br>**SE-007-UI** | **0 - 1** | **09/02/03** | 2 |
| **SE-075-UI**<br>**SE-075-UI** | **0 - 1** | **09/03/04** | 1 |
| **SE-076-UI**<br>**SE-076-UI** | **0 - 1** | **09/03/04** | 0 |
| **SE-077-UI**<br>**SE-077-UI** | **0 - 1** | **09/06/04** | 2 |
| **SE-078-UI**<br>**SE-078-UI** | **0 - 1** | **09/06/04** | 2 |
| **SE-084-UI**<br>**SE-084-UI** | **0 - 1** | **09/07/04** | 2 |
| **SE-085-UI**<br>**SE-085-UI** | **0 - 1** | **09/07/04** | 2 |
| **SE-086-UI**<br>**SE-086-UI** | **0 - 1** | **09/07/04** | 2 |
| **SE-087-UI**<br>**SE-087-UI** | **0 - 1** | **09/07/04** | 2 |
| **T05PA-001**<br>**T05PA-001** | **0 - 0.5** | **06/21/05** | nearshore |
| **T05PA-003**<br>**T05PA-003** | **0 - 0.5** | **06/21/05** | nearshore |
| **T05PD-002**<br>**BD062105** | **0 - 0.5** | **06/21/05** | shallow |
| **T05PD-002**<br>**T05PD-002** | **0 - 0.5** | **06/21/05** | shallow |

**Peterson Puritan Superfund Site - Operable Unit 2**
**Summary of Surface Water Samples**

| | |
|---|---|
| Scenario Timeframe: | Current/Future |
| Exposure Area: | Unnamed Island Ponds (Ponds A, D, E, P) |
| Exposure Medium: | Surface Water |
| Receptor(s): | Trespasser, Recreational User |
| Pathway(s): | Ingestion, dermal |

| Location ID<br>Sample ID | Date<br>Collected |
|---|---|
| SE-001-UI<br>SW-001-UI | 08/28/03 |
| SE-002-UI<br>SW-002-UI | 08/28/03 |
| SE-003-UI<br>SW-003-UI | 08/29/03 |
| SE-003-UI<br>SW-FD01 | 08/29/03 |
| SE-005-UI<br>SW-005-UI | 08/29/03 |
| SE-006-UI<br>SW-006-UI | 08/29/03 |
| SE-007-UI<br>SW-007-UI | 09/02/03 |
| SE-075-UI<br>SW-075-UI | 09/03/04 |
| SE-077-UI<br>SW-077-UI | 09/06/04 |
| SE-078-UI<br>SW-078-UI | 09/06/04 |
| SE-079-UI<br>SW-079-UI | 09/07/04 |
| SE-079-UI<br>SW-FD-13 | 09/07/04 |
| SE-080-UI<br>SW-080-UI | 09/07/04 |
| SE-084-UI<br>SW-084-UI | 09/07/04 |
| SE-085-UI<br>SW-085-UI | 09/07/04 |
| SE-086-UI<br>SW-086-UI | 09/07/04 |
| SE-087-UI<br>SW-087-UI | 09/07/04 |

**Peterson Puritan Superfund Site - Operable Unit 2**
**Leachate Samples[1]: Unnamed Island**

| | |
|---|---|
| Scenario Timeframe: | Current/Future |
| Exposure Area: | Unnamed Island |
| Exposure Medium: | Leachate |
| Receptor(s): | Trespasser, Recreational User, Construction Worker |
| Pathway(s): | Dermal |

| Location ID<br>Sample ID | Date<br>Collected |
|---|---|
| GUI-701<br>GUI-701 | 12/08/05 |
| GUI-702<br>GUI-702 | 01/10/06 |
| GUI-703<br>GUI-703 | 01/10/06 |
| SEA-607<br>GW-025-UI | 10/03/03 |
| SEA-607<br>GW-072-UI | 10/01/04 |
| SEA-608<br>GW-026-UI | 10/03/03 |
| SEA-608<br>GW-FD03 | 10/03/03 |
| SEA-608<br>GW-073-UI | 10/01/04 |
| SEA-608<br>SEA-608 | 01/10/06 |
| GW-201-UI<br>GW-201-UI | 11/24/09 |
| GW-201-UI<br>DUPLICATE-3 | 11/24/09 |
| GW-207B-UI<br>GW-207B-UI | 11/24/09 |
| GW-208B-UI<br>GW-208B-UI | 11/24/09 |
| GW-224A-UI<br>GW-224A-UI | 11/24/09 |

Note:

(1) Because there are no "true" leachate data for the site, as discussed, groundwater data will be used as a surrogate to evaluate potential leachate exposures to the receptors. Screening of leachate data using samples below was performed (see Table 2.4) and COPCs were used with the surrogate groundwater data to calculate EPCs.

| Location ID<br>Sample ID | Date<br>Collected |
|---|---|
| UI-TT-06<br>GW-LE01-UI | 08/19/03 |
| UI-TT-06<br>GW-FD01 | 08/19/03 |
| UI-TT-10<br>GW-LE02-UI | 08/19/03 |
| LF-TT-02<br>GW-LE3-LF | 08/21/03 |
| LF-TT-04<br>GW-LE4-LF | 08/21/03 |
| LF-TT-07<br>GW-LE5-LF | 08/22/03 |
| LF-TT-09<br>GW-LE6-LF | 08/22/03 |

**Peterson Puritan Superfund Site - Operable Unit 2**
**Shallow Groundwater Samples**

| | |
|---|---|
| Scenario Timeframe: | Future |
| Exposure Area: | Unnamed Island |
| Exposure Medium: | Shallow Groundwater |
| Receptor(s): | Construction Worker |
| Pathway(s): | Ingestion, dermal |

| Location ID<br>Sample ID | Date<br>Collected |
|---|---|
| GUI-701<br>GUI-701 | 12/08/05 |
| GUI-702<br>GUI-702 | 01/10/06 |
| GUI-703<br>GUI-703 | 01/10/06 |
| SEA-607<br>GW-025-UI | 10/03/03 |
| SEA-607<br>GW-072-UI | 10/01/04 |
| SEA-608<br>GW-026-UI | 10/03/03 |
| SEA-608<br>GW-FD03 | 10/03/03 |
| SEA-608<br>GW-073-UI | 10/01/04 |
| SEA-608<br>SEA-608 | 01/10/06 |
| GW-201-UI<br>GW-201-UI | 11/24/09 |
| GW-201-UI<br>DUPLICATE-3 | 11/24/09 |
| GW-207B-UI<br>GW-207B-UI | 11/24/09 |
| GW-208B-UI<br>GW-208B-UI | 11/24/09 |
| GW-224A-UI<br>GW-224A-UI | 11/24/09 |

# APPENDIX B

# JOHNSON & ETTINGER ADVANCED SOIL AND GROUNDWATER MODELS – OUTDOOR (TRENCH) AIR

# COPC Screening

# Outdoor from Groundwater

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 75343 | 8.30E-01 | 1,1-Dichloroethane |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 7,450 | 2.88E-03 | 1.24E-01 | 1.75E-04 | 1.20E-02 | 1.20E-02 | 1.20E-02 | 4.81E-04 | 3.10E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1.03E+02 | 91.00 | -6.28E+01 | 1.20E-02 | 6.10E+04 | 4.24E-01 | 1.59E-04 | 1.64E-02 | NA | 5.0E-01 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 95501 | 3.00E-01 | 1,2-Dichlorobenzene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 11,687 | 6.67E-04 | 2.87E-02 | 1.75E-04 | 1.12E-02 | 1.12E-02 | 1.12E-02 | 4.62E-04 | 2.95E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 8.61E+00 | 91.00 | -6.28E+01 | 1.12E-02 | 6.10E+04 | 3.97E-01 | 1.52E-04 | 1.31E-03 | NA | 2.0E-01 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 106467 | 3.19E+00 | 1,4-Dichlorobenzene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ (g/cm-$s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 11,243 | 8.76E-04 | 3.77E-02 | 1.75E-04 | 1.12E-02 | 1.12E-02 | 1.12E-02 | 4.57E-04 | 2.93E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1.20E+02 | 91.00 | -6.28E+01 | 1.12E-02 | 6.10E+04 | 3.97E-01 | 1.50E-04 | 1.81E-02 | NA | 8.0E-01 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 91576 | 5.77E-01 | 2-Methylnaphthalene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 16,241 | 1.21E-04 | 5.20E-03 | 1.75E-04 | 8.44E-03 | 8.44E-03 | 8.44E-03 | 4.44E-04 | 2.67E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 3.00E+00 | 91.00 | -6.28E+01 | 8.44E-03 | 6.10E+04 | 2.95E-01 | 1.36E-04 | 4.10E-04 | NA | 7.0E-02 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 83329 | 4.04E-01 | Acenaphthene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 16,123 | 3.66E-05 | 1.57E-03 | 1.75E-04 | 6.81E-03 | 6.81E-03 | 6.81E-03 | 6.28E-04 | 3.12E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 6.36E-01 | 91.00 | -6.28E+01 | 6.81E-03 | 6.10E+04 | 2.20E-01 | 1.58E-04 | 1.00E-04 | NA | 2.1E-01 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 208968 | 3.65E-02 | Acenaphthylene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ (g/cm-$s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | NA | 1.14E-04 | 4.90E-03 | 1.75E-04 | 7.26E-03 | 7.26E-03 | 7.26E-03 | 3.92E-04 | 2.34E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1.79E-01 | 91.00 | -6.28E+01 | 7.26E-03 | 6.10E+04 | 2.42E-01 | 1.19E-04 | 2.13E-05 | NA | NA |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 98862 | 8.97E-01 | Acetophenone |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 14,718 | 2.86E-06 | 1.23E-04 | 1.75E-04 | 9.73E-03 | 9.73E-03 | 9.73E-03 | 5.59E-03 | 8.93E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1.11E-01 | 91.00 | -6.28E+01 | 9.73E-03 | 6.10E+04 | 3.47E-01 | 4.45E-04 | 4.92E-05 | NA | 3.5E-01 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 120127 | 8.68E-02 | Anthracene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 18,353 | 1.26E-05 | 5.43E-04 | 1.75E-04 | 5.24E-03 | 5.24E-03 | 5.24E-03 | 1.25E-03 | 3.79E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 4.71E-02 | 91.00 | -6.28E+01 | 5.24E-03 | 6.10E+04 | 1.40E-01 | 1.86E-04 | 8.77E-06 | NA | NA |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 71432 | 8.30E+00 | Benzene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ (g/cm-$s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 8,122 | 2.68E-03 | 1.15E-01 | 1.75E-04 | 1.42E-02 | 1.42E-02 | 1.42E-02 | 5.70E-04 | 3.67E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 9.57E+02 | 91.00 | -6.28E+01 | 1.42E-02 | 6.10E+04 | 4.85E-01 | 1.89E-04 | 1.81E-01 | 7.8E-06 | 3.0E-02 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 108907 | 2.80E+01 | Chlorobenzene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 9,803 | 1.54E-03 | 6.61E-02 | 1.75E-04 | 1.18E-02 | 1.18E-02 | 1.18E-02 | 4.77E-04 | 3.07E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1.85E+03 | 91.00 | -6.28E+01 | 1.18E-02 | 6.10E+04 | 4.18E-01 | 1.58E-04 | 2.92E-01 | NA | 6.0E-02 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 75003 | 2.10E+00 | Chloroethane (ethyl chloride) |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 5,904 | 5.19E-03 | 2.23E-01 | 1.75E-04 | 4.38E-02 | 4.38E-02 | 4.38E-02 | 1.74E-03 | 1.12E-02 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 4.69E+02 | 91.00 | -6.28E+01 | 4.38E-02 | 6.10E+04 | 7.91E-01 | 5.78E-04 | 2.71E-01 | 8.3E-07 | 1.0E+01 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 156592 | 7.20E-01 | cis-1,2-Dichloroethylene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 7,734 | 2.04E-03 | 8.77E-02 | 1.75E-04 | 1.19E-02 | 1.19E-02 | 1.19E-02 | 4.81E-04 | 3.09E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 6.32E+01 | 91.00 | -6.28E+01 | 1.19E-02 | 6.10E+04 | 4.21E-01 | 1.59E-04 | 1.00E-02 | NA | 3.5E-02 |

**END**

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 110827 | 6.30E-01 | Cyclohexane |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | NA | 4.55E-02 | 1.96E+00 | 1.75E-04 | 1.35E-02 | 1.35E-02 | 1.35E-02 | 5.33E-04 | 3.44E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1.23E+03 | 91.00 | -6.28E+01 | 1.35E-02 | 6.10E+04 | 4.65E-01 | 1.77E-04 | 2.18E-01 | NA | NA |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 86737 | 4.46E-01 | Fluorene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 16,235 | 1.49E-05 | 6.39E-04 | 1.75E-04 | 5.87E-03 | 5.87E-03 | 5.87E-03 | 1.14E-03 | 3.92E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 2.85E-01 | 91.00 | -6.28E+01 | 5.87E-03 | 6.10E+04 | 1.73E-01 | 1.94E-04 | 5.54E-05 | NA | 1.4E-01 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 98828 | 5.20E+00 | Cumene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 12,644 | 4.71E-03 | 2.03E-01 | 1.75E-04 | 1.05E-02 | 1.05E-02 | 1.05E-02 | 4.19E-04 | 2.70E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1.05E+03 | 91.00 | -6.28E+01 | 1.05E-02 | 6.10E+04 | 3.75E-01 | 1.39E-04 | 1.46E-01 | NA | 4.0E-01 |

**END**

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 108872 | 1.34E+00 | Methylcyclohexane |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 8,584 | 4.77E-02 | 2.05E+00 | 1.75E-04 | 1.19E-02 | 1.19E-02 | 1.19E-02 | 4.71E-04 | 3.04E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 2.75E+03 | 91.00 | -6.28E+01 | 1.19E-02 | 6.10E+04 | 4.20E-01 | 1.56E-04 | 4.30E-01 | NA | 3.0E+00 |

**END**

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 1634044 | 3.60E-01 | MTBE |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 7,294 | 3.25E-04 | 1.40E-02 | 1.75E-04 | 1.66E-02 | 1.66E-02 | 1.66E-02 | 7.11E-04 | 4.50E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 5.03E+00 | 91.00 | -6.28E+01 | 1.66E-02 | 6.10E+04 | 5.37E-01 | 2.32E-04 | 1.17E-03 | NA | 3.0E+00 |

**END**

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 91203 | 3.53E+00 | Naphthalene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 12,913 | 1.52E-04 | 6.54E-03 | 1.75E-04 | 9.54E-03 | 9.54E-03 | 9.54E-03 | 4.62E-04 | 2.84E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 2.31E+01 | 91.00 | -6.28E+01 | 9.54E-03 | 6.10E+04 | 3.40E-01 | 1.46E-04 | 3.36E-03 | NA | 3.0E-03 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 85018 | 9.20E-01 | Phenanthrene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | NA | 3.57E-05 | 1.54E-03 | 1.75E-04 | 6.06E-03 | 6.06E-03 | 6.06E-03 | 5.97E-04 | 2.89E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1.41E+00 | 91.00 | -6.28E+01 | 6.06E-03 | 6.10E+04 | 1.83E-01 | 1.45E-04 | 2.05E-04 | NA | NA |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 106423 | 2.12E+00 | p-Xylene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 10,248 | 3.06E-03 | 1.32E-01 | 1.75E-04 | 1.24E-02 | 1.24E-02 | 1.24E-02 | 4.97E-04 | 3.20E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 2.79E+02 | 91.00 | -6.28E+01 | 1.24E-02 | 6.10E+04 | 4.37E-01 | 1.65E-04 | 4.59E-02 | NA | 1.0E-01 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 129000 | 2.21E-01 | Pyrene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 20,700 | 1.72E-06 | 7.42E-05 | 1.75E-04 | 4.44E-03 | 4.44E-03 | 4.44E-03 | 7.34E-03 | 4.66E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1.64E-02 | 91.00 | -6.28E+01 | 4.44E-03 | 6.10E+04 | 9.84E-02 | 2.18E-04 | 3.58E-06 | NA | 1.1E-01 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 108883 | 1.87E+01 | Toluene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 9,154 | 2.92E-03 | 1.26E-01 | 1.75E-04 | 1.41E-02 | 1.41E-02 | 1.41E-02 | 5.62E-04 | 3.62E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 2.35E+03 | 91.00 | -6.28E+01 | 1.41E-02 | 6.10E+04 | 4.81E-01 | 1.86E-04 | 4.38E-01 | NA | 4.0E-01 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 79016 | 5.50E-01 | Trichloroethylene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 8,557 | 4.78E-03 | 2.06E-01 | 1.75E-04 | 1.28E-02 | 1.28E-02 | 1.28E-02 | 5.09E-04 | 3.28E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1.13E+02 | 91.00 | -6.28E+01 | 1.28E-02 | 6.10E+04 | 4.47E-01 | 1.69E-04 | 1.91E-02 | 1.1E-04 | 4.0E-02 |

**END**

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial groundwater conc., $C_W$ (µg/L) | Chemical |
|---|---|---|
| 106423 | 6.80E-01 | p-Xylene |

MORE ↓

| ENTER Average soil/ groundwater temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to water table, $L_{WT}$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum directly above water table, (Enter A, B, or C) | ENTER SCS soil type directly above water table | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_{WT}$ (cell G28) | | | | | | | |
| 10 | 10 | 152 | 52 | 50 | 50 | C | S | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 | S | 1.66 | 0.375 | 0.054 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

MORE ↓

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based groundwater concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Thickness of capillary zone, $L_{cz}$ (cm) | Total porosity in capillary zone, $n_{cz}$ ($cm^3/cm^3$) | Air-filled porosity in capillary zone, $\theta_{a,cz}$ ($cm^3/cm^3$) | Water-filled porosity in capillary zone, $\theta_{w,cz}$ ($cm^3/cm^3$) | Floor-wall seam perimeter, $X_{crack}$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 142 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 17.05 | 0.375 | 0.122 | 0.253 | 670 |

| Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. groundwater temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. groundwater temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Capillary zone effective diffusion coefficient, $D^{eff}_{cz}$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.01E+03 | 2.22E+04 | 2.75E+00 | 10 | 10,248 | 3.06E-03 | 1.32E-01 | 1.75E-04 | 1.24E-02 | 1.24E-02 | 1.24E-02 | 4.97E-04 | 3.20E-03 | 142 |

| Convection path length, $L_p$ (cm) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 8.94E+01 | 91.00 | -6.28E+01 | 1.24E-02 | 6.10E+04 | 4.37E-01 | 1.65E-04 | 1.47E-02 | NA | 1.0E-01 |

**END**

# Outdoor from Soil

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 75354 | 5.00E+00 | 1,1-Dichloroethylene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_T$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Totals must add up to value of $L_t$ (cell G28) | | | | | |
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based soil concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 5.00E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 6,392 | 1.47E-02 | 6.33E-01 | 1.75E-04 | 1.45E-02 | 1.45E-02 | 1.45E-02 | 1.45E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.18E-01 | 1.16E+04 | 91.00 | -6.28E+01 | 1.45E-02 | 6.10E+04 | 4.93E-01 | 1.93E-03 | 2.24E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 2.0E-01 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 106467 | 1.25E+03 | 1,4-Dichlorobenzene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_T$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.25E+03 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 11,243 | 8.76E-04 | 3.77E-02 | 1.75E-04 | 1.12E-02 | 1.12E-02 | 1.12E-02 | 1.12E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.23E+00 | 3.70E+04 | 91.00 | -6.28E+01 | 1.12E-02 | 6.10E+04 | 3.97E-01 | 1.46E-03 | 5.42E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 8.0E-01 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 78933 | 5.25E+02 | Methylethylketone (2-butanone) |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, $h_B$ (Enter value or 0) (cm) | ENTER Thickness of soil stratum C, $h_C$ (Enter value or 0) (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 5.25E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 8,419 | 2.63E-05 | 1.13E-03 | 1.75E-04 | 1.31E-02 | 1.31E-02 | 1.31E-02 | 1.31E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.60E-03 | 1.59E+04 | 91.00 | -6.28E+01 | 1.31E-02 | 6.10E+04 | 4.55E-01 | 1.73E-03 | 2.75E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 5.0E+00 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 91576 | 2.78E+03 | 2-Methylnaphthalene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_T$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ (µg/kg) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 2.78E+03 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 16,241 | 1.21E-04 | 5.20E-03 | 1.75E-04 | 8.44E-03 | 8.44E-03 | 8.44E-03 | 8.44E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ (µg/$m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ (µg/$m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.62E+00 | 2.56E+03 | 91.00 | -6.28E+01 | 8.44E-03 | 6.10E+04 | 2.95E-01 | 1.09E-03 | 2.78E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ (µg/$m^3$) | Finite source bldg. conc., $C_{building}$ (µg/$m^3$) | Final finite source bldg. conc., $C_{building}$ (µg/$m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC (mg/$m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 7.0E-02 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 95501 | 5.50E+00 | 1,2-Dichlorobenzene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 5.50E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 11,687 | 6.67E-04 | 2.87E-02 | 1.75E-04 | 1.12E-02 | 1.12E-02 | 1.12E-02 | 1.12E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.23E+00 | 1.24E+02 | 91.00 | -6.28E+01 | 1.12E-02 | 6.10E+04 | 3.97E-01 | 1.46E-03 | 1.82E-01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 2.0E-01 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 120821 | 1.10E+01 | 1,2,4-Trichlorobenzene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.10E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 13,230 | 4.34E-04 | 1.87E-02 | 1.75E-04 | 4.85E-03 | 4.85E-03 | 4.85E-03 | 4.85E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.56E+00 | 5.71E+01 | 91.00 | -6.28E+01 | 4.85E-03 | 6.10E+04 | 1.20E-01 | 5.69E-04 | 3.25E-02 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 4.0E-03 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 83329 | 2.01E+03 | Acenaphthene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_T$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 2.01E+03 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 16,123 | 3.66E-05 | 1.57E-03 | 1.75E-04 | 6.81E-03 | 6.81E-03 | 6.81E-03 | 6.81E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.42E+01 | 2.23E+02 | 91.00 | -6.28E+01 | 6.81E-03 | 6.10E+04 | 2.20E-01 | 8.55E-04 | 1.91E-01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 2.1E-01 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 208968 | 1.14E+03 | Acenaphthylene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.14E+03 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | NA | 1.14E-04 | 4.90E-03 | 1.75E-04 | 7.26E-03 | 7.26E-03 | 7.26E-03 | 7.26E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.22E+01 | 4.55E+02 | 91.00 | -6.28E+01 | 7.26E-03 | 6.10E+04 | 2.42E-01 | 9.19E-04 | 4.18E-01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | NA |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 67641 | 1.98E+03 | Acetone |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ (µg/kg) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.98E+03 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 7,559 | 1.97E-05 | 8.47E-04 | 1.75E-04 | 2.01E-02 | 2.01E-02 | 2.01E-02 | 2.01E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ (µg/$m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ (µg/$m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.15E-03 | 4.96E+04 | 91.00 | -6.28E+01 | 2.01E-02 | 6.10E+04 | 5.98E-01 | 2.69E-03 | 1.33E+02 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, <$\alpha$> (unitless) | Mass limit bldg. conc., $C_{building}$ (µg/$m^3$) | Finite source bldg. conc., $C_{building}$ (µg/$m^3$) | Final finite source bldg. conc., $C_{building}$ (µg/$m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC (mg/$m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 3.5E-01 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 98862 | 8.60E+02 | Acetophenone |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Totals must add up to value of $L_t$ (cell G28) | | | | | |
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based soil concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 8.60E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 14,718 | 2.86E-06 | 1.23E-04 | 1.75E-04 | 9.73E-03 | 9.73E-03 | 9.73E-03 | 9.73E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.15E-01 | 7.16E+02 | 91.00 | -6.28E+01 | 9.73E-03 | 6.10E+04 | 3.47E-01 | 1.27E-03 | 9.07E-01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 3.5E-01 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 120127 | 4.10E+03 | Anthracene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 2.56E+03 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 18,353 | 1.26E-05 | 5.43E-04 | 1.75E-04 | 5.24E-03 | 5.24E-03 | 5.24E-03 | 5.24E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.90E+01 | 2.36E+01 | 91.00 | -6.28E+01 | 5.24E-03 | 6.10E+04 | 1.40E-01 | 6.28E-04 | 1.48E-02 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | NA |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 100527 | 3.30E+02 | Benzaldehyde |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, $h_B$ (cm) | ENTER Thickness of soil stratum C, $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 3.30E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 14,135 | 6.71E-06 | 2.89E-04 | 1.75E-04 | 1.17E-02 | 1.17E-02 | 1.17E-02 | 1.17E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.18E-02 | 7.66E+02 | 91.00 | -6.28E+01 | 1.17E-02 | 6.10E+04 | 4.14E-01 | 1.54E-03 | 1.18E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 3.5E-01 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 71432 | 1.35E+01 | Benzene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ (µg/kg) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.35E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 8,122 | 2.68E-03 | 1.15E-01 | 1.75E-04 | 1.42E-02 | 1.42E-02 | 1.42E-02 | 1.42E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ (µg/$m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ (µg/$m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.18E-01 | 9.01E+03 | 91.00 | -6.28E+01 | 1.42E-02 | 6.10E+04 | 4.85E-01 | 1.89E-03 | 1.70E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ (µg/$m^3$) | Finite source bldg. conc., $C_{building}$ (µg/$m^3$) | Final finite source bldg. conc., $C_{building}$ (µg/$m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC (mg/$m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | 7.8E-06 | 3.0E-02 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 92524 | 3.40E+02 | Biphenyl |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 3.40E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 14,028 | 8.54E-05 | 3.67E-03 | 1.75E-04 | 6.53E-03 | 6.53E-03 | 6.53E-03 | 6.53E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.75E+00 | 1.42E+02 | 91.00 | -6.28E+01 | 6.53E-03 | 6.10E+04 | 2.07E-01 | 8.15E-04 | 1.16E-01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, <$\alpha$> (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 1.8E-01 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 75150 | 5.00E+01 | Carbon disulfide |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Totals must add up to value of $L_t$ (cell G28) | | | | | |
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based soil concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 5.00E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 6,682 | 1.66E-02 | 7.16E-01 | 1.75E-04 | 1.68E-02 | 1.68E-02 | 1.68E-02 | 1.68E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.14E-02 | 1.36E+05 | 91.00 | -6.28E+01 | 1.68E-02 | 6.10E+04 | 5.42E-01 | 2.24E-03 | 3.06E+02 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 7.0E-01 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 56235 | 5.00E+01 | Carbon tetrachloride |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 5.00E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 7,859 | 1.50E-02 | 6.46E-01 | 1.75E-04 | 1.26E-02 | 1.26E-02 | 1.26E-02 | 1.26E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.48E-01 | 6.39E+04 | 91.00 | -6.28E+01 | 1.26E-02 | 6.10E+04 | 4.42E-01 | 1.67E-03 | 1.06E+02 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | 1.5E-05 | NA |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 108907 | 1.27E+02 | Chlorobenzene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based soil concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.27E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 9,803 | 1.54E-03 | 6.61E-02 | 1.75E-04 | 1.18E-02 | 1.18E-02 | 1.18E-02 | 1.18E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.38E-01 | 1.74E+04 | 91.00 | -6.28E+01 | 1.18E-02 | 6.10E+04 | 4.18E-01 | 1.55E-03 | 2.70E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 6.0E-02 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 156592 | 1.96E+00 | cis-1,2-Dichloroethylene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based soil concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.96E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 7,734 | 2.04E-03 | 8.77E-02 | 1.75E-04 | 1.19E-02 | 1.19E-02 | 1.19E-02 | 1.19E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.10E-02 | 1.43E+03 | 91.00 | -6.28E+01 | 1.19E-02 | 6.10E+04 | 4.21E-01 | 1.57E-03 | 2.24E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 3.5E-02 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 110827 | 4.43E+01 | Cyclohexane |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 4.43E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | NA | 4.55E-02 | 1.96E+00 | 1.75E-04 | 1.35E-02 | 1.35E-02 | 1.35E-02 | 1.35E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.31E-01 | 1.17E+05 | 91.00 | -6.28E+01 | 1.35E-02 | 6.10E+04 | 4.65E-01 | 1.78E-03 | 2.08E+02 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | NA |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 75718 | 2.09E+01 | Dichlorodifluoromethane |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 2.09E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 8,386 | 1.62E-01 | 6.96E+00 | 1.75E-04 | 1.08E-02 | 1.08E-02 | 1.08E-02 | 1.08E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.14E-01 | 6.34E+04 | 91.00 | -6.28E+01 | 1.08E-02 | 6.10E+04 | 3.84E-01 | 1.41E-03 | 8.93E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, <$\alpha$> (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 2.0E-01 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 100414 | 2.60E+00 | Ethylbenzene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 2.60E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 10,155 | 3.17E-03 | 1.36E-01 | 1.75E-04 | 1.21E-02 | 1.21E-02 | 1.21E-02 | 1.21E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.26E-01 | 4.52E+02 | 91.00 | -6.28E+01 | 1.21E-02 | 6.10E+04 | 4.28E-01 | 1.60E-03 | 7.23E-01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 1.0E+00 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 86737 | 2.40E+03 | Fluorene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, $h_B$ (Enter value or 0) (cm) | ENTER Thickness of soil stratum C, $h_C$ (Enter value or 0) (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 2.40E+03 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 16,235 | 1.49E-05 | 6.39E-04 | 1.75E-04 | 5.87E-03 | 5.87E-03 | 5.87E-03 | 5.87E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.76E+01 | 5.55E+01 | 91.00 | -6.28E+01 | 5.87E-03 | 6.10E+04 | 1.73E-01 | 7.20E-04 | 4.00E-02 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, <$\alpha$> (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 1.4E-01 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 98828 | 6.46E+01 | Cumene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 6.46E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 12,644 | 4.71E-03 | 2.03E-01 | 1.75E-04 | 1.05E-02 | 1.05E-02 | 1.05E-02 | 1.05E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.77E-01 | 1.25E+04 | 91.00 | -6.28E+01 | 1.05E-02 | 6.10E+04 | 3.75E-01 | 1.37E-03 | 1.72E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 4.0E-01 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 79209 | 1.11E+03 | Methyl acetate |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, $h_B$ (Enter value or 0) (cm) | ENTER Thickness of soil stratum C, $h_C$ (Enter value or 0) (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.11E+03 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 7,909 | 5.82E-05 | 2.50E-03 | 1.75E-04 | 1.68E-02 | 1.68E-02 | 1.68E-02 | 1.68E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.52E-03 | 7.03E+04 | 91.00 | -6.28E+01 | 1.68E-02 | 6.10E+04 | 5.42E-01 | 2.24E-03 | 1.58E+02 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 3.5E+00 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 108872 | 2.29E+02 | Methylcyclohexane |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 2.29E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 8,584 | 4.77E-02 | 2.05E+00 | 1.75E-04 | 1.19E-02 | 1.19E-02 | 1.19E-02 | 1.19E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.57E-01 | 8.02E+05 | 91.00 | -6.28E+01 | 1.19E-02 | 6.10E+04 | 4.20E-01 | 1.57E-03 | 1.25E+03 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 3.0E+00 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 75092 | 4.00E+00 | Methylene chloride |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 4.00E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 7,034 | 1.16E-03 | 5.01E-02 | 1.75E-04 | 1.63E-02 | 1.63E-02 | 1.63E-02 | 1.63E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.34E-02 | 3.06E+03 | 91.00 | -6.28E+01 | 1.63E-02 | 6.10E+04 | 5.32E-01 | 2.18E-03 | 6.66E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | 4.7E-07 | 3.0E+00 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 91203 | 5.30E+02 | Naphthalene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based soil concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 5.30E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 12,913 | 1.52E-04 | 6.54E-03 | 1.75E-04 | 9.54E-03 | 9.54E-03 | 9.54E-03 | 9.54E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.00E+00 | 8.59E+02 | 91.00 | -6.28E+01 | 9.54E-03 | 6.10E+04 | 3.40E-01 | 1.24E-03 | 1.06E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 3.0E-03 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 98953 | 5.30E+02 | Nitrobenzene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 5.30E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 13,378 | 7.24E-06 | 3.12E-04 | 1.75E-04 | 1.23E-02 | 1.23E-02 | 1.23E-02 | 1.23E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.29E-01 | 1.02E+03 | 91.00 | -6.28E+01 | 1.23E-02 | 6.10E+04 | 4.33E-01 | 1.62E-03 | 1.66E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 2.0E-03 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 85018 | 2.67E+04 | Phenanthrene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 2.67E+04 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | NA | 3.57E-05 | 1.54E-03 | 1.75E-04 | 6.06E-03 | 6.06E-03 | 6.06E-03 | 6.06E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.17E+01 | 9.84E+02 | 91.00 | -6.28E+01 | 6.06E-03 | 6.10E+04 | 1.83E-01 | 7.48E-04 | 7.36E-01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | NA |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 129000 | 3.95E+04 | Pyrene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based soil concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ (µg/kg) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 3.95E+04 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 20,700 | 1.72E-06 | 7.42E-05 | 1.75E-04 | 4.44E-03 | 4.44E-03 | 4.44E-03 | 4.44E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ (µg/$m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ (µg/$m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.10E+02 | 1.40E+01 | 91.00 | -6.28E+01 | 4.44E-03 | 6.10E+04 | 9.84E-02 | 5.06E-04 | 7.06E-03 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, <$\alpha$> (unitless) | Mass limit bldg. conc., $C_{building}$ (µg/$m^3$) | Finite source bldg. conc., $C_{building}$ (µg/$m^3$) | Final finite source bldg. conc., $C_{building}$ (µg/$m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC (mg/$m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 1.1E-01 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 100425 | 2.32E+00 | Styrene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 2.32E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 10,450 | 1.08E-03 | 4.64E-02 | 1.75E-04 | 1.15E-02 | 1.15E-02 | 1.15E-02 | 1.15E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.55E+00 | 6.75E+01 | 91.00 | -6.28E+01 | 1.15E-02 | 6.10E+04 | 4.08E-01 | 1.51E-03 | 1.02E-01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 1.0E+00 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES: X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 127184 | 2.50E+01 | Tetrachloroethylene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, $h_B$ (Enter value or 0) (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 2.50E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 9,553 | 7.81E-03 | 3.36E-01 | 1.75E-04 | 1.16E-02 | 1.16E-02 | 1.16E-02 | 1.16E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.10E-01 | 2.06E+04 | 91.00 | -6.28E+01 | 1.16E-02 | 6.10E+04 | 4.13E-01 | 1.53E-03 | 3.16E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | 5.9E-06 | 6.0E-01 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 108883 | 6.08E+02 | Toluene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ (µg/kg) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 6.08E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 9,154 | 2.92E-03 | 1.26E-01 | 1.75E-04 | 1.41E-02 | 1.41E-02 | 1.41E-02 | 1.41E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ (µg/$m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ (µg/$m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.64E-01 | 1.82E+05 | 91.00 | -6.28E+01 | 1.41E-02 | 6.10E+04 | 4.81E-01 | 1.87E-03 | 3.39E+02 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ (µg/$m^3$) | Finite source bldg. conc., $C_{building}$ (µg/$m^3$) | Final finite source bldg. conc., $C_{building}$ (µg/$m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC (mg/$m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 4.0E-01 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 79016 | 5.04E+00 | Trichloroethylene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 5.04E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 8,557 | 4.78E-03 | 2.06E-01 | 1.75E-04 | 1.28E-02 | 1.28E-02 | 1.28E-02 | 1.28E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.32E-01 | 2.56E+03 | 91.00 | -6.28E+01 | 1.28E-02 | 6.10E+04 | 4.47E-01 | 1.69E-03 | 4.33E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | 1.1E-04 | 4.0E-02 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 75694 | 5.60E+00 | Trichlorofluoromethane |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 5.60E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 6,158 | 5.58E-02 | 2.40E+00 | 1.75E-04 | 1.41E-02 | 1.41E-02 | 1.41E-02 | 1.41E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.93E-01 | 9.02E+03 | 91.00 | -6.28E+01 | 1.41E-02 | 6.10E+04 | 4.81E-01 | 1.87E-03 | 1.68E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 7.0E-01 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 106423 | 4.23E+01 | p-Xylene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 4.23E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 10,248 | 3.06E-03 | 1.32E-01 | 1.75E-04 | 1.24E-02 | 1.24E-02 | 1.24E-02 | 1.24E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.78E-01 | 6.66E+03 | 91.00 | -6.28E+01 | 1.24E-02 | 6.10E+04 | 4.37E-01 | 1.64E-03 | 1.09E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 1.0E-01 |

**END**

# EPC Calculation

# Outdoor from Soil

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 75354 | 5.00E+00 | 1,1-Dichloroethylene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_T$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Totals must add up to value of $L_t$ (cell G28) | | | | | |
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based soil concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 5.00E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 6,392 | 1.47E-02 | 6.33E-01 | 1.75E-04 | 1.45E-02 | 1.45E-02 | 1.45E-02 | 1.45E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.18E-01 | 1.16E+04 | 91.00 | -6.28E+01 | 1.45E-02 | 6.10E+04 | 4.93E-01 | 1.93E-03 | 2.24E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 2.0E-01 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 106467 | 7.03E+01 | 1,4-Dichlorobenzene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_T$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 7.03E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 11,243 | 8.76E-04 | 3.77E-02 | 1.75E-04 | 1.12E-02 | 1.12E-02 | 1.12E-02 | 1.12E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.23E+00 | 2.08E+03 | 91.00 | -6.28E+01 | 1.12E-02 | 6.10E+04 | 3.97E-01 | 1.46E-03 | 3.05E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 8.0E-01 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 91576 | 4.50E+02 | 2-Methylnaphthalene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_T$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 4.50E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 16,241 | 1.21E-04 | 5.20E-03 | 1.75E-04 | 8.44E-03 | 8.44E-03 | 8.44E-03 | 8.44E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.62E+00 | 4.14E+02 | 91.00 | -6.28E+01 | 8.44E-03 | 6.10E+04 | 2.95E-01 | 1.09E-03 | 4.50E-01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 7.0E-02 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 83329 | 4.18E+02 | Acenaphthene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_T$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 4.18E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 16,123 | 3.66E-05 | 1.57E-03 | 1.75E-04 | 6.81E-03 | 6.81E-03 | 6.81E-03 | 6.81E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.42E+01 | 4.64E+01 | 91.00 | -6.28E+01 | 6.81E-03 | 6.10E+04 | 2.20E-01 | 8.55E-04 | 3.96E-02 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 2.1E-01 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 208968 | 3.21E+02 | Acenaphthylene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 3.21E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | NA | 1.14E-04 | 4.90E-03 | 1.75E-04 | 7.26E-03 | 7.26E-03 | 7.26E-03 | 7.26E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.22E+01 | 1.28E+02 | 91.00 | -6.28E+01 | 7.26E-03 | 6.10E+04 | 2.42E-01 | 9.19E-04 | 1.18E-01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | NA |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 98862 | 1.35E+02 | Acetophenone |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Totals must add up to value of $L_t$ (cell G28) | | | | | |
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based soil concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.35E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 14,718 | 2.86E-06 | 1.23E-04 | 1.75E-04 | 9.73E-03 | 9.73E-03 | 9.73E-03 | 9.73E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.15E-01 | 1.12E+02 | 91.00 | -6.28E+01 | 9.73E-03 | 6.10E+04 | 3.47E-01 | 1.27E-03 | 1.42E-01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 3.5E-01 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 100527 | 1.69E+02 | Benzaldehyde |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.69E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 14,135 | 6.71E-06 | 2.89E-04 | 1.75E-04 | 1.17E-02 | 1.17E-02 | 1.17E-02 | 1.17E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.18E-02 | 3.92E+02 | 91.00 | -6.28E+01 | 1.17E-02 | 6.10E+04 | 4.14E-01 | 1.54E-03 | 6.02E-01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 3.5E-01 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 71432 | 3.11E+00 | Benzene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ (µg/kg) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 3.11E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 8,122 | 2.68E-03 | 1.15E-01 | 1.75E-04 | 1.42E-02 | 1.42E-02 | 1.42E-02 | 1.42E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ (µg/$m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ (µg/$m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.18E-01 | 2.08E+03 | 91.00 | -6.28E+01 | 1.42E-02 | 6.10E+04 | 4.85E-01 | 1.89E-03 | 3.92E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ (µg/$m^3$) | Finite source bldg. conc., $C_{building}$ (µg/$m^3$) | Final finite source bldg. conc., $C_{building}$ (µg/$m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC (mg/$m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | 7.8E-06 | 3.0E-02 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 92524 | 1.25E+02 | Biphenyl |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.25E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 14,028 | 8.54E-05 | 3.67E-03 | 1.75E-04 | 6.53E-03 | 6.53E-03 | 6.53E-03 | 6.53E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.75E+00 | 5.23E+01 | 91.00 | -6.28E+01 | 6.53E-03 | 6.10E+04 | 2.07E-01 | 8.15E-04 | 4.26E-02 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, <$\alpha$> (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 1.8E-01 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 75150 | 5.19E+00 | Carbon disulfide |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 5.19E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 6,682 | 1.66E-02 | 7.16E-01 | 1.75E-04 | 1.68E-02 | 1.68E-02 | 1.68E-02 | 1.68E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.14E-02 | 1.42E+04 | 91.00 | -6.28E+01 | 1.68E-02 | 6.10E+04 | 5.42E-01 | 2.24E-03 | 3.18E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 7.0E-01 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 56235 | 2.07E+00 | Carbon tetrachloride |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 2.07E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 7,859 | 1.50E-02 | 6.46E-01 | 1.75E-04 | 1.26E-02 | 1.26E-02 | 1.26E-02 | 1.26E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.48E-01 | 2.65E+03 | 91.00 | -6.28E+01 | 1.26E-02 | 6.10E+04 | 4.42E-01 | 1.67E-03 | 4.41E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | 1.5E-05 | NA |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 108907 | 1.69E+01 | Chlorobenzene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based soil concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.69E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 9,803 | 1.54E-03 | 6.61E-02 | 1.75E-04 | 1.18E-02 | 1.18E-02 | 1.18E-02 | 1.18E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.38E-01 | 2.31E+03 | 91.00 | -6.28E+01 | 1.18E-02 | 6.10E+04 | 4.18E-01 | 1.55E-03 | 3.59E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, <$\alpha$> (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 6.0E-02 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 75718 | 2.79E+00 | Dichlorodifluoromethane |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ (g/cm-$s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 2.79E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 8,386 | 1.62E-01 | 6.96E+00 | 1.75E-04 | 1.08E-02 | 1.08E-02 | 1.08E-02 | 1.08E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.14E-01 | 8.47E+03 | 91.00 | -6.28E+01 | 1.08E-02 | 6.10E+04 | 3.84E-01 | 1.41E-03 | 1.19E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, <$\alpha$> (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 2.0E-01 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 79209 | 8.04E+01 | Methyl acetate |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, $h_B$ (cm) | ENTER Thickness of soil stratum C, $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 8.04E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 7,909 | 5.82E-05 | 2.50E-03 | 1.75E-04 | 1.68E-02 | 1.68E-02 | 1.68E-02 | 1.68E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.52E-03 | 5.09E+03 | 91.00 | -6.28E+01 | 1.68E-02 | 6.10E+04 | 5.42E-01 | 2.24E-03 | 1.14E+01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 3.5E+00 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 108872 | 1.95E+01 | Methylcyclohexane |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.95E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 8,584 | 4.77E-02 | 2.05E+00 | 1.75E-04 | 1.19E-02 | 1.19E-02 | 1.19E-02 | 1.19E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.57E-01 | 6.83E+04 | 91.00 | -6.28E+01 | 1.19E-02 | 6.10E+04 | 4.20E-01 | 1.57E-03 | 1.07E+02 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, <$\alpha$> (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 3.0E+00 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 75092 | 3.90E+00 | Methylene chloride |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 3.90E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 7,034 | 1.16E-03 | 5.01E-02 | 1.75E-04 | 1.63E-02 | 1.63E-02 | 1.63E-02 | 1.63E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.34E-02 | 2.98E+03 | 91.00 | -6.28E+01 | 1.63E-02 | 6.10E+04 | 5.32E-01 | 2.18E-03 | 6.49E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | 4.7E-07 | 3.0E+00 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [ X ]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 91203 | 7.45E+02 | Naphthalene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |
| | | | | Used to calculate risk-based soil concentration. | |

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 7.45E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 12,913 | 1.52E-04 | 6.54E-03 | 1.75E-04 | 9.54E-03 | 9.54E-03 | 9.54E-03 | 9.54E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.00E+00 | 1.21E+03 | 91.00 | -6.28E+01 | 9.54E-03 | 6.10E+04 | 3.40E-01 | 1.24E-03 | 1.50E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 3.0E-03 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 98953 | 5.30E+02 | Nitrobenzene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 5.30E+02 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 13,378 | 7.24E-06 | 3.12E-04 | 1.75E-04 | 1.23E-02 | 1.23E-02 | 1.23E-02 | 1.23E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.29E-01 | 1.02E+03 | 91.00 | -6.28E+01 | 1.23E-02 | 6.10E+04 | 4.33E-01 | 1.62E-03 | 1.66E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 2.0E-03 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 85018 | 4.63E+03 | Phenanthrene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 4.63E+03 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | NA | 3.57E-05 | 1.54E-03 | 1.75E-04 | 6.06E-03 | 6.06E-03 | 6.06E-03 | 6.06E-03 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.17E+01 | 1.71E+02 | 91.00 | -6.28E+01 | 6.06E-03 | 6.10E+04 | 1.83E-01 | 7.48E-04 | 1.28E-01 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | NA |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 127184 | 3.87E+00 | Tetrachloroethylene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, $h_B$ (Enter value or 0) (cm) | ENTER Thickness of soil stratum C, $h_C$ (Enter value or 0) (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 3.87E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 9,553 | 7.81E-03 | 3.36E-01 | 1.75E-04 | 1.16E-02 | 1.16E-02 | 1.16E-02 | 1.16E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.10E-01 | 3.19E+03 | 91.00 | -6.28E+01 | 1.16E-02 | 6.10E+04 | 4.13E-01 | 1.53E-03 | 4.89E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | 5.9E-06 | 6.0E-01 |

**END**

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 79016 | 3.09E+00 | Trichloroethylene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 3.09E+00 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 8,557 | 4.78E-03 | 2.06E-01 | 1.75E-04 | 1.28E-02 | 1.28E-02 | 1.28E-02 | 1.28E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.32E-01 | 1.57E+03 | 91.00 | -6.28E+01 | 1.28E-02 | 6.10E+04 | 4.47E-01 | 1.69E-03 | 2.65E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | 1.1E-04 | 4.0E-02 |

**END**

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

**OR**

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Initial soil conc., $C_R$ (µg/kg) | Chemical |
|---|---|---|
| 106423 | 1.06E+01 | p-Xylene |

MORE ↓

| ENTER Average soil temperature, $T_S$ (°C) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Depth below grade to top of contamination, $L_t$ (cm) | ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) $L_b$ (cm) | ENTER Totals must add up to value of $L_t$ (cell G28) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 60 | 0 | 20 | 20 | 20 | S | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum A soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum B soil organic carbon fraction, $f_{oc}^B$ (unitless) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) | ENTER Stratum C soil organic carbon fraction, $f_{oc}^C$ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 | S | 1.66 | 0.375 | 0.054 | 0.002 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10 | 40 | 244 | 91 | 244 | 91 | 2 | |

| ENTER Averaging time for carcinogens, $AT_C$ (yrs) | ENTER Averaging time for noncarcinogens, $AT_{NC}$ (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|
| 70 | 30 | 30 | 350 | 1.0E-06 | 1 |

Used to calculate risk-based soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, $X_{crack}$ (cm) | Initial soil concentration used, $C_R$ ($\mu g/kg$) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 50 | 0.321 | 0.321 | 0.321 | 0.003 | 9.92E-08 | 0.998 | 9.91E-08 | 670 | 1.06E+01 | 3.01E+03 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, $H'_{TS}$ (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.22E+04 | 2.75E+00 | 10 | 10,248 | 3.06E-03 | 1.32E-01 | 1.75E-04 | 1.24E-02 | 1.24E-02 | 1.24E-02 | 1.24E-02 | 50 | 10 |

| Soil-water partition coefficient, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source $\beta$ term (unitless) | Finite source $\psi$ term $(sec)^{-1}$ | Time for source depletion, $\tau_D$ (sec) | Exposure duration > time for source depletion (YES/NO) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.78E-01 | 1.67E+03 | 91.00 | -6.28E+01 | 1.24E-02 | 6.10E+04 | 4.37E-01 | 1.64E-03 | 2.74E+00 | NA | NA | NA | NA |

| Finite source indoor attenuation coefficient, $<\alpha>$ (unitless) | Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$) | Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Final finite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | 1.0E-01 |

**END**

# APPENDIX C

# ProUCL OUTPUTS

# Shallow Groundwater/Leachate

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | **General UCL Statistics for Data Sets with Non-Detects** | | | | | | | | |
| 2 | | **User Selected Options** | | | | | | | | | | |
| 3 | | | From File | C:\aa_Projects\Peterson\Unnamed Island\UCLs\GW conc_Crosstab.xls.wst | | | | | | | | |
| 4 | | | Full Precision | OFF | | | | | | | | |
| 5 | | | Confidence Coefficient | 95% | | | | | | | | |
| 6 | | | Number of Bootstrap Operations | 2000 | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | **1,4-Dichlorobenzene** | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | **General Statistics** | | | | | | |
| 12 | | | | | | Number of Valid Data | 12 | | | Number of Detected Data | | 5 |
| 13 | | | | | | Number of Distinct Detected Data | 4 | | | Number of Non-Detect Data | | 7 |
| 14 | | | | | | | | | | Percent Non-Detects | | 58.33% |
| 15 | | | | | | | | | | | | |
| 16 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 17 | | | | | | Minimum Detected | 0.81 | | | Minimum Detected | | -0.211 |
| 18 | | | | | | Maximum Detected | 3.19 | | | Maximum Detected | | 1.16 |
| 19 | | | | | | Mean of Detected | 2.074 | | | Mean of Detected | | 0.641 |
| 20 | | | | | | SD of Detected | 0.849 | | | SD of Detected | | 0.51 |
| 21 | | | | | | Minimum Non-Detect | 0.5 | | | Minimum Non-Detect | | -0.693 |
| 22 | | | | | | Maximum Non-Detect | 2 | | | Maximum Non-Detect | | 0.693 |
| 23 | | | | | | | | | | | | |
| 24 | | | | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | Number treated as Non-Detect | | 9 |
| 25 | | | | For all methods (except KM, DL/2, and ROS Methods), | | | | | | Number treated as Detected | | 3 |
| 26 | | | | Observations < Largest ND are treated as NDs | | | | | | Single DL Non-Detect Percentage | | 75.00% |
| 27 | | | | | | | | | | | | |
| 28 | | | | | | **Warning: There are only 4 Distinct Detected Values in this data** | | | | | | |
| 29 | | | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | |
| 30 | | | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | |
| 31 | | | | | | | | | | | | |
| 32 | | | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | |
| 33 | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |
| 35 | | | | | | **UCL Statistics** | | | | | | |
| 36 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 37 | | | | | | Shapiro Wilk Test Statistic | 0.929 | | | Shapiro Wilk Test Statistic | | 0.846 |
| 38 | | | | | | 5% Shapiro Wilk Critical Value | 0.762 | | | 5% Shapiro Wilk Critical Value | | 0.762 |
| 39 | | | | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 40 | | | | | | | | | | | | |
| 41 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 42 | | | | | | DL/2 Substitution Method | | | | DL/2 Substitution Method | | |
| 43 | | | | | | Mean | 1.135 | | | Mean | | -0.311 |
| 44 | | | | | | SD | 1.011 | | | SD | | 1.024 |
| 45 | | | | | | 95% DL/2 (t) UCL | 1.659 | | | 95% H-Stat (DL/2) UCL | | 2.829 |
| 46 | | | | | | | | | | | | |
| 47 | | | | | | Maximum Likelihood Estimate(MLE) Method | | | | Log ROS Method | | |
| 48 | | | | | | Mean | 2.652 | | | Mean in Log Scale | | -0.0714 |
| 49 | | | | | | SD | 0.467 | | | SD in Log Scale | | 0.758 |
| 50 | | | | | | 95% MLE (t) UCL | 2.894 | | | Mean in Original Scale | | 1.212 |
| 51 | | | | | | 95% MLE (Tiku) UCL | 3.12 | | | SD in Original Scale | | 0.931 |
| 52 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 1.663 |
| 53 | | | | | | | | | | 95% BCA Bootstrap UCL | | 1.73 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 54 | | | | | | | | | | | | |
| 55 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 56 | | | | | k star (bias corrected) | 2.455 | **Data appear Normal at 5% Significance Level** | | | | | |
| 57 | | | | | Theta Star | 0.845 | | | | | | |
| 58 | | | | | nu star | 24.55 | | | | | | |
| 59 | | | | | | | | | | | | |
| 60 | | | | | A-D Test Statistic | 0.475 | **Nonparametric Statistics** | | | | | |
| 61 | | | | | 5% A-D Critical Value | 0.68 | | | | | Kaplan-Meier (KM) Method | |
| 62 | | | | | K-S Test Statistic | 0.68 | | | | | Mean | 1.364 |
| 63 | | | | | 5% K-S Critical Value | 0.358 | | | | | SD | 0.794 |
| 64 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.263 |
| 65 | | | | | | | | | | | 95% KM (t) UCL | 1.837 |
| 66 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 1.798 |
| 67 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 2.05 |
| 68 | | | | | Minimum | 0.81 | | | | | 95% KM (bootstrap t) UCL | 1.69 |
| 69 | | | | | Maximum | 3.21 | | | | | 95% KM (BCA) UCL | 2.365 |
| 70 | | | | | Mean | 2.168 | | | | | 95% KM (Percentile Bootstrap) UCL | 2.313 |
| 71 | | | | | Median | 2.182 | | | | | 95% KM (Chebyshev) UCL | 2.513 |
| 72 | | | | | SD | 0.776 | | | | | 97.5% KM (Chebyshev) UCL | 3.01 |
| 73 | | | | | k star | 5.156 | | | | | 99% KM (Chebyshev) UCL | 3.986 |
| 74 | | | | | Theta star | 0.421 | | | | | | |
| 75 | | | | | Nu star | 123.7 | **Potential UCLs to Use** | | | | | |
| 76 | | | | | AppChi2 | 99.05 | | | | | 95% KM (t) UCL | 1.837 |
| 77 | | | | | 95% Gamma Approximate UCL | 2.709 | | | | | 95% KM (Percentile Bootstrap) UCL | 2.313 |
| 78 | | | | | 95% Adjusted Gamma UCL | 2.804 | | | | | | |
| 79 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 80 | | | | | | | | | | | | |
| 81 | | | | | | | | | | | | |
| 82 | **4,4'-DDD** | | | | | | | | | | | |
| 83 | | | | | | | | | | | | |
| 84 | | | | | **General Statistics** | | | | | | | |
| 85 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 2 |
| 86 | | | | | Number of Distinct Detected Data | 2 | | | | | Number of Non-Detect Data | 10 |
| 87 | | | | | | | | | | | Percent Non-Detects | 83.33% |
| 88 | | | | | | | | | | | | |
| 89 | | | | **Raw Statistics** | | | **Log-transformed Statistics** | | | | | |
| 90 | | | | | Minimum Detected | 0.00282 | | | | | Minimum Detected | -5.871 |
| 91 | | | | | Maximum Detected | 0.0119 | | | | | Maximum Detected | -4.431 |
| 92 | | | | | Mean of Detected | 0.00736 | | | | | Mean of Detected | -5.151 |
| 93 | | | | | SD of Detected | 0.00642 | | | | | SD of Detected | 1.018 |
| 94 | | | | | Minimum Non-Detect | 0.000526 | | | | | Minimum Non-Detect | -7.55 |
| 95 | | | | | Maximum Non-Detect | 0.01 | | | | | Maximum Non-Detect | -4.605 |
| 96 | | | | | | | | | | | | |
| 97 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 11 |
| 98 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 1 |
| 99 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 91.67% |
| 100 | | | | | | | | | | | | |
| 101 | **Warning: Data set has only 2 Distinct Detected Values.** | | | | | | | | | | | |
| 102 | **This may not be adequate enough to compute meaningful and reliable test statistics and estimates.** | | | | | | | | | | | |
| 103 | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 104 | | | | | | | | | | | | |
| 105 | **Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.** | | | | | | | | | | | |
| 106 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 107 | The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods. | | | | | | | | | | | |
| 108 | Those methods will return a 'N/A' value on your output display! | | | | | | | | | | | |
| 109 | | | | | | | | | | | | |
| 110 | It is necessary to have 4 or more Distinct Values for bootstrap methods. | | | | | | | | | | | |
| 111 | However, results obtained using 4 to 9 distinct values may not be reliable. | | | | | | | | | | | |
| 112 | It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates. | | | | | | | | | | | |
| 113 | | | | | | | | | | | | |
| 114 | | | | | | | | | | | | |
| 115 | UCL Statistics | | | | | | | | | | | |
| 116 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 117 | | | | | Shapiro Wilk Test Statistic | N/A | | | | Shapiro Wilk Test Statistic | | N/A |
| 118 | | | | | 5% Shapiro Wilk Critical Value | N/A | | | | 5% Shapiro Wilk Critical Value | | N/A |
| 119 | Data not Normal at 5% Significance Level | | | | | | Data not Lognormal at 5% Significance Level | | | | | |
| 120 | | | | | | | | | | | | |
| 121 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 122 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 123 | | | | | Mean | 0.00359 | | | | Mean | | -6.043 |
| 124 | | | | | SD | 0.00306 | | | | SD | | 1.127 |
| 125 | | | | | 95% DL/2 (t) UCL | 0.00517 | | | | 95% H-Stat (DL/2) UCL | | 0.00984 |
| 126 | | | | | | | | | | | | |
| 127 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 128 | MLE method failed to converge properly | | | | | | | | | Mean in Log Scale | | N/A |
| 129 | | | | | | | | | | SD in Log Scale | | N/A |
| 130 | | | | | | | | | | Mean in Original Scale | | N/A |
| 131 | | | | | | | | | | SD in Original Scale | | N/A |
| 132 | | | | | | | | | | 95% Percentile Bootstrap UCL | | N/A |
| 133 | | | | | | | | | | 95% BCA Bootstrap UCL | | N/A |
| 134 | | | | | | | | | | | | |
| 135 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 136 | | | | | k star (bias corrected) | N/A | Data do not follow a Discernable Distribution (0.05) | | | | | |
| 137 | | | | | Theta Star | N/A | | | | | | |
| 138 | | | | | nu star | N/A | | | | | | |
| 139 | | | | | | | | | | | | |
| 140 | | | | | A-D Test Statistic | N/A | Nonparametric Statistics | | | | | |
| 141 | | | | | 5% A-D Critical Value | N/A | | | | Kaplan-Meier (KM) Method | | |
| 142 | | | | | K-S Test Statistic | N/A | | | | Mean | | 0.00358 |
| 143 | | | | | 5% K-S Critical Value | N/A | | | | SD | | 0.00251 |
| 144 | Data not Gamma Distributed at 5% Significance Level | | | | | | | | | SE of Mean | | 0.00102 |
| 145 | | | | | | | | | | 95% KM (t) UCL | | 0.00542 |
| 146 | Assuming Gamma Distribution | | | | | | | | | 95% KM (z) UCL | | 0.00526 |
| 147 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | | 0.00979 |
| 148 | | | | | Minimum | N/A | | | | 95% KM (bootstrap t) UCL | | N/A |
| 149 | | | | | Maximum | N/A | | | | 95% KM (BCA) UCL | | 0.0119 |
| 150 | | | | | Mean | N/A | | | | 95% KM (Percentile Bootstrap) UCL | | N/A |
| 151 | | | | | Median | N/A | | | | 95% KM (Chebyshev) UCL | | 0.00804 |
| 152 | | | | | SD | N/A | | | | 97.5% KM (Chebyshev) UCL | | 0.00997 |
| 153 | | | | | k star | N/A | | | | 99% KM (Chebyshev) UCL | | 0.0138 |
| 154 | | | | | Theta star | N/A | | | | | | |
| 155 | | | | | Nu star | N/A | Potential UCLs to Use | | | | | |
| 156 | | | | | AppChi2 | N/A | | | | 95% KM (BCA) UCL | | 0.0119 |
| 157 | | | | | 95% Gamma Approximate UCL | N/A | | | | | | |
| 158 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 159 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 160 | | | | | | | | | | | | |
| 161 | | | | | | | | | | | | |
| 162 | **4,4'-DDE** | | | | | | | | | | | |
| 163 | | | | | | | | | | | | |
| 164 | | | | | | **General Statistics** | | | | | | |
| 165 | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | | 1 |
| 166 | | | | | Number of Distinct Detected Data | 1 | | | | Number of Non-Detect Data | | 11 |
| 167 | | | | | | | | | | Percent Non-Detects | | 91.67% |
| 168 | | | | | | | | | | | | |
| 169 | | | | | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | |
| 170 | | | | | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | |
| 171 | | | | | | | | | | | | |
| 172 | | | | | **The data set for variable 4,4'-DDE was not processed!** | | | | | | | |
| 173 | | | | | | | | | | | | |
| 174 | | | | | | | | | | | | |
| 175 | | | | | | | | | | | | |
| 176 | **4,4'-DDT** | | | | | | | | | | | |
| 177 | | | | | | | | | | | | |
| 178 | | | | | | **General Statistics** | | | | | | |
| 179 | | | | | Number of Valid Data | 11 | | | | Number of Detected Data | | 0 |
| 180 | | | | | Number of Distinct Detected Data | 0 | | | | Number of Non-Detect Data | | 11 |
| 181 | | | | | | | | | | Percent Non-Detects | | 100.00% |
| 182 | | | | | | | | | | | | |
| 183 | | | | | **Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!** | | | | | | | |
| 184 | | | | | **Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!** | | | | | | | |
| 185 | | | | | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | |
| 186 | | | | | | | | | | | | |
| 187 | | | | | **The data set for variable 4,4'-DDT was not processed!** | | | | | | | |
| 188 | | | | | | | | | | | | |
| 189 | | | | | | | | | | | | |
| 190 | | | | | | | | | | | | |
| 191 | **4-Methylphenol** | | | | | | | | | | | |
| 192 | | | | | | | | | | | | |
| 193 | | | | | | **General Statistics** | | | | | | |
| 194 | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | | 1 |
| 195 | | | | | Number of Distinct Detected Data | 1 | | | | Number of Non-Detect Data | | 11 |
| 196 | | | | | | | | | | Percent Non-Detects | | 91.67% |
| 197 | | | | | | | | | | | | |
| 198 | | | | | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | |
| 199 | | | | | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | |
| 200 | | | | | | | | | | | | |
| 201 | | | | | **The data set for variable 4-Methylphenol was not processed!** | | | | | | | |
| 202 | | | | | | | | | | | | |
| 203 | | | | | | | | | | | | |
| 204 | | | | | | | | | | | | |
| 205 | **Acenaphthylene** | | | | | | | | | | | |
| 206 | | | | | | | | | | | | |
| 207 | | | | | | **General Statistics** | | | | | | |
| 208 | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | | 3 |
| 209 | | | | | Number of Distinct Detected Data | 3 | | | | Number of Non-Detect Data | | 9 |
| 210 | | | | | | | | | | Percent Non-Detects | | 75.00% |
| 211 | | | | | | | | | | | | |
| 212 | | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | | |

| | A–E | F | G–K | L |
|---|---|---|---|---|
| 213 | Minimum Detected | 0.0178 | Minimum Detected | -4.029 |
| 214 | Maximum Detected | 0.032 | Maximum Detected | -3.442 |
| 215 | Mean of Detected | 0.0229 | Mean of Detected | -3.811 |
| 216 | SD of Detected | 0.00787 | SD of Detected | 0.321 |
| 217 | Minimum Non-Detect | 0.01 | Minimum Non-Detect | -4.605 |
| 218 | Maximum Non-Detect | 11 | Maximum Non-Detect | 2.398 |
| 219 | | | | |
| 220 | Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 12 |
| 221 | For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 0 |
| 222 | Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 100.00% |
| 223 | | | | |
| 224 | **Warning: There are only 3 Distinct Detected Values in this data set** | | | |
| 225 | **The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.** | | | |
| 226 | **Those methods will return a 'N/A' value on your output display!** | | | |
| 227 | | | | |
| 228 | **It is necessary to have 4 or more Distinct Values for bootstrap methods.** | | | |
| 229 | **However, results obtained using 4 to 9 distinct values may not be reliable.** | | | |
| 230 | **It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.** | | | |
| 231 | | | | |
| 232 | | | | |
| 233 | **UCL Statistics** | | | |
| 234 | **Normal Distribution Test with Detected Values Only** | | **Lognormal Distribution Test with Detected Values Only** | |
| 235 | Shapiro Wilk Test Statistic | 0.813 | Shapiro Wilk Test Statistic | 0.832 |
| 236 | 5% Shapiro Wilk Critical Value | 0.767 | 5% Shapiro Wilk Critical Value | 0.767 |
| 237 | **Data appear Normal at 5% Significance Level** | | **Data appear Lognormal at 5% Significance Level** | |
| 238 | | | | |
| 239 | **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
| 240 | DL/2 Substitution Method | | DL/2 Substitution Method | |
| 241 | Mean | 1.315 | Mean | -2.421 |
| 242 | SD | 2.326 | SD | 2.579 |
| 243 | 95% DL/2 (t) UCL | 2.521 | 95% H-Stat (DL/2) UCL | 2581 |
| 244 | | | | |
| 245 | Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| 246 | **MLE method failed to converge properly** | | Mean in Log Scale | -4.183 |
| 247 | | | SD in Log Scale | 0.435 |
| 248 | | | Mean in Original Scale | 0.0166 |
| 249 | | | SD in Original Scale | 0.00731 |
| 250 | | | 95% Percentile Bootstrap UCL | 0.02 |
| 251 | | | 95% BCA Bootstrap UCL | 0.0204 |
| 252 | | | | |
| 253 | **Gamma Distribution Test with Detected Values Only** | | **Data Distribution Test with Detected Values Only** | |
| 254 | k star (bias corrected) | N/A | **Data appear Normal at 5% Significance Level** | |
| 255 | Theta Star | N/A | | |
| 256 | nu star | N/A | | |
| 257 | | | | |
| 258 | A-D Test Statistic | N/A | **Nonparametric Statistics** | |
| 259 | 5% A-D Critical Value | N/A | Kaplan-Meier (KM) Method | |
| 260 | K-S Test Statistic | N/A | Mean | 0.0209 |
| 261 | 5% K-S Critical Value | N/A | SD | 0.00558 |
| 262 | **Data not Gamma Distributed at 5% Significance Level** | | SE of Mean | 0.00306 |
| 263 | | | 95% KM (t) UCL | 0.0264 |
| 264 | **Assuming Gamma Distribution** | | 95% KM (z) UCL | 0.0259 |
| 265 | Gamma ROS Statistics using Extrapolated Data | | 95% KM (jackknife) UCL | 0.026 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 266 | | | | | Minimum | N/A | | | | 95% KM (bootstrap t) UCL | | 0.0562 |
| 267 | | | | | Maximum | N/A | | | | 95% KM (BCA) UCL | | 0.032 |
| 268 | | | | | Mean | N/A | | | | 95% KM (Percentile Bootstrap) UCL | | N/A |
| 269 | | | | | Median | N/A | | | | 95% KM (Chebyshev) UCL | | 0.0342 |
| 270 | | | | | SD | N/A | | | | 97.5% KM (Chebyshev) UCL | | 0.04 |
| 271 | | | | | k star | N/A | | | | 99% KM (Chebyshev) UCL | | 0.0513 |
| 272 | | | | | Theta star | N/A | | | | | | |
| 273 | | | | | Nu star | N/A | | | | **Potential UCLs to Use** | | |
| 274 | | | | | AppChi2 | N/A | | | | 95% KM (t) UCL | | 0.0264 |
| 275 | | | | | 95% Gamma Approximate UCL | N/A | | | | 95% KM (Percentile Bootstrap) UCL | | N/A |
| 276 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 277 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 278 | | | | | | | | | | | | |
| 279 | | | | | | | | | | | | |
| 280 | **alpha-BHC** | | | | | | | | | | | |
| 281 | | | | | | | | | | | | |
| 282 | | | | | **General Statistics** | | | | | | | |
| 283 | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | | 1 |
| 284 | | | | | Number of Distinct Detected Data | 1 | | | | Number of Non-Detect Data | | 11 |
| 285 | | | | | | | | | | Percent Non-Detects | | 91.67% |
| 286 | | | | | | | | | | | | |
| 287 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 288 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 289 | | | | | | | | | | | | |
| 290 | **The data set for variable alpha-BHC was not processed!** | | | | | | | | | | | |
| 291 | | | | | | | | | | | | |
| 292 | | | | | | | | | | | | |
| 293 | | | | | | | | | | | | |
| 294 | **alpha-Chlordane** | | | | | | | | | | | |
| 295 | | | | | | | | | | | | |
| 296 | | | | | **General Statistics** | | | | | | | |
| 297 | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | | 3 |
| 298 | | | | | Number of Distinct Detected Data | 3 | | | | Number of Non-Detect Data | | 9 |
| 299 | | | | | | | | | | Percent Non-Detects | | 75.00% |
| 300 | | | | | | | | | | | | |
| 301 | | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | | |
| 302 | | | | | Minimum Detected | 0.000892 | | | | Minimum Detected | | -7.022 |
| 303 | | | | | Maximum Detected | 0.0072 | | | | Maximum Detected | | -4.934 |
| 304 | | | | | Mean of Detected | 0.00433 | | | | Mean of Detected | | -5.757 |
| 305 | | | | | SD of Detected | 0.00319 | | | | SD of Detected | | 1.112 |
| 306 | | | | | Minimum Non-Detect | 0.000526 | | | | Minimum Non-Detect | | -7.55 |
| 307 | | | | | Maximum Non-Detect | 0.01 | | | | Maximum Non-Detect | | -4.605 |
| 308 | | | | | | | | | | | | |
| 309 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 12 |
| 310 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 0 |
| 311 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 100.00% |
| 312 | | | | | | | | | | | | |
| 313 | **Warning: There are only 3 Distinct Detected Values in this data set** | | | | | | | | | | | |
| 314 | **The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.** | | | | | | | | | | | |
| 315 | **Those methods will return a 'N/A' value on your output display!** | | | | | | | | | | | |
| 316 | | | | | | | | | | | | |
| 317 | **It is necessary to have 4 or more Distinct Values for bootstrap methods.** | | | | | | | | | | | |
| 318 | **However, results obtained using 4 to 9 distinct values may not be reliable.** | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 319 | It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates. | | | | | | | | | | | |
| 320 | | | | | | | | | | | | |
| 321 | | | | | | | | | | | | |
| 322 | UCL Statistics | | | | | | | | | | | |
| 323 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 324 | | | | | Shapiro Wilk Test Statistic | 0.976 | | | | Shapiro Wilk Test Statistic | | 0.882 |
| 325 | | | | | 5% Shapiro Wilk Critical Value | 0.767 | | | | 5% Shapiro Wilk Critical Value | | 0.767 |
| 326 | Data appear Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | | | | |
| 327 | | | | | | | | | | | | |
| 328 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 329 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 330 | | | | | Mean | 0.00301 | | | | Mean | | -6.169 |
| 331 | | | | | SD | 0.00229 | | | | SD | | 0.987 |
| 332 | | | | | 95% DL/2 (t) UCL | 0.00419 | | | | 95% H-Stat (DL/2) UCL | | 0.0125 |
| 333 | | | | | | | | | | | | |
| 334 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 335 | MLE method failed to converge properly | | | | | | | | | Mean in Log Scale | | -7.069 |
| 336 | | | | | | | | | | SD in Log Scale | | 1.163 |
| 337 | | | | | | | | | | Mean in Original Scale | | 0.00164 |
| 338 | | | | | | | | | | SD in Original Scale | | 0.00219 |
| 339 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.00274 |
| 340 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.00314 |
| 341 | | | | | | | | | | | | |
| 342 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 343 | | | | | k star (bias corrected) | N/A | Data appear Normal at 5% Significance Level | | | | | |
| 344 | | | | | Theta Star | N/A | | | | | | |
| 345 | | | | | nu star | N/A | | | | | | |
| 346 | | | | | | | | | | | | |
| 347 | | | | | A-D Test Statistic | N/A | Nonparametric Statistics | | | | | |
| 348 | | | | | 5% A-D Critical Value | N/A | | | | Kaplan-Meier (KM) Method | | |
| 349 | | | | | K-S Test Statistic | N/A | | | | Mean | | 0.0021 |
| 350 | | | | | 5% K-S Critical Value | N/A | | | | SD | | 0.00224 |
| 351 | Data not Gamma Distributed at 5% Significance Level | | | | | | | | | SE of Mean | | 0.0009359 |
| 352 | | | | | | | | | | 95% KM (t) UCL | | 0.00378 |
| 353 | Assuming Gamma Distribution | | | | | | | | | 95% KM (z) UCL | | 0.00364 |
| 354 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | | 0.00474 |
| 355 | | | | | Minimum | N/A | | | | 95% KM (bootstrap t) UCL | | 0.00305 |
| 356 | | | | | Maximum | N/A | | | | 95% KM (BCA) UCL | | N/A |
| 357 | | | | | Mean | N/A | | | | 95% KM (Percentile Bootstrap) UCL | | 0.0072 |
| 358 | | | | | Median | N/A | | | | 95% KM (Chebyshev) UCL | | 0.00618 |
| 359 | | | | | SD | N/A | | | | 97.5% KM (Chebyshev) UCL | | 0.00795 |
| 360 | | | | | k star | N/A | | | | 99% KM (Chebyshev) UCL | | 0.0114 |
| 361 | | | | | Theta star | N/A | | | | | | |
| 362 | | | | | Nu star | N/A | Potential UCLs to Use | | | | | |
| 363 | | | | | AppChi2 | N/A | | | | 95% KM (t) UCL | | 0.00378 |
| 364 | | | | | 95% Gamma Approximate UCL | N/A | | | | 95% KM (Percentile Bootstrap) UCL | | 0.0072 |
| 365 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 366 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 367 | | | | | | | | | | | | |
| 368 | | | | | | | | | | | | |
| 369 | Aluminum | | | | | | | | | | | |
| 370 | | | | | | | | | | | | |
| 371 | General Statistics | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 372 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 9 |
| 373 | | | | | Number of Distinct Detected Data | 8 | | | | | Number of Non-Detect Data | 3 |
| 374 | | | | | | | | | | | Percent Non-Detects | 25.00% |
| 375 | | | | | | | | | | | | |
| 376 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 377 | | | | | Minimum Detected | 38 | | | | | Minimum Detected | 3.638 |
| 378 | | | | | Maximum Detected | 260 | | | | | Maximum Detected | 5.561 |
| 379 | | | | | Mean of Detected | 109.3 | | | | | Mean of Detected | 4.52 |
| 380 | | | | | SD of Detected | 70.16 | | | | | SD of Detected | 0.626 |
| 381 | | | | | Minimum Non-Detect | 16 | | | | | Minimum Non-Detect | 2.773 |
| 382 | | | | | Maximum Non-Detect | 200 | | | | | Maximum Non-Detect | 5.298 |
| 383 | | | | | | | | | | | | |
| 384 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 11 |
| 385 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 1 |
| 386 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 91.67% |
| 387 | | | | | | | | | | | | |
| 388 | | | | **Warning: There are only 9 Detected Values in this data** | | | | | | | | |
| 389 | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | | |
| 390 | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | | |
| 391 | | | | | | | | | | | | |
| 392 | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | | |
| 393 | | | | | | | | | | | | |
| 394 | | | | | | | | | | | | |
| 395 | | | | **UCL Statistics** | | | | | | | | |
| 396 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 397 | | | | | Shapiro Wilk Test Statistic | 0.889 | | | | | Shapiro Wilk Test Statistic | 0.973 |
| 398 | | | | | 5% Shapiro Wilk Critical Value | 0.829 | | | | | 5% Shapiro Wilk Critical Value | 0.829 |
| 399 | | | | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 400 | | | | | | | | | | | | |
| 401 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 402 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 403 | | | | | Mean | 99.28 | | | | | Mean | 4.331 |
| 404 | | | | | SD | 66.48 | | | | | SD | 0.888 |
| 405 | | | | | 95% DL/2 (t) UCL | 133.7 | | | | | 95% H-Stat (DL/2) UCL | 248.7 |
| 406 | | | | | | | | | | | | |
| 407 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 408 | | | | **MLE method failed to converge properly** | | | | | | | Mean in Log Scale | 4.36 |
| 409 | | | | | | | | | | | SD in Log Scale | 0.685 |
| 410 | | | | | | | | | | | Mean in Original Scale | 96.24 |
| 411 | | | | | | | | | | | SD in Original Scale | 66.26 |
| 412 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 128.8 |
| 413 | | | | | | | | | | | 95% BCA Bootstrap UCL | 133.7 |
| 414 | | | | | | | | | | | | |
| 415 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 416 | | | | | k star (bias corrected) | 2.1 | | | | **Data appear Normal at 5% Significance Level** | | |
| 417 | | | | | Theta Star | 52.04 | | | | | | |
| 418 | | | | | nu star | 37.79 | | | | | | |
| 419 | | | | | | | | | | | | |
| 420 | | | | | A-D Test Statistic | 0.204 | | | | **Nonparametric Statistics** | | |
| 421 | | | | | 5% A-D Critical Value | 0.727 | | | | | Kaplan-Meier (KM) Method | |
| 422 | | | | | K-S Test Statistic | 0.727 | | | | | Mean | 99.22 |
| 423 | | | | | 5% K-S Critical Value | 0.281 | | | | | SD | 63.3 |
| 424 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 20.25 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 425 | | | | | | | | | | | 95% KM (t) UCL | 135.6 |
| 426 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 132.5 |
| 427 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 135.2 |
| 428 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 150.8 |
| 429 | | | | | Maximum | 260 | | | | | 95% KM (BCA) UCL | 135.7 |
| 430 | | | | | Mean | 101 | | | | | 95% KM (Percentile Bootstrap) UCL | 134.4 |
| 431 | | | | | Median | 87.1 | | | | | 95% KM (Chebyshev) UCL | 187.5 |
| 432 | | | | | SD | 69.19 | | | | | 97.5% KM (Chebyshev) UCL | 225.7 |
| 433 | | | | | k star | 0.292 | | | | | 99% KM (Chebyshev) UCL | 300.7 |
| 434 | | | | | Theta star | 346 | | | | | | |
| 435 | | | | | Nu star | 7.009 | | | **Potential UCLs to Use** | | | |
| 436 | | | | | AppChi2 | 2.176 | | | | | 95% KM (t) UCL | 135.6 |
| 437 | | | | | 95% Gamma Approximate UCL | 325.5 | | | | | 95% KM (Percentile Bootstrap) UCL | 134.4 |
| 438 | | | | | 95% Adjusted Gamma UCL | 395.9 | | | | | | |
| 439 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 440 | | | | | | | | | | | | |
| 441 | | | | | | | | | | | | |
| 442 | **Antimony** | | | | | | | | | | | |
| 443 | | | | | | | | | | | | |
| 444 | | | | | **General Statistics** | | | | | | | |
| 445 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 4 |
| 446 | | | | | Number of Distinct Detected Data | 4 | | | | | Number of Non-Detect Data | 8 |
| 447 | | | | | | | | | | | Percent Non-Detects | 66.67% |
| 448 | | | | | | | | | | | | |
| 449 | | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | |
| 450 | | | | | Minimum Detected | 0.62 | | | | | Minimum Detected | -0.478 |
| 451 | | | | | Maximum Detected | 5.7 | | | | | Maximum Detected | 1.74 |
| 452 | | | | | Mean of Detected | 2.293 | | | | | Mean of Detected | 0.405 |
| 453 | | | | | SD of Detected | 2.388 | | | | | SD of Detected | 1.066 |
| 454 | | | | | Minimum Non-Detect | 0.5 | | | | | Minimum Non-Detect | -0.693 |
| 455 | | | | | Maximum Non-Detect | 2 | | | | | Maximum Non-Detect | 0.693 |
| 456 | | | | | | | | | | | | |
| 457 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 10 |
| 458 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 2 |
| 459 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 83.33% |
| 460 | | | | | | | | | | | | |
| 461 | | | | | **Warning: There are only 4 Distinct Detected Values in this data** | | | | | | | |
| 462 | | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | |
| 463 | | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | |
| 464 | | | | | | | | | | | | |
| 465 | | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | |
| 466 | | | | | | | | | | | | |
| 467 | | | | | | | | | | | | |
| 468 | | | | | **UCL Statistics** | | | | | | | |
| 469 | | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | |
| 470 | | | | | Shapiro Wilk Test Statistic | 0.822 | | | | | Shapiro Wilk Test Statistic | 0.877 |
| 471 | | | | | 5% Shapiro Wilk Critical Value | 0.748 | | | | | 5% Shapiro Wilk Critical Value | 0.748 |
| 472 | | | | | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | |
| 473 | | | | | | | | | | | | |
| 474 | | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | |
| 475 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 476 | | | | | Mean | 1.202 | | | | | Mean | -0.269 |
| 477 | | | | | SD | 1.515 | | | | | SD | 0.926 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 478 | | | | | 95% DL/2 (t) UCL | 1.987 | | | | 95% H-Stat (DL/2) UCL | | 2.5 |
| 479 | | | | | | | | | | | | |
| 480 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | Log ROS Method | | |
| 481 | | | **MLE method failed to converge properly** | | | | | | | Mean in Log Scale | | -1.154 |
| 482 | | | | | | | | | | SD in Log Scale | | 1.467 |
| 483 | | | | | | | | | | Mean in Original Scale | | 0.901 |
| 484 | | | | | | | | | | SD in Original Scale | | 1.624 |
| 485 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 1.7 |
| 486 | | | | | | | | | | 95% BCA Bootstrap UCL | | 2.227 |
| 487 | | | | | | | | | | | | |
| 488 | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | |
| 489 | | | | | k star (bias corrected) | 0.496 | | | **Data appear Normal at 5% Significance Level** | | | |
| 490 | | | | | Theta Star | 4.617 | | | | | | |
| 491 | | | | | nu star | 3.972 | | | | | | |
| 492 | | | | | | | | | | | | |
| 493 | | | | | A-D Test Statistic | 0.413 | | | **Nonparametric Statistics** | | | |
| 494 | | | | | 5% A-D Critical Value | 0.664 | | | | Kaplan-Meier (KM) Method | | |
| 495 | | | | | K-S Test Statistic | 0.664 | | | | Mean | | 1.18 |
| 496 | | | | | 5% K-S Critical Value | 0.401 | | | | SD | | 1.43 |
| 497 | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | | 0.477 |
| 498 | | | | | | | | | | 95% KM (t) UCL | | 2.036 |
| 499 | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | | 1.964 |
| 500 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | | 1.942 |
| 501 | | | | | Minimum | 0.321 | | | | 95% KM (bootstrap t) UCL | | 2.632 |
| 502 | | | | | Maximum | 6.73 | | | | 95% KM (BCA) UCL | | 2.783 |
| 503 | | | | | Mean | 2.343 | | | | 95% KM (Percentile Bootstrap) UCL | | 2.783 |
| 504 | | | | | Median | 1.954 | | | | 95% KM (Chebyshev) UCL | | 3.258 |
| 505 | | | | | SD | 2.095 | | | | 97.5% KM (Chebyshev) UCL | | 4.157 |
| 506 | | | | | k star | 1.088 | | | | 99% KM (Chebyshev) UCL | | 5.923 |
| 507 | | | | | Theta star | 2.154 | | | | | | |
| 508 | | | | | Nu star | 26.11 | | | **Potential UCLs to Use** | | | |
| 509 | | | | | AppChi2 | 15.47 | | | | 95% KM (t) UCL | | 2.036 |
| 510 | | | | | 95% Gamma Approximate UCL | 3.956 | | | | 95% KM (Percentile Bootstrap) UCL | | 2.783 |
| 511 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 512 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 513 | | | | | | | | | | | | |
| 514 | | | | | | | | | | | | |
| 515 | **Aroclor-1242** | | | | | | | | | | | |
| 516 | | | | | | | | | | | | |
| 517 | | | | | **General Statistics** | | | | | | | |
| 518 | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | | 1 |
| 519 | | | | | Number of Distinct Detected Data | 1 | | | | Number of Non-Detect Data | | 11 |
| 520 | | | | | | | | | | Percent Non-Detects | | 91.67% |
| 521 | | | | | | | | | | | | |
| 522 | | | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | |
| 523 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 524 | | | | | | | | | | | | |
| 525 | | | | **The data set for variable Aroclor-1242 was not processed!** | | | | | | | | |
| 526 | | | | | | | | | | | | |
| 527 | | | | | | | | | | | | |
| 528 | | | | | | | | | | | | |
| 529 | **Aroclor-1254** | | | | | | | | | | | |
| 530 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 531 | General Statistics | | | | | | | | | | | |
| 532 | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | | 2 |
| 533 | | | | | Number of Distinct Detected Data | 2 | | | | Number of Non-Detect Data | | 10 |
| 534 | | | | | | | | | | Percent Non-Detects | | 83.33% |
| 535 | | | | | | | | | | | | |
| 536 | Raw Statistics | | | | | | Log-transformed Statistics | | | | | |
| 537 | | | | | Minimum Detected | 0.132 | | | | Minimum Detected | | -2.025 |
| 538 | | | | | Maximum Detected | 4.28 | | | | Maximum Detected | | 1.454 |
| 539 | | | | | Mean of Detected | 2.206 | | | | Mean of Detected | | -0.286 |
| 540 | | | | | SD of Detected | 2.933 | | | | SD of Detected | | 2.46 |
| 541 | | | | | Minimum Non-Detect | 0.021 | | | | Minimum Non-Detect | | -3.863 |
| 542 | | | | | Maximum Non-Detect | 0.22 | | | | Maximum Non-Detect | | -1.514 |
| 543 | | | | | | | | | | | | |
| 544 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 11 |
| 545 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 1 |
| 546 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 91.67% |
| 547 | | | | | | | | | | | | |
| 548 | Warning: Data set has only 2 Distinct Detected Values. | | | | | | | | | | | |
| 549 | This may not be adequate enough to compute meaningful and reliable test statistics and estimates. | | | | | | | | | | | |
| 550 | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 551 | | | | | | | | | | | | |
| 552 | Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations. | | | | | | | | | | | |
| 553 | | | | | | | | | | | | |
| 554 | The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods. | | | | | | | | | | | |
| 555 | Those methods will return a 'N/A' value on your output display! | | | | | | | | | | | |
| 556 | | | | | | | | | | | | |
| 557 | It is necessary to have 4 or more Distinct Values for bootstrap methods. | | | | | | | | | | | |
| 558 | However, results obtained using 4 to 9 distinct values may not be reliable. | | | | | | | | | | | |
| 559 | It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates. | | | | | | | | | | | |
| 560 | | | | | | | | | | | | |
| 561 | | | | | | | | | | | | |
| 562 | UCL Statistics | | | | | | | | | | | |
| 563 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 564 | | | | | Shapiro Wilk Test Statistic | N/A | | | | Shapiro Wilk Test Statistic | | N/A |
| 565 | | | | | 5% Shapiro Wilk Critical Value | N/A | | | | 5% Shapiro Wilk Critical Value | | N/A |
| 566 | Data not Normal at 5% Significance Level | | | | | | Data not Lognormal at 5% Significance Level | | | | | |
| 567 | | | | | | | | | | | | |
| 568 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 569 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 570 | | | | | Mean | 0.413 | | | | Mean | | -2.788 |
| 571 | | | | | SD | 1.219 | | | | SD | | 1.63 |
| 572 | | | | | 95% DL/2 (t) UCL | 1.045 | | | | 95% H-Stat (DL/2) UCL | | 1.223 |
| 573 | | | | | | | | | | | | |
| 574 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 575 | MLE method failed to converge properly | | | | | | | | | Mean in Log Scale | | N/A |
| 576 | | | | | | | | | | SD in Log Scale | | N/A |
| 577 | | | | | | | | | | Mean in Original Scale | | N/A |
| 578 | | | | | | | | | | SD in Original Scale | | N/A |
| 579 | | | | | | | | | | 95% Percentile Bootstrap UCL | | N/A |
| 580 | | | | | | | | | | 95% BCA Bootstrap UCL | | N/A |
| 581 | | | | | | | | | | | | |
| 582 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 583 | | | | | k star (bias corrected) | N/A | Data do not follow a Discernable Distribution (0.05) | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 584 | | | | | Theta Star | N/A | | | | | | |
| 585 | | | | | nu star | N/A | | | | | | |
| 586 | | | | | | | | | | | | |
| 587 | | | | | A-D Test Statistic | N/A | **Nonparametric Statistics** | | | | | |
| 588 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 589 | | | | | K-S Test Statistic | N/A | | | | | Mean | 0.478 |
| 590 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 1.146 |
| 591 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.468 |
| 592 | | | | | | | | | | | 95% KM (t) UCL | 1.318 |
| 593 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 1.248 |
| 594 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 3.316 |
| 595 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | N/A |
| 596 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | 4.28 |
| 597 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 4.28 |
| 598 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 2.518 |
| 599 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 3.401 |
| 600 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 5.135 |
| 601 | | | | | Theta star | N/A | | | | | | |
| 602 | | | | | Nu star | N/A | **Potential UCLs to Use** | | | | | |
| 603 | | | | | AppChi2 | N/A | | | | | 99% KM (Chebyshev) UCL | 5.135 |
| 604 | | | | | 95% Gamma Approximate UCL | N/A | | | | | | |
| 605 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 606 | **Warning: Recommended UCL exceeds the maximum observation** | | | | | | | | | | | |
| 607 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 608 | | | | | | | | | | | | |
| 609 | | | | | | | | | | | | |
| 610 | **Arsenic** | | | | | | | | | | | |
| 611 | | | | | | | | | | | | |
| 612 | **General Statistics** | | | | | | | | | | | |
| 613 | | | | | Number of Valid Observations | 12 | | | | | Number of Distinct Observations | 12 |
| 614 | | | | | | | | | | | | |
| 615 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 616 | | | | | Minimum | 0.436 | | | | | Minimum of Log Data | -0.83 |
| 617 | | | | | Maximum | 8.4 | | | | | Maximum of Log Data | 2.128 |
| 618 | | | | | Mean | 2.736 | | | | | Mean of log Data | 0.752 |
| 619 | | | | | Median | 2.2 | | | | | SD of log Data | 0.767 |
| 620 | | | | | SD | 2.14 | | | | | | |
| 621 | | | | | Coefficient of Variation | 0.782 | | | | | | |
| 622 | | | | | Skewness | 1.843 | | | | | | |
| 623 | | | | | | | | | | | | |
| 624 | **Relevant UCL Statistics** | | | | | | | | | | | |
| 625 | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | | | | |
| 626 | | | | | Shapiro Wilk Test Statistic | 0.833 | | | | | Shapiro Wilk Test Statistic | 0.985 |
| 627 | | | | | Shapiro Wilk Critical Value | 0.859 | | | | | Shapiro Wilk Critical Value | 0.859 |
| 628 | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 629 | | | | | | | | | | | | |
| 630 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 631 | | | | | 95% Student's-t UCL | 3.845 | | | | | 95% H-UCL | 5.092 |
| 632 | **95% UCLs (Adjusted for Skewness)** | | | | | | | | | | 95% Chebyshev (MVUE) UCL | 5.556 |
| 633 | | | | | 95% Adjusted-CLT UCL | 4.103 | | | | | 97.5% Chebyshev (MVUE) UCL | 6.765 |
| 634 | | | | | 95% Modified-t UCL | 3.9 | | | | | 99% Chebyshev (MVUE) UCL | 9.14 |
| 635 | | | | | | | | | | | | |
| 636 | **Gamma Distribution Test** | | | | | | **Data Distribution** | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 637 | | | | | k star (bias corrected) | 1.644 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | |
| 638 | | | | | Theta Star | 1.664 | | | | | | |
| 639 | | | | | MLE of Mean | 2.736 | | | | | | |
| 640 | | | | | MLE of Standard Deviation | 2.134 | | | | | | |
| 641 | | | | | nu star | 39.45 | | | | | | |
| 642 | | | | | Approximate Chi Square Value (.05) | 26.06 | **Nonparametric Statistics** | | | | | |
| 643 | | | | | Adjusted Level of Significance | 0.029 | | | | | 95% CLT UCL | 3.752 |
| 644 | | | | | Adjusted Chi Square Value | 24.41 | | | | | 95% Jackknife UCL | 3.845 |
| 645 | | | | | | | | | | | 95% Standard Bootstrap UCL | 3.73 |
| 646 | | | | | Anderson-Darling Test Statistic | 0.185 | | | | | 95% Bootstrap-t UCL | 4.67 |
| 647 | | | | | Anderson-Darling 5% Critical Value | 0.741 | | | | | 95% Hall's Bootstrap UCL | 8.616 |
| 648 | | | | | Kolmogorov-Smirnov Test Statistic | 0.104 | | | | | 95% Percentile Bootstrap UCL | 3.853 |
| 649 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.248 | | | | | 95% BCA Bootstrap UCL | 4.1 |
| 650 | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | 95% Chebyshev(Mean, Sd) UCL | 5.429 |
| 651 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 6.594 |
| 652 | | | **Assuming Gamma Distribution** | | | | | | | | 99% Chebyshev(Mean, Sd) UCL | 8.883 |
| 653 | | | | | 95% Approximate Gamma UCL | 4.141 | | | | | | |
| 654 | | | | | 95% Adjusted Gamma UCL | 4.421 | | | | | | |
| 655 | | | | | | | | | | | | |
| 656 | | | **Potential UCL to Use** | | | | | | | | Use 95% Approximate Gamma UCL | 4.141 |
| 657 | | | | | | | | | | | | |
| 658 | | | | | | | | | | | | |
| 659 | **Atrazine** | | | | | | | | | | | |
| 660 | | | | | | | | | | | | |
| 661 | | | | | **General Statistics** | | | | | | | |
| 662 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 1 |
| 663 | | | | | Number of Distinct Detected Data | 1 | | | | | Number of Non-Detect Data | 11 |
| 664 | | | | | | | | | | | Percent Non-Detects | 91.67% |
| 665 | | | | | | | | | | | | |
| 666 | | | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | |
| 667 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 668 | | | | | | | | | | | | |
| 669 | | | **The data set for variable Atrazine was not processed!** | | | | | | | | | |
| 670 | | | | | | | | | | | | |
| 671 | | | | | | | | | | | | |
| 672 | | | | | | | | | | | | |
| 673 | **Barium** | | | | | | | | | | | |
| 674 | | | | | | | | | | | | |
| 675 | | | | | **General Statistics** | | | | | | | |
| 676 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 9 |
| 677 | | | | | Number of Distinct Detected Data | 9 | | | | | Number of Non-Detect Data | 3 |
| 678 | | | | | | | | | | | Percent Non-Detects | 25.00% |
| 679 | | | | | | | | | | | | |
| 680 | | | **Raw Statistics** | | | | **Log-transformed Statistics** | | | | | |
| 681 | | | | | Minimum Detected | 21 | | | | | Minimum Detected | 3.045 |
| 682 | | | | | Maximum Detected | 870.6 | | | | | Maximum Detected | 6.769 |
| 683 | | | | | Mean of Detected | 332.2 | | | | | Mean of Detected | 5.208 |
| 684 | | | | | SD of Detected | 333.1 | | | | | SD of Detected | 1.292 |
| 685 | | | | | Minimum Non-Detect | 200 | | | | | Minimum Non-Detect | 5.298 |
| 686 | | | | | Maximum Non-Detect | 200 | | | | | Maximum Non-Detect | 5.298 |
| 687 | | | | | | | | | | | | |
| 688 | | | | | | | | | | | | |
| 689 | | | **Warning: There are only 9 Detected Values in this data** | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 690 | Note: It should be noted that even though bootstrap may be performed on this data set | | | | | | | | | | | |
| 691 | the resulting calculations may not be reliable enough to draw conclusions | | | | | | | | | | | |
| 692 | | | | | | | | | | | | |
| 693 | It is recommended to have 10-15 or more distinct observations for accurate and meaningful results. | | | | | | | | | | | |
| 694 | | | | | | | | | | | | |
| 695 | | | | | | | | | | | | |
| 696 | UCL Statistics | | | | | | | | | | | |
| 697 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 698 | | | | | Shapiro Wilk Test Statistic | 0.828 | | | | Shapiro Wilk Test Statistic | | 0.952 |
| 699 | | | | | 5% Shapiro Wilk Critical Value | 0.829 | | | | 5% Shapiro Wilk Critical Value | | 0.829 |
| 700 | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | | | | |
| 701 | | | | | | | | | | | | |
| 702 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 703 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 704 | | | | | Mean | 274.1 | | | | Mean | | 5.057 |
| 705 | | | | | SD | 302.9 | | | | SD | | 1.135 |
| 706 | | | | | 95% DL/2 (t) UCL | 431.1 | | | | 95% H-Stat (DL/2) UCL | | 920.9 |
| 707 | | | | | | | | | | | | |
| 708 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 709 | MLE yields a negative mean | | | | | | | | | Mean in Log Scale | | 4.978 |
| 710 | | | | | | | | | | SD in Log Scale | | 1.212 |
| 711 | | | | | | | | | | Mean in Original Scale | | 270.3 |
| 712 | | | | | | | | | | SD in Original Scale | | 306.2 |
| 713 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 413.6 |
| 714 | | | | | | | | | | 95% BCA Bootstrap UCL | | 443.3 |
| 715 | | | | | | | | | | | | |
| 716 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 717 | | | | | k star (bias corrected) | 0.72 | Data appear Gamma Distributed at 5% Significance Level | | | | | |
| 718 | | | | | Theta Star | 461.3 | | | | | | |
| 719 | | | | | nu star | 12.96 | | | | | | |
| 720 | | | | | | | | | | | | |
| 721 | | | | | A-D Test Statistic | 0.236 | Nonparametric Statistics | | | | | |
| 722 | | | | | 5% A-D Critical Value | 0.744 | | | | Kaplan-Meier (KM) Method | | |
| 723 | | | | | K-S Test Statistic | 0.744 | | | | Mean | | 273.4 |
| 724 | | | | | 5% K-S Critical Value | 0.287 | | | | SD | | 292.2 |
| 725 | Data appear Gamma Distributed at 5% Significance Level | | | | | | | | | SE of Mean | | 90.31 |
| 726 | | | | | | | | | | 95% KM (t) UCL | | 435.6 |
| 727 | Assuming Gamma Distribution | | | | | | | | | 95% KM (z) UCL | | 421.9 |
| 728 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | | 433.9 |
| 729 | | | | | Minimum | 21 | | | | 95% KM (bootstrap t) UCL | | 555.6 |
| 730 | | | | | Maximum | 870.6 | | | | 95% KM (BCA) UCL | | 410.1 |
| 731 | | | | | Mean | 317.7 | | | | 95% KM (Percentile Bootstrap) UCL | | 413.4 |
| 732 | | | | | Median | 226.2 | | | | 95% KM (Chebyshev) UCL | | 667 |
| 733 | | | | | SD | 294.9 | | | | 97.5% KM (Chebyshev) UCL | | 837.4 |
| 734 | | | | | k star | 0.92 | | | | 99% KM (Chebyshev) UCL | | 1172 |
| 735 | | | | | Theta star | 345.5 | | | | | | |
| 736 | | | | | Nu star | 22.07 | Potential UCLs to Use | | | | | |
| 737 | | | | | AppChi2 | 12.39 | | | | 95% KM (Chebyshev) UCL | | 667 |
| 738 | | | | | 95% Gamma Approximate UCL | 565.9 | | | | | | |
| 739 | | | | | 95% Adjusted Gamma UCL | 620.7 | | | | | | |
| 740 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 741 | | | | | | | | | | | | |
| 742 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 743 | **Benzene** | | | | | | | | | | | |
| 744 | | | | | | | | | | | | |
| 745 | | | | | **General Statistics** | | | | | | | |
| 746 | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | | 4 |
| 747 | | | | | Number of Distinct Detected Data | 4 | | | | Number of Non-Detect Data | | 8 |
| 748 | | | | | | | | | | Percent Non-Detects | | 66.67% |
| 749 | | | | | | | | | | | | |
| 750 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 751 | | | | | Minimum Detected | 0.72 | | | | Minimum Detected | | -0.329 |
| 752 | | | | | Maximum Detected | 7.9 | | | | Maximum Detected | | 2.067 |
| 753 | | | | | Mean of Detected | 5.3 | | | | Mean of Detected | | 1.341 |
| 754 | | | | | SD of Detected | 3.35 | | | | SD of Detected | | 1.135 |
| 755 | | | | | Minimum Non-Detect | 0.5 | | | | Minimum Non-Detect | | -0.693 |
| 756 | | | | | Maximum Non-Detect | 2 | | | | Maximum Non-Detect | | 0.693 |
| 757 | | | | | | | | | | | | |
| 758 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 9 |
| 759 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 3 |
| 760 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 75.00% |
| 761 | | | | | | | | | | | | |
| 762 | | | | **Warning: There are only 4 Distinct Detected Values in this data** | | | | | | | | |
| 763 | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | | |
| 764 | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | | |
| 765 | | | | | | | | | | | | |
| 766 | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | | |
| 767 | | | | | | | | | | | | |
| 768 | | | | | | | | | | | | |
| 769 | | | | | **UCL Statistics** | | | | | | | |
| 770 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 771 | | | | | Shapiro Wilk Test Statistic | 0.868 | | | | Shapiro Wilk Test Statistic | | 0.768 |
| 772 | | | | | 5% Shapiro Wilk Critical Value | 0.748 | | | | 5% Shapiro Wilk Critical Value | | 0.748 |
| 773 | | | | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 774 | | | | | | | | | | | | |
| 775 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 776 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 777 | | | | | Mean | 2.121 | | | | Mean | | -0.131 |
| 778 | | | | | SD | 2.944 | | | | SD | | 1.364 |
| 779 | | | | | 95% DL/2 (t) UCL | 3.647 | | | | 95% H-Stat (DL/2) UCL | | 6.627 |
| 780 | | | | | | | | | | | | |
| 781 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 782 | | | | **MLE yields a negative mean** | | | | | | Mean in Log Scale | | -0.907 |
| 783 | | | | | | | | | | SD in Log Scale | | 1.972 |
| 784 | | | | | | | | | | Mean in Original Scale | | 1.905 |
| 785 | | | | | | | | | | SD in Original Scale | | 3.061 |
| 786 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 3.451 |
| 787 | | | | | | | | | | 95% BCA Bootstrap UCL | | 3.53 |
| 788 | | | | | | | | | | | | |
| 789 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 790 | | | | | k star (bias corrected) | 0.586 | | | | **Data appear Normal at 5% Significance Level** | | |
| 791 | | | | | Theta Star | 9.039 | | | | | | |
| 792 | | | | | nu star | 4.691 | | | | | | |
| 793 | | | | | | | | | | | | |
| 794 | | | | | A-D Test Statistic | 0.557 | | | | **Nonparametric Statistics** | | |
| 795 | | | | | 5% A-D Critical Value | 0.662 | | | | Kaplan-Meier (KM) Method | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 796 | | | | | K-S Test Statistic | 0.662 | | | | | Mean | 2.247 |
| 797 | | | | | 5% K-S Critical Value | 0.399 | | | | | SD | 2.733 |
| 798 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.911 |
| 799 | | | | | | | | | | | 95% KM (t) UCL | 3.883 |
| 800 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 3.745 |
| 801 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 4.903 |
| 802 | | | | | Minimum | 0.72 | | | | | 95% KM (bootstrap t) UCL | 3.006 |
| 803 | | | | | Maximum | 14.11 | | | | | 95% KM (BCA) UCL | 7.9 |
| 804 | | | | | Mean | 6.693 | | | | | 95% KM (Percentile Bootstrap) UCL | 7.717 |
| 805 | | | | | Median | 6.911 | | | | | 95% KM (Chebyshev) UCL | 6.217 |
| 806 | | | | | SD | 4.011 | | | | | 97.5% KM (Chebyshev) UCL | 7.935 |
| 807 | | | | | k star | 1.758 | | | | | 99% KM (Chebyshev) UCL | 11.31 |
| 808 | | | | | Theta star | 3.807 | | | | | | |
| 809 | | | | | Nu star | 42.2 | | | **Potential UCLs to Use** | | | |
| 810 | | | | | AppChi2 | 28.31 | | | | | 95% KM (t) UCL | 3.883 |
| 811 | | | | | 95% Gamma Approximate UCL | 9.977 | | | | | 95% KM (Percentile Bootstrap) UCL | 7.717 |
| 812 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 813 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 814 | | | | | | | | | | | | |
| 815 | | | | | | | | | | | | |
| 816 | **Benzo(a)pyrene** | | | | | | | | | | | |
| 817 | | | | | | | | | | | | |
| 818 | | | | | **General Statistics** | | | | | | | |
| 819 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 2 |
| 820 | | | | | Number of Distinct Detected Data | 2 | | | | | Number of Non-Detect Data | 10 |
| 821 | | | | | | | | | | | Percent Non-Detects | 83.33% |
| 822 | | | | | | | | | | | | |
| 823 | | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | |
| 824 | | | | | Minimum Detected | 0.00756 | | | | | Minimum Detected | -4.885 |
| 825 | | | | | Maximum Detected | 0.019 | | | | | Maximum Detected | -3.963 |
| 826 | | | | | Mean of Detected | 0.0133 | | | | | Mean of Detected | -4.424 |
| 827 | | | | | SD of Detected | 0.00809 | | | | | SD of Detected | 0.652 |
| 828 | | | | | Minimum Non-Detect | 0.01 | | | | | Minimum Non-Detect | -4.605 |
| 829 | | | | | Maximum Non-Detect | 11 | | | | | Maximum Non-Detect | 2.398 |
| 830 | | | | | | | | | | | | |
| 831 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 12 |
| 832 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 833 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 834 | | | | | | | | | | | | |
| 835 | **Warning: Data set has only 2 Distinct Detected Values.** | | | | | | | | | | | |
| 836 | **This may not be adequate enough to compute meaningful and reliable test statistics and estimates.** | | | | | | | | | | | |
| 837 | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 838 | | | | | | | | | | | | |
| 839 | **Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.** | | | | | | | | | | | |
| 840 | | | | | | | | | | | | |
| 841 | **The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.** | | | | | | | | | | | |
| 842 | **Those methods will return a 'N/A' value on your output display!** | | | | | | | | | | | |
| 843 | | | | | | | | | | | | |
| 844 | **It is necessary to have 4 or more Distinct Values for bootstrap methods.** | | | | | | | | | | | |
| 845 | **However, results obtained using 4 to 9 distinct values may not be reliable.** | | | | | | | | | | | |
| 846 | **It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.** | | | | | | | | | | | |
| 847 | | | | | | | | | | | | |
| 848 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 849 | | | | | | UCL Statistics | | | | | | |
| 850 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 851 | | | | | Shapiro Wilk Test Statistic | N/A | | | | | Shapiro Wilk Test Statistic | N/A |
| 852 | | | | | 5% Shapiro Wilk Critical Value | N/A | | | | | 5% Shapiro Wilk Critical Value | N/A |
| 853 | Data not Normal at 5% Significance Level | | | | | | Data not Lognormal at 5% Significance Level | | | | | |
| 854 | | | | | | | | | | | | |
| 855 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 856 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 857 | | | | | Mean | 1.728 | | | | | Mean | -2.071 |
| 858 | | | | | SD | 2.512 | | | | | SD | 2.867 |
| 859 | | | | | 95% DL/2 (t) UCL | 3.03 | | | | | 95% H-Stat (DL/2) UCL | 11304 |
| 860 | | | | | | | | | | | | |
| 861 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 862 | MLE method failed to converge properly | | | | | | | | | | Mean in Log Scale | N/A |
| 863 | | | | | | | | | | | SD in Log Scale | N/A |
| 864 | | | | | | | | | | | Mean in Original Scale | N/A |
| 865 | | | | | | | | | | | SD in Original Scale | N/A |
| 866 | | | | | | | | | | | 95% Percentile Bootstrap UCL | N/A |
| 867 | | | | | | | | | | | 95% BCA Bootstrap UCL | N/A |
| 868 | | | | | | | | | | | | |
| 869 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 870 | | | | | k star (bias corrected) | N/A | Data do not follow a Discernable Distribution (0.05) | | | | | |
| 871 | | | | | Theta Star | N/A | | | | | | |
| 872 | | | | | nu star | N/A | | | | | | |
| 873 | | | | | | | | | | | | |
| 874 | | | | | A-D Test Statistic | N/A | Nonparametric Statistics | | | | | |
| 875 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 876 | | | | | K-S Test Statistic | N/A | | | | | Mean | 0.0104 |
| 877 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 0.00495 |
| 878 | Data not Gamma Distributed at 5% Significance Level | | | | | | | | | | SE of Mean | 0.0035 |
| 879 | | | | | | | | | | | 95% KM (t) UCL | 0.0167 |
| 880 | Assuming Gamma Distribution | | | | | | | | | | 95% KM (z) UCL | 0.0162 |
| 881 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.0187 |
| 882 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | N/A |
| 883 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | 0.019 |
| 884 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 0.019 |
| 885 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 0.0257 |
| 886 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 0.0323 |
| 887 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 0.0453 |
| 888 | | | | | Theta star | N/A | | | | | | |
| 889 | | | | | Nu star | N/A | Potential UCLs to Use | | | | | |
| 890 | | | | | AppChi2 | N/A | | | | | 95% KM (t) UCL | 0.0167 |
| 891 | | | | | 95% Gamma Approximate UCL | N/A | | | | | 95% KM (% Bootstrap) UCL | 0.019 |
| 892 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 893 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 894 | | | | | | | | | | | | |
| 895 | | | | | | | | | | | | |
| 896 | Benzo(b)fluoranthene | | | | | | | | | | | |
| 897 | | | | | | | | | | | | |
| 898 | | | | | | General Statistics | | | | | | |
| 899 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 4 |
| 900 | | | | | Number of Distinct Detected Data | 4 | | | | | Number of Non-Detect Data | 8 |
| 901 | | | | | | | | | | | Percent Non-Detects | 66.67% |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 902 | | | | | | | | | | | | |
| 903 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 904 | | | | | Minimum Detected | 0.00867 | | | | | Minimum Detected | -4.748 |
| 905 | | | | | Maximum Detected | 0.0182 | | | | | Maximum Detected | -4.006 |
| 906 | | | | | Mean of Detected | 0.0125 | | | | | Mean of Detected | -4.427 |
| 907 | | | | | SD of Detected | 0.00448 | | | | | SD of Detected | 0.352 |
| 908 | | | | | Minimum Non-Detect | 0.01 | | | | | Minimum Non-Detect | -4.605 |
| 909 | | | | | Maximum Non-Detect | 11 | | | | | Maximum Non-Detect | 2.398 |
| 910 | | | | | | | | | | | | |
| 911 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 12 |
| 912 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 913 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 914 | | | | | | | | | | | | |
| 915 | **Warning: There are only 4 Distinct Detected Values in this data** | | | | | | | | | | | |
| 916 | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | | | | | |
| 917 | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | | | | | |
| 918 | | | | | | | | | | | | |
| 919 | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | | | | | |
| 920 | | | | | | | | | | | | |
| 921 | | | | | | | | | | | | |
| 922 | **UCL Statistics** | | | | | | | | | | | |
| 923 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 924 | | | | | Shapiro Wilk Test Statistic | 0.898 | | | | | Shapiro Wilk Test Statistic | 0.903 |
| 925 | | | | | 5% Shapiro Wilk Critical Value | 0.748 | | | | | 5% Shapiro Wilk Critical Value | 0.748 |
| 926 | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 927 | | | | | | | | | | | | |
| 928 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 929 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 930 | | | | | Mean | 1.313 | | | | | Mean | -2.506 |
| 931 | | | | | SD | 2.327 | | | | | SD | 2.62 |
| 932 | | | | | 95% DL/2 (t) UCL | 2.519 | | | | | 95% H-Stat (DL/2) UCL | 1932 |
| 933 | | | | | | | | | | | | |
| 934 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 935 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | -4.486 |
| 936 | | | | | | | | | | | SD in Log Scale | 0.257 |
| 937 | | | | | | | | | | | Mean in Original Scale | 0.0116 |
| 938 | | | | | | | | | | | SD in Original Scale | 0.00314 |
| 939 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.0131 |
| 940 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.0132 |
| 941 | | | | | | | | | | | | |
| 942 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 943 | | | | | k star (bias corrected) | 2.862 | **Data appear Normal at 5% Significance Level** | | | | | |
| 944 | | | | | Theta Star | 0.00438 | | | | | | |
| 945 | | | | | nu star | 22.89 | | | | | | |
| 946 | | | | | | | | | | | | |
| 947 | | | | | A-D Test Statistic | 0.367 | **Nonparametric Statistics** | | | | | |
| 948 | | | | | 5% A-D Critical Value | 0.657 | | | | | Kaplan-Meier (KM) Method | |
| 949 | | | | | K-S Test Statistic | 0.657 | | | | | Mean | 0.0118 |
| 950 | | | | | 5% K-S Critical Value | 0.395 | | | | | SD | 0.00375 |
| 951 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.00194 |
| 952 | | | | | | | | | | | 95% KM (t) UCL | 0.0153 |
| 953 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 0.015 |
| 954 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.0154 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 955 | | | | | Minimum | 0.00867 | | | | | 95% KM (bootstrap t) UCL | 0.0172 |
| 956 | | | | | Maximum | 0.0182 | | | | | 95% KM (BCA) UCL | 0.0161 |
| 957 | | | | | Mean | 0.0133 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0161 |
| 958 | | | | | Median | 0.0134 | | | | | 95% KM (Chebyshev) UCL | 0.0203 |
| 959 | | | | | SD | 0.00343 | | | | | 97.5% KM (Chebyshev) UCL | 0.0239 |
| 960 | | | | | k star | 11.89 | | | | | 99% KM (Chebyshev) UCL | 0.0311 |
| 961 | | | | | Theta star | 0.00111 | | | | | | |
| 962 | | | | | Nu star | 285.4 | | | **Potential UCLs to Use** | | | |
| 963 | | | | | AppChi2 | 247.3 | | | | | 95% KM (t) UCL | 0.0153 |
| 964 | | | | | 95% Gamma Approximate UCL | 0.0153 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0161 |
| 965 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 966 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 967 | | | | | | | | | | | | |
| 968 | | | | | | | | | | | | |
| 969 | **Benzo(g,h,i)perylene** | | | | | | | | | | | |
| 970 | | | | | | | | | | | | |
| 971 | | | | | **General Statistics** | | | | | | | |
| 972 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 2 |
| 973 | | | | | Number of Distinct Detected Data | 2 | | | | | Number of Non-Detect Data | 10 |
| 974 | | | | | | | | | | | Percent Non-Detects | 83.33% |
| 975 | | | | | | | | | | | | |
| 976 | | | | | **Raw Statistics** | | | | **Log-transformed Statistics** | | | |
| 977 | | | | | Minimum Detected | 0.00826 | | | | | Minimum Detected | -4.796 |
| 978 | | | | | Maximum Detected | 0.0141 | | | | | Maximum Detected | -4.262 |
| 979 | | | | | Mean of Detected | 0.0112 | | | | | Mean of Detected | -4.529 |
| 980 | | | | | SD of Detected | 0.00413 | | | | | SD of Detected | 0.378 |
| 981 | | | | | Minimum Non-Detect | 0.01 | | | | | Minimum Non-Detect | -4.605 |
| 982 | | | | | Maximum Non-Detect | 11 | | | | | Maximum Non-Detect | 2.398 |
| 983 | | | | | | | | | | | | |
| 984 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 12 |
| 985 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 986 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 987 | | | | | | | | | | | | |
| 988 | **Warning: Data set has only 2 Distinct Detected Values.** | | | | | | | | | | | |
| 989 | **This may not be adequate enough to compute meaningful and reliable test statistics and estimates.** | | | | | | | | | | | |
| 990 | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 991 | | | | | | | | | | | | |
| 992 | **Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.** | | | | | | | | | | | |
| 993 | | | | | | | | | | | | |
| 994 | **The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.** | | | | | | | | | | | |
| 995 | **Those methods will return a 'N/A' value on your output display!** | | | | | | | | | | | |
| 996 | | | | | | | | | | | | |
| 997 | **It is necessary to have 4 or more Distinct Values for bootstrap methods.** | | | | | | | | | | | |
| 998 | **However, results obtained using 4 to 9 distinct values may not be reliable.** | | | | | | | | | | | |
| 999 | **It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.** | | | | | | | | | | | |
| 1000 | | | | | | | | | | | | |
| 1001 | | | | | | | | | | | | |
| 1002 | | | | | **UCL Statistics** | | | | | | | |
| 1003 | | | | | **Normal Distribution Test with Detected Values Only** | | | | **Lognormal Distribution Test with Detected Values Only** | | | |
| 1004 | | | | | Shapiro Wilk Test Statistic | N/A | | | | | Shapiro Wilk Test Statistic | N/A |
| 1005 | | | | | 5% Shapiro Wilk Critical Value | N/A | | | | | 5% Shapiro Wilk Critical Value | N/A |
| 1006 | | | | | **Data not Normal at 5% Significance Level** | | | | **Data not Lognormal at 5% Significance Level** | | | |
| 1007 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1008 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 1009 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1010 | | | | | Mean | 1.728 | | | | | Mean | -2.089 |
| 1011 | | | | | SD | 2.513 | | | | | SD | 2.878 |
| 1012 | | | | | 95% DL/2 (t) UCL | 3.03 | | | | | 95% H-Stat (DL/2) UCL | 12410 |
| 1013 | | | | | | | | | | | | |
| 1014 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 1015 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | N/A |
| 1016 | | | | | | | | | | | SD in Log Scale | N/A |
| 1017 | | | | | | | | | | | Mean in Original Scale | N/A |
| 1018 | | | | | | | | | | | SD in Original Scale | N/A |
| 1019 | | | | | | | | | | | 95% Percentile Bootstrap UCL | N/A |
| 1020 | | | | | | | | | | | 95% BCA Bootstrap UCL | N/A |
| 1021 | | | | | | | | | | | | |
| 1022 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 1023 | | | | | k star (bias corrected) | N/A | **Data do not follow a Discernable Distribution (0.05)** | | | | | |
| 1024 | | | | | Theta Star | N/A | | | | | | |
| 1025 | | | | | nu star | N/A | | | | | | |
| 1026 | | | | | | | | | | | | |
| 1027 | | | | | A-D Test Statistic | N/A | **Nonparametric Statistics** | | | | | |
| 1028 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 1029 | | | | | K-S Test Statistic | N/A | | | | | Mean | 0.00972 |
| 1030 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 0.00253 |
| 1031 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.00179 |
| 1032 | | | | | | | | | | | 95% KM (t) UCL | 0.0129 |
| 1033 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 0.0127 |
| 1034 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.0139 |
| 1035 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | N/A |
| 1036 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | 0.0141 |
| 1037 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0141 |
| 1038 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 0.0175 |
| 1039 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 0.0209 |
| 1040 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 0.0275 |
| 1041 | | | | | Theta star | N/A | | | | | | |
| 1042 | | | | | Nu star | N/A | **Potential UCLs to Use** | | | | | |
| 1043 | | | | | AppChi2 | N/A | | | | | 95% KM (t) UCL | 0.0129 |
| 1044 | | | | | 95% Gamma Approximate UCL | N/A | | | | | 95% KM (% Bootstrap) UCL | 0.0141 |
| 1045 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 1046 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1047 | | | | | | | | | | | | |
| 1048 | | | | | | | | | | | | |
| 1049 | **Benzo(k)fluoranthene** | | | | | | | | | | | |
| 1050 | | | | | | | | | | | | |
| 1051 | | | | | **General Statistics** | | | | | | | |
| 1052 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 3 |
| 1053 | | | | | Number of Distinct Detected Data | 3 | | | | | Number of Non-Detect Data | 9 |
| 1054 | | | | | | | | | | | Percent Non-Detects | 75.00% |
| 1055 | | | | | | | | | | | | |
| 1056 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 1057 | | | | | Minimum Detected | 0.00604 | | | | | Minimum Detected | -5.109 |
| 1058 | | | | | Maximum Detected | 0.0192 | | | | | Maximum Detected | -3.953 |
| 1059 | | | | | Mean of Detected | 0.011 | | | | | Mean of Detected | -4.639 |
| 1060 | | | | | SD of Detected | 0.00715 | | | | | SD of Detected | 0.608 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1061 | | | | | Minimum Non-Detect | 0.01 | | | | | Minimum Non-Detect | -4.605 |
| 1062 | | | | | Maximum Non-Detect | 11 | | | | | Maximum Non-Detect | 2.398 |
| 1063 | | | | | | | | | | | | |
| 1064 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 12 |
| 1065 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 1066 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 1067 | | | | | | | | | | | | |
| 1068 | **Warning: There are only 3 Distinct Detected Values in this data set** | | | | | | | | | | | |
| 1069 | **The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.** | | | | | | | | | | | |
| 1070 | **Those methods will return a 'N/A' value on your output display!** | | | | | | | | | | | |
| 1071 | | | | | | | | | | | | |
| 1072 | **It is necessary to have 4 or more Distinct Values for bootstrap methods.** | | | | | | | | | | | |
| 1073 | **However, results obtained using 4 to 9 distinct values may not be reliable.** | | | | | | | | | | | |
| 1074 | **It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.** | | | | | | | | | | | |
| 1075 | | | | | | | | | | | | |
| 1076 | | | | | | | | | | | | |
| 1077 | **UCL Statistics** | | | | | | | | | | | |
| 1078 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 1079 | | | | | Shapiro Wilk Test Statistic | 0.847 | | | | | Shapiro Wilk Test Statistic | 0.905 |
| 1080 | | | | | 5% Shapiro Wilk Critical Value | 0.767 | | | | | 5% Shapiro Wilk Critical Value | 0.767 |
| 1081 | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 1082 | | | | | | | | | | | | |
| 1083 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 1084 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1085 | | | | | Mean | 1.728 | | | | | Mean | -2.056 |
| 1086 | | | | | SD | 2.512 | | | | | SD | 2.849 |
| 1087 | | | | | 95% DL/2 (t) UCL | 3.031 | | | | | 95% H-Stat (DL/2) UCL | 30990 |
| 1088 | | | | | | | | | | | | |
| 1089 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 1090 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | -4.734 |
| 1091 | | | | | | | | | | | SD in Log Scale | 0.41 |
| 1092 | | | | | | | | | | | Mean in Original Scale | 0.00954 |
| 1093 | | | | | | | | | | | SD in Original Scale | 0.0043 |
| 1094 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.0117 |
| 1095 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.012 |
| 1096 | | | | | | | | | | | | |
| 1097 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 1098 | | | | | k star (bias corrected) | N/A | **Data appear Normal at 5% Significance Level** | | | | | |
| 1099 | | | | | Theta Star | N/A | | | | | | |
| 1100 | | | | | nu star | N/A | | | | | | |
| 1101 | | | | | | | | | | | | |
| 1102 | | | | | A-D Test Statistic | N/A | **Nonparametric Statistics** | | | | | |
| 1103 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 1104 | | | | | K-S Test Statistic | N/A | | | | | Mean | 0.00998 |
| 1105 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 0.00537 |
| 1106 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.00331 |
| 1107 | | | | | | | | | | | 95% KM (t) UCL | 0.0159 |
| 1108 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 0.0154 |
| 1109 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.0162 |
| 1110 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | 0.0367 |
| 1111 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | 0.0192 |
| 1112 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0192 |
| 1113 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 0.0244 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1114 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 0.0306 |
| 1115 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 0.0429 |
| 1116 | | | | | Theta star | N/A | | | | | | |
| 1117 | | | | | Nu star | N/A | **Potential UCLs to Use** | | | | | |
| 1118 | | | | | AppChi2 | N/A | | | | | 95% KM (t) UCL | 0.0159 |
| 1119 | | | | 95% Gamma Approximate UCL | | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0192 |
| 1120 | | | | 95% Adjusted Gamma UCL | | N/A | | | | | | |
| 1121 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1122 | | | | | | | | | | | | |
| 1123 | | | | | | | | | | | | |
| 1124 | **Benzo_a_anthracene** | | | | | | | | | | | |
| 1125 | | | | | | | | | | | | |
| 1126 | | | | | **General Statistics** | | | | | | | |
| 1127 | | | | Number of Valid Data | | 12 | | | | | Number of Detected Data | 7 |
| 1128 | | | | Number of Distinct Detected Data | | 7 | | | | | Number of Non-Detect Data | 5 |
| 1129 | | | | | | | | | | | Percent Non-Detects | 41.67% |
| 1130 | | | | | | | | | | | | |
| 1131 | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | | | |
| 1132 | | | | Minimum Detected | | 0.0057 | | | | | Minimum Detected | -5.167 |
| 1133 | | | | Maximum Detected | | 0.08 | | | | | Maximum Detected | -2.526 |
| 1134 | | | | Mean of Detected | | 0.0265 | | | | | Mean of Detected | -4.034 |
| 1135 | | | | SD of Detected | | 0.0268 | | | | | SD of Detected | 0.963 |
| 1136 | | | | Minimum Non-Detect | | 0.1 | | | | | Minimum Non-Detect | -2.303 |
| 1137 | | | | Maximum Non-Detect | | 11 | | | | | Maximum Non-Detect | 2.398 |
| 1138 | | | | | | | | | | | | |
| 1139 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 12 |
| 1140 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 1141 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 1142 | | | | | | | | | | | | |
| 1143 | **Warning: There are only 7 Detected Values in this data** | | | | | | | | | | | |
| 1144 | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | | | | | |
| 1145 | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | | | | | |
| 1146 | | | | | | | | | | | | |
| 1147 | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | | | | | |
| 1148 | | | | | | | | | | | | |
| 1149 | | | | | | | | | | | | |
| 1150 | | | | | **UCL Statistics** | | | | | | | |
| 1151 | | | | **Normal Distribution Test with Detected Values Only** | | | | | **Lognormal Distribution Test with Detected Values Only** | | | |
| 1152 | | | | Shapiro Wilk Test Statistic | | 0.806 | | | | | Shapiro Wilk Test Statistic | 0.948 |
| 1153 | | | | 5% Shapiro Wilk Critical Value | | 0.803 | | | | | 5% Shapiro Wilk Critical Value | 0.803 |
| 1154 | | | | **Data appear Normal at 5% Significance Level** | | | | | **Data appear Lognormal at 5% Significance Level** | | | |
| 1155 | | | | | | | | | | | | |
| 1156 | | | | **Assuming Normal Distribution** | | | | | **Assuming Lognormal Distribution** | | | |
| 1157 | | | | DL/2 Substitution Method | | | | | | | DL/2 Substitution Method | |
| 1158 | | | | Mean | | 0.903 | | | | | Mean | -2.826 |
| 1159 | | | | SD | | 2.033 | | | | | SD | 2.258 |
| 1160 | | | | 95% DL/2 (t) UCL | | 1.957 | | | | | 95% H-Stat (DL/2) UCL | 493 |
| 1161 | | | | | | | | | | | | |
| 1162 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | | Log ROS Method | |
| 1163 | | | | **MLE method failed to converge properly** | | | | | | | Mean in Log Scale | -4.034 |
| 1164 | | | | | | | | | | | SD in Log Scale | 0.79 |
| 1165 | | | | | | | | | | | Mean in Original Scale | 0.0239 |
| 1166 | | | | | | | | | | | SD in Original Scale | 0.0212 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1167 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.0344 |
| 1168 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.0361 |
| 1169 | | | | | | | | | | | | |
| 1170 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 1171 | | | | | k star (bias corrected) | 0.882 | | | | Data appear Normal at 5% Significance Level | | |
| 1172 | | | | | Theta Star | 0.0301 | | | | | | |
| 1173 | | | | | nu star | 12.35 | | | | | | |
| 1174 | | | | | | | | | | | | |
| 1175 | | | | | A-D Test Statistic | 0.347 | | | | Nonparametric Statistics | | |
| 1176 | | | | | 5% A-D Critical Value | 0.723 | | | | | Kaplan-Meier (KM) Method | |
| 1177 | | | | | K-S Test Statistic | 0.723 | | | | | Mean | 0.0265 |
| 1178 | | | | | 5% K-S Critical Value | 0.318 | | | | | SD | 0.0248 |
| 1179 | | | | Data appear Gamma Distributed at 5% Significance Level | | | | | | | SE of Mean | 0.0101 |
| 1180 | | | | | | | | | | | 95% KM (t) UCL | 0.0447 |
| 1181 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 0.0432 |
| 1182 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.0453 |
| 1183 | | | | | Minimum | 0.00412 | | | | | 95% KM (bootstrap t) UCL | 0.0706 |
| 1184 | | | | | Maximum | 0.08 | | | | | 95% KM (BCA) UCL | 0.0438 |
| 1185 | | | | | Mean | 0.0263 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0442 |
| 1186 | | | | | Median | 0.0256 | | | | | 95% KM (Chebyshev) UCL | 0.0706 |
| 1187 | | | | | SD | 0.022 | | | | | 97.5% KM (Chebyshev) UCL | 0.0897 |
| 1188 | | | | | k star | 1.266 | | | | | 99% KM (Chebyshev) UCL | 0.127 |
| 1189 | | | | | Theta star | 0.0208 | | | | | | |
| 1190 | | | | | Nu star | 30.39 | | | | Potential UCLs to Use | | |
| 1191 | | | | | AppChi2 | 18.8 | | | | | 95% KM (t) UCL | 0.0447 |
| 1192 | | | | | 95% Gamma Approximate UCL | 0.0425 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0442 |
| 1193 | | | | | 95% Adjusted Gamma UCL | 0.0459 | | | | | | |
| 1194 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 1195 | | | | | | | | | | | | |
| 1196 | | | | | | | | | | | | |
| 1197 | Beryllium | | | | | | | | | | | |
| 1198 | | | | | | | | | | | | |
| 1199 | | | | | | General Statistics | | | | | | |
| 1200 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 1 |
| 1201 | | | | | Number of Distinct Detected Data | 1 | | | | | Number of Non-Detect Data | 11 |
| 1202 | | | | | | | | | | | Percent Non-Detects | 91.67% |
| 1203 | | | | | | | | | | | | |
| 1204 | | | | Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set! | | | | | | | | |
| 1205 | It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 1206 | | | | | | | | | | | | |
| 1207 | | | | The data set for variable Beryllium was not processed! | | | | | | | | |
| 1208 | | | | | | | | | | | | |
| 1209 | | | | | | | | | | | | |
| 1210 | | | | | | | | | | | | |
| 1211 | bis(2-Ethylhexyl)phthalate | | | | | | | | | | | |
| 1212 | | | | | | | | | | | | |
| 1213 | | | | | | General Statistics | | | | | | |
| 1214 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 4 |
| 1215 | | | | | Number of Distinct Detected Data | 4 | | | | | Number of Non-Detect Data | 8 |
| 1216 | | | | | | | | | | | Percent Non-Detects | 66.67% |
| 1217 | | | | | | | | | | | | |
| 1218 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 1219 | | | | | Minimum Detected | 0.87 | | | | | Minimum Detected | -0.139 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1220 | | | | | Maximum Detected | 4.84 | | | | | Maximum Detected | 1.577 |
| 1221 | | | | | Mean of Detected | 2.745 | | | | | Mean of Detected | 0.841 |
| 1222 | | | | | SD of Detected | 1.643 | | | | | SD of Detected | 0.72 |
| 1223 | | | | | Minimum Non-Detect | 0.52 | | | | | Minimum Non-Detect | -0.654 |
| 1224 | | | | | Maximum Non-Detect | 5 | | | | | Maximum Non-Detect | 1.609 |
| 1225 | | | | | | | | | | | | |
| 1226 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 12 |
| 1227 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 1228 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 1229 | | | | | | | | | | | | |
| 1230 | **Warning: There are only 4 Distinct Detected Values in this data** | | | | | | | | | | | |
| 1231 | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | | | | | |
| 1232 | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | | | | | |
| 1233 | | | | | | | | | | | | |
| 1234 | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | | | | | |
| 1235 | | | | | | | | | | | | |
| 1236 | | | | | | | | | | | | |
| 1237 | **UCL Statistics** | | | | | | | | | | | |
| 1238 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 1239 | | | | | Shapiro Wilk Test Statistic | 0.986 | | | | | Shapiro Wilk Test Statistic | 0.951 |
| 1240 | | | | | 5% Shapiro Wilk Critical Value | 0.748 | | | | | 5% Shapiro Wilk Critical Value | 0.748 |
| 1241 | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 1242 | | | | | | | | | | | | |
| 1243 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 1244 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1245 | | | | | Mean | 1.836 | | | | | Mean | 0.139 |
| 1246 | | | | | SD | 1.448 | | | | | SD | 1.155 |
| 1247 | | | | | 95% DL/2 (t) UCL | 2.587 | | | | | 95% H-Stat (DL/2) UCL | 7.698 |
| 1248 | | | | | | | | | | | | |
| 1249 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 1250 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | -0.259 |
| 1251 | | | | | | | | | | | SD in Log Scale | 1.19 |
| 1252 | | | | | | | | | | | Mean in Original Scale | 1.396 |
| 1253 | | | | | | | | | | | SD in Original Scale | 1.493 |
| 1254 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 2.125 |
| 1255 | | | | | | | | | | | 95% BCA Bootstrap UCL | 2.27 |
| 1256 | | | | | | | | | | | | |
| 1257 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 1258 | | | | | k star (bias corrected) | 0.945 | **Data appear Normal at 5% Significance Level** | | | | | |
| 1259 | | | | | Theta Star | 2.904 | | | | | | |
| 1260 | | | | | nu star | 7.561 | | | | | | |
| 1261 | | | | | | | | | | | | |
| 1262 | | | | | A-D Test Statistic | 0.239 | **Nonparametric Statistics** | | | | | |
| 1263 | | | | | 5% A-D Critical Value | 0.659 | | | | | Kaplan-Meier (KM) Method | |
| 1264 | | | | | K-S Test Statistic | 0.659 | | | | | Mean | 1.808 |
| 1265 | | | | | 5% K-S Critical Value | 0.397 | | | | | SD | 1.375 |
| 1266 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.562 |
| 1267 | | | | | | | | | | | 95% KM (t) UCL | 2.816 |
| 1268 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 2.731 |
| 1269 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 2.906 |
| 1270 | | | | | Minimum | 0.87 | | | | | 95% KM (bootstrap t) UCL | 2.684 |
| 1271 | | | | | Maximum | 7.486 | | | | | 95% KM (BCA) UCL | 4.84 |
| 1272 | | | | | Mean | 3.455 | | | | | 95% KM (Percentile Bootstrap) UCL | 3.37 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1273 | | | | | Median | 2.833 | | | | 95% KM (Chebyshev) UCL | | 4.255 |
| 1274 | | | | | SD | 1.834 | | | | 97.5% KM (Chebyshev) UCL | | 5.314 |
| 1275 | | | | | k star | 2.92 | | | | 99% KM (Chebyshev) UCL | | 7.394 |
| 1276 | | | | | Theta star | 1.183 | | | | | | |
| 1277 | | | | | Nu star | 70.07 | | | **Potential UCLs to Use** | | | |
| 1278 | | | | | AppChi2 | 51.8 | | | | 95% KM (t) UCL | | 2.816 |
| 1279 | | | | 95% Gamma Approximate UCL | | 4.673 | | | | 95% KM (Percentile Bootstrap) UCL | | 3.37 |
| 1280 | | | | 95% Adjusted Gamma UCL | | N/A | | | | | | |
| 1281 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1282 | | | | | | | | | | | | |
| 1283 | | | | | | | | | | | | |
| 1284 | **Cadmium** | | | | | | | | | | | |
| 1285 | | | | | | | | | | | | |
| 1286 | | | | | **General Statistics** | | | | | | | |
| 1287 | | | | Number of Valid Data | | 12 | | | | Number of Detected Data | | 5 |
| 1288 | | | | Number of Distinct Detected Data | | 5 | | | | Number of Non-Detect Data | | 7 |
| 1289 | | | | | | | | | | Percent Non-Detects | | 58.33% |
| 1290 | | | | | | | | | | | | |
| 1291 | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | | | |
| 1292 | | | | Minimum Detected | | 0.5 | | | | Minimum Detected | | -0.693 |
| 1293 | | | | Maximum Detected | | 27 | | | | Maximum Detected | | 3.296 |
| 1294 | | | | Mean of Detected | | 8.694 | | | | Mean of Detected | | 1.212 |
| 1295 | | | | SD of Detected | | 11.08 | | | | SD of Detected | | 1.735 |
| 1296 | | | | Minimum Non-Detect | | 0.1 | | | | Minimum Non-Detect | | -2.303 |
| 1297 | | | | Maximum Non-Detect | | 0.5 | | | | Maximum Non-Detect | | -0.693 |
| 1298 | | | | | | | | | | | | |
| 1299 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 7 |
| 1300 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 5 |
| 1301 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 58.33% |
| 1302 | | | | | | | | | | | | |
| 1303 | | | | | **Warning: There are only 5 Detected Values in this data** | | | | | | | |
| 1304 | | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | |
| 1305 | | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | |
| 1306 | | | | | | | | | | | | |
| 1307 | | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | |
| 1308 | | | | | | | | | | | | |
| 1309 | | | | | | | | | | | | |
| 1310 | | | | | **UCL Statistics** | | | | | | | |
| 1311 | | | | **Normal Distribution Test with Detected Values Only** | | | | | **Lognormal Distribution Test with Detected Values Only** | | | |
| 1312 | | | | Shapiro Wilk Test Statistic | | 0.823 | | | | Shapiro Wilk Test Statistic | | 0.919 |
| 1313 | | | | 5% Shapiro Wilk Critical Value | | 0.762 | | | | 5% Shapiro Wilk Critical Value | | 0.762 |
| 1314 | | | | **Data appear Normal at 5% Significance Level** | | | | | **Data appear Lognormal at 5% Significance Level** | | | |
| 1315 | | | | | | | | | | | | |
| 1316 | | | | **Assuming Normal Distribution** | | | | | **Assuming Lognormal Distribution** | | | |
| 1317 | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | | |
| 1318 | | | | Mean | | 3.706 | | | | Mean | | -0.734 |
| 1319 | | | | SD | | 8.003 | | | | SD | | 2.072 |
| 1320 | | | | 95% DL/2 (t) UCL | | 7.855 | | | | 95% H-Stat (DL/2) UCL | | 23.92 |
| 1321 | | | | | | | | | | | | |
| 1322 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | Log ROS Method | | |
| 1323 | | | | **MLE yields a negative mean** | | | | | | Mean in Log Scale | | -2.105 |
| 1324 | | | | | | | | | | SD in Log Scale | | 3.222 |
| 1325 | | | | | | | | | | Mean in Original Scale | | 3.633 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
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| 1326 | | | | | | | | | | | SD in Original Scale | 8.038 |
| 1327 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 8.04 |
| 1328 | | | | | | | | | | | 95% BCA Bootstrap UCL | 9.466 |
| 1329 | | | | | | | | | | | | |
| 1330 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | **Data Distribution Test with Detected Values Only** | | | |
| 1331 | | | | | k star (bias corrected) | 0.391 | | | **Data appear Normal at 5% Significance Level** | | | |
| 1332 | | | | | Theta Star | 22.26 | | | | | | |
| 1333 | | | | | nu star | 3.906 | | | | | | |
| 1334 | | | | | | | | | | | | |
| 1335 | | | | | A-D Test Statistic | 0.288 | | | **Nonparametric Statistics** | | | |
| 1336 | | | | | 5% A-D Critical Value | 0.704 | | | | | Kaplan-Meier (KM) Method | |
| 1337 | | | | | K-S Test Statistic | 0.704 | | | | | Mean | 3.914 |
| 1338 | | | | | 5% K-S Critical Value | 0.369 | | | | | SD | 7.567 |
| 1339 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 2.442 |
| 1340 | | | | | | | | | | | 95% KM (t) UCL | 8.3 |
| 1341 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 7.931 |
| 1342 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 7.94 |
| 1343 | | | | | Minimum | 0.5 | | | | | 95% KM (bootstrap t) UCL | 18.21 |
| 1344 | | | | | Maximum | 27 | | | | | 95% KM (BCA) UCL | 13.67 |
| 1345 | | | | | Mean | 8.73 | | | | | 95% KM (Percentile Bootstrap) UCL | 9.758 |
| 1346 | | | | | Median | 6.234 | | | | | 95% KM (Chebyshev) UCL | 14.56 |
| 1347 | | | | | SD | 7.395 | | | | | 97.5% KM (Chebyshev) UCL | 19.17 |
| 1348 | | | | | k star | 0.972 | | | | | 99% KM (Chebyshev) UCL | 28.21 |
| 1349 | | | | | Theta star | 8.98 | | | | | | |
| 1350 | | | | | Nu star | 23.33 | | | **Potential UCLs to Use** | | | |
| 1351 | | | | | AppChi2 | 13.34 | | | | | 95% KM (t) UCL | 8.3 |
| 1352 | | | | | 95% Gamma Approximate UCL | 15.27 | | | | | 95% KM (Percentile Bootstrap) UCL | 9.758 |
| 1353 | | | | | 95% Adjusted Gamma UCL | 16.69 | | | | | | |
| 1354 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1355 | | | | | | | | | | | | |
| 1356 | | | | | | | | | | | | |
| 1357 | **Chlorobenzene** | | | | | | | | | | | |
| 1358 | | | | | | | | | | | | |
| 1359 | | | | | | **General Statistics** | | | | | | |
| 1360 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 5 |
| 1361 | | | | | Number of Distinct Detected Data | 5 | | | | | Number of Non-Detect Data | 7 |
| 1362 | | | | | | | | | | | Percent Non-Detects | 58.33% |
| 1363 | | | | | | | | | | | | |
| 1364 | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | | | |
| 1365 | | | | | Minimum Detected | 2.46 | | | | | Minimum Detected | 0.9 |
| 1366 | | | | | Maximum Detected | 28 | | | | | Maximum Detected | 3.332 |
| 1367 | | | | | Mean of Detected | 13.43 | | | | | Mean of Detected | 2.22 |
| 1368 | | | | | SD of Detected | 11.68 | | | | | SD of Detected | 1.025 |
| 1369 | | | | | Minimum Non-Detect | 0.5 | | | | | Minimum Non-Detect | -0.693 |
| 1370 | | | | | Maximum Non-Detect | 2 | | | | | Maximum Non-Detect | 0.693 |
| 1371 | | | | | | | | | | | | |
| 1372 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 7 |
| 1373 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 5 |
| 1374 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 58.33% |
| 1375 | | | | | | | | | | | | |
| 1376 | | | | | | **Warning: There are only 5 Detected Values in this data** | | | | | | |
| 1377 | | | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | |
| 1378 | | | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
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| 1379 | | | | | | | | | | | | |
| 1380 | It is recommended to have 10-15 or more distinct observations for accurate and meaningful results. | | | | | | | | | | | |
| 1381 | | | | | | | | | | | | |
| 1382 | | | | | | | | | | | | |
| 1383 | UCL Statistics | | | | | | | | | | | |
| 1384 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 1385 | | | | | Shapiro Wilk Test Statistic | 0.839 | | | | Shapiro Wilk Test Statistic | | 0.917 |
| 1386 | | | | | 5% Shapiro Wilk Critical Value | 0.762 | | | | 5% Shapiro Wilk Critical Value | | 0.762 |
| 1387 | Data appear Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | | | | |
| 1388 | | | | | | | | | | | | |
| 1389 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 1390 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 1391 | | | | | Mean | 5.868 | | | | Mean | | 0.347 |
| 1392 | | | | | SD | 9.708 | | | | SD | | 1.834 |
| 1393 | | | | | 95% DL/2 (t) UCL | 10.9 | | | | 95% H-Stat (DL/2) UCL | | 55.4 |
| 1394 | | | | | | | | | | | | |
| 1395 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 1396 | MLE yields a negative mean | | | | | | | | | Mean in Log Scale | | 0.263 |
| 1397 | | | | | | | | | | SD in Log Scale | | 1.977 |
| 1398 | | | | | | | | | | Mean in Original Scale | | 5.868 |
| 1399 | | | | | | | | | | SD in Original Scale | | 9.709 |
| 1400 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 10.47 |
| 1401 | | | | | | | | | | 95% BCA Bootstrap UCL | | 12.02 |
| 1402 | | | | | | | | | | | | |
| 1403 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 1404 | | | | | k star (bias corrected) | 0.72 | Data appear Normal at 5% Significance Level | | | | | |
| 1405 | | | | | Theta Star | 18.66 | | | | | | |
| 1406 | | | | | nu star | 7.201 | | | | | | |
| 1407 | | | | | | | | | | | | |
| 1408 | | | | | A-D Test Statistic | 0.396 | Nonparametric Statistics | | | | | |
| 1409 | | | | | 5% A-D Critical Value | 0.687 | | | | Kaplan-Meier (KM) Method | | |
| 1410 | | | | | K-S Test Statistic | 0.687 | | | | Mean | | 7.033 |
| 1411 | | | | | 5% K-S Critical Value | 0.362 | | | | SD | | 8.644 |
| 1412 | Data appear Gamma Distributed at 5% Significance Level | | | | | | | | | SE of Mean | | 2.79 |
| 1413 | | | | | | | | | | 95% KM (t) UCL | | 12.04 |
| 1414 | Assuming Gamma Distribution | | | | | | | | | 95% KM (z) UCL | | 11.62 |
| 1415 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | | 11.35 |
| 1416 | | | | | Minimum | 0.435 | | | | 95% KM (bootstrap t) UCL | | 24.35 |
| 1417 | | | | | Maximum | 28.41 | | | | 95% KM (BCA) UCL | | 24.33 |
| 1418 | | | | | Mean | 13.35 | | | | 95% KM (Percentile Bootstrap) UCL | | 14 |
| 1419 | | | | | Median | 9.729 | | | | 95% KM (Chebyshev) UCL | | 19.19 |
| 1420 | | | | | SD | 10.19 | | | | 97.5% KM (Chebyshev) UCL | | 24.45 |
| 1421 | | | | | k star | 0.988 | | | | 99% KM (Chebyshev) UCL | | 34.79 |
| 1422 | | | | | Theta star | 13.52 | | | | | | |
| 1423 | | | | | Nu star | 23.71 | Potential UCLs to Use | | | | | |
| 1424 | | | | | AppChi2 | 13.63 | | | | 95% KM (t) UCL | | 12.04 |
| 1425 | | | | | 95% Gamma Approximate UCL | 23.23 | | | | 95% KM (Percentile Bootstrap) UCL | | 14 |
| 1426 | | | | | 95% Adjusted Gamma UCL | 25.38 | | | | | | |
| 1427 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 1428 | | | | | | | | | | | | |
| 1429 | | | | | | | | | | | | |
| 1430 | Chromium | | | | | | | | | | | |
| 1431 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1432 | General Statistics | | | | | | | | | | | |
| 1433 | Number of Valid Data | | | | | 12 | Number of Detected Data | | | | | 10 |
| 1434 | Number of Distinct Detected Data | | | | | 9 | Number of Non-Detect Data | | | | | 2 |
| 1435 | | | | | | | Percent Non-Detects | | | | | 16.67% |
| 1436 | | | | | | | | | | | | |
| 1437 | Raw Statistics | | | | | | Log-transformed Statistics | | | | | |
| 1438 | Minimum Detected | | | | | 0.58 | Minimum Detected | | | | | -0.545 |
| 1439 | Maximum Detected | | | | | 8 | Maximum Detected | | | | | 2.079 |
| 1440 | Mean of Detected | | | | | 2.369 | Mean of Detected | | | | | 0.424 |
| 1441 | SD of Detected | | | | | 2.528 | SD of Detected | | | | | 0.947 |
| 1442 | Minimum Non-Detect | | | | | 0.6 | Minimum Non-Detect | | | | | -0.511 |
| 1443 | Maximum Non-Detect | | | | | 0.6 | Maximum Non-Detect | | | | | -0.511 |
| 1444 | | | | | | | | | | | | |
| 1445 | | | | | | | | | | | | |
| 1446 | UCL Statistics | | | | | | | | | | | |
| 1447 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 1448 | Shapiro Wilk Test Statistic | | | | | 0.749 | Shapiro Wilk Test Statistic | | | | | 0.877 |
| 1449 | 5% Shapiro Wilk Critical Value | | | | | 0.842 | 5% Shapiro Wilk Critical Value | | | | | 0.842 |
| 1450 | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | | | | |
| 1451 | | | | | | | | | | | | |
| 1452 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 1453 | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | | | | | |
| 1454 | Mean | | | | | 2.024 | Mean | | | | | 0.152 |
| 1455 | SD | | | | | 2.425 | SD | | | | | 1.065 |
| 1456 | 95% DL/2 (t) UCL | | | | | 3.281 | 95% H-Stat (DL/2) UCL | | | | | 5.271 |
| 1457 | | | | | | | | | | | | |
| 1458 | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | | | | | |
| 1459 | Mean | | | | | 1.596 | Mean in Log Scale | | | | | 0.152 |
| 1460 | SD | | | | | 2.812 | SD in Log Scale | | | | | 1.07 |
| 1461 | 95% MLE (t) UCL | | | | | 3.054 | Mean in Original Scale | | | | | 2.026 |
| 1462 | 95% MLE (Tiku) UCL | | | | | 3.077 | SD in Original Scale | | | | | 2.424 |
| 1463 | | | | | | | 95% Percentile Bootstrap UCL | | | | | 3.204 |
| 1464 | | | | | | | 95% BCA Bootstrap UCL | | | | | 3.449 |
| 1465 | | | | | | | | | | | | |
| 1466 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 1467 | k star (bias corrected) | | | | | 0.963 | Data Follow Appr. Gamma Distribution at 5% Significance Level | | | | | |
| 1468 | Theta Star | | | | | 2.459 | | | | | | |
| 1469 | nu star | | | | | 19.26 | | | | | | |
| 1470 | | | | | | | | | | | | |
| 1471 | A-D Test Statistic | | | | | 0.741 | Nonparametric Statistics | | | | | |
| 1472 | 5% A-D Critical Value | | | | | 0.743 | Kaplan-Meier (KM) Method | | | | | |
| 1473 | K-S Test Statistic | | | | | 0.743 | Mean | | | | | 2.071 |
| 1474 | 5% K-S Critical Value | | | | | 0.272 | SD | | | | | 2.289 |
| 1475 | Data follow Appr. Gamma Distribution at 5% Significance Level | | | | | | SE of Mean | | | | | 0.696 |
| 1476 | | | | | | | 95% KM (t) UCL | | | | | 3.322 |
| 1477 | Assuming Gamma Distribution | | | | | | 95% KM (z) UCL | | | | | 3.216 |
| 1478 | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | | | | | 3.308 |
| 1479 | Minimum | | | | | 1E-09 | 95% KM (bootstrap t) UCL | | | | | 5.141 |
| 1480 | Maximum | | | | | 8 | 95% KM (BCA) UCL | | | | | 3.345 |
| 1481 | Mean | | | | | 1.986 | 95% KM (Percentile Bootstrap) UCL | | | | | 3.245 |
| 1482 | Median | | | | | 0.935 | 95% KM (Chebyshev) UCL | | | | | 5.107 |
| 1483 | SD | | | | | 2.456 | 97.5% KM (Chebyshev) UCL | | | | | 6.42 |
| 1484 | k star | | | | | 0.287 | 99% KM (Chebyshev) UCL | | | | | 9.001 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1485 | | | | | Theta star | 6.913 | | | | | | |
| 1486 | | | | | Nu star | 6.896 | **Potential UCLs to Use** | | | | | |
| 1487 | | | | | AppChi2 | 2.113 | | | | 95% KM (Chebyshev) UCL | | 5.107 |
| 1488 | | | | 95% Gamma Approximate UCL | | 6.481 | | | | | | |
| 1489 | | | | 95% Adjusted Gamma UCL | | 7.901 | | | | | | |
| 1490 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1491 | | | | | | | | | | | | |
| 1492 | | | | | | | | | | | | |
| 1493 | **Chrysene** | | | | | | | | | | | |
| 1494 | | | | | | | | | | | | |
| 1495 | | | | | **General Statistics** | | | | | | | |
| 1496 | | | | Number of Valid Data | | 12 | | | | Number of Detected Data | | 4 |
| 1497 | | | | Number of Distinct Detected Data | | 4 | | | | Number of Non-Detect Data | | 8 |
| 1498 | | | | | | | | | | Percent Non-Detects | | 66.67% |
| 1499 | | | | | | | | | | | | |
| 1500 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1501 | | | | Minimum Detected | | 0.0062 | | | | Minimum Detected | | -5.083 |
| 1502 | | | | Maximum Detected | | 0.048 | | | | Maximum Detected | | -3.037 |
| 1503 | | | | Mean of Detected | | 0.0227 | | | | Mean of Detected | | -4.029 |
| 1504 | | | | SD of Detected | | 0.0178 | | | | SD of Detected | | 0.837 |
| 1505 | | | | Minimum Non-Detect | | 0.0104 | | | | Minimum Non-Detect | | -4.566 |
| 1506 | | | | Maximum Non-Detect | | 11 | | | | Maximum Non-Detect | | 2.398 |
| 1507 | | | | | | | | | | | | |
| 1508 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 12 |
| 1509 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 0 |
| 1510 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 100.00% |
| 1511 | | | | | | | | | | | | |
| 1512 | | | | **Warning: There are only 4 Distinct Detected Values in this data** | | | | | | | | |
| 1513 | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | | |
| 1514 | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | | |
| 1515 | | | | | | | | | | | | |
| 1516 | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | | |
| 1517 | | | | | | | | | | | | |
| 1518 | | | | | | | | | | | | |
| 1519 | | | | | **UCL Statistics** | | | | | | | |
| 1520 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 1521 | | | | Shapiro Wilk Test Statistic | | 0.881 | | | | Shapiro Wilk Test Statistic | | 0.958 |
| 1522 | | | | 5% Shapiro Wilk Critical Value | | 0.748 | | | | 5% Shapiro Wilk Critical Value | | 0.748 |
| 1523 | | | | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1524 | | | | | | | | | | | | |
| 1525 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1526 | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | | |
| 1527 | | | | Mean | | 1.316 | | | | Mean | | -2.37 |
| 1528 | | | | SD | | 2.325 | | | | SD | | 2.546 |
| 1529 | | | | 95% DL/2 (t) UCL | | 2.522 | | | | 95% H-Stat (DL/2) UCL | | 2409 |
| 1530 | | | | | | | | | | | | |
| 1531 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | Log ROS Method | | |
| 1532 | | | | **MLE method failed to converge properly** | | | | | | Mean in Log Scale | | -4.246 |
| 1533 | | | | | | | | | | SD in Log Scale | | 0.679 |
| 1534 | | | | | | | | | | Mean in Original Scale | | 0.0177 |
| 1535 | | | | | | | | | | SD in Original Scale | | 0.0126 |
| 1536 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.0238 |
| 1537 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.0247 |

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| 1538 | | | | | | | | | | | | |
| 1539 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 1540 | | | | | k star (bias corrected) | 0.715 | **Data appear Normal at 5% Significance Level** | | | | | |
| 1541 | | | | | Theta Star | 0.0318 | | | | | | |
| 1542 | | | | | nu star | 5.719 | | | | | | |
| 1543 | | | | | | | | | | | | |
| 1544 | | | | | A-D Test Statistic | 0.303 | **Nonparametric Statistics** | | | | | |
| 1545 | | | | | 5% A-D Critical Value | 0.66 | | | | | Kaplan-Meier (KM) Method | |
| 1546 | | | | | K-S Test Statistic | 0.66 | | | | | Mean | 0.0194 |
| 1547 | | | | | 5% K-S Critical Value | 0.398 | | | | | SD | 0.0153 |
| 1548 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.0079 |
| 1549 | | | | | | | | | | | 95% KM (t) UCL | 0.0336 |
| 1550 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 0.0324 |
| 1551 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.034 |
| 1552 | | | | | Minimum | 0.0062 | | | | | 95% KM (bootstrap t) UCL | 0.0482 |
| 1553 | | | | | Maximum | 0.0485 | | | | | 95% KM (BCA) UCL | 0.0364 |
| 1554 | | | | | Mean | 0.0246 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0341 |
| 1555 | | | | | Median | 0.0198 | | | | | 95% KM (Chebyshev) UCL | 0.0538 |
| 1556 | | | | | SD | 0.0145 | | | | | 97.5% KM (Chebyshev) UCL | 0.0687 |
| 1557 | | | | | k star | 2.267 | | | | | 99% KM (Chebyshev) UCL | 0.098 |
| 1558 | | | | | Theta star | 0.0109 | | | | | | |
| 1559 | | | | | Nu star | 54.41 | **Potential UCLs to Use** | | | | | |
| 1560 | | | | | AppChi2 | 38.46 | | | | | 95% KM (t) UCL | 0.0336 |
| 1561 | | | | | 95% Gamma Approximate UCL | 0.0348 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0341 |
| 1562 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 1563 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1564 | | | | | | | | | | | | |
| 1565 | | | | | | | | | | | | |
| 1566 | **Cobalt** | | | | | | | | | | | |
| 1567 | | | | | | | | | | | | |
| 1568 | | | | | **General Statistics** | | | | | | | |
| 1569 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 7 |
| 1570 | | | | | Number of Distinct Detected Data | 7 | | | | | Number of Non-Detect Data | 5 |
| 1571 | | | | | | | | | | | Percent Non-Detects | 41.67% |
| 1572 | | | | | | | | | | | | |
| 1573 | | | | **Raw Statistics** | | | **Log-transformed Statistics** | | | | | |
| 1574 | | | | | Minimum Detected | 0.77 | | | | | Minimum Detected | -0.261 |
| 1575 | | | | | Maximum Detected | 33 | | | | | Maximum Detected | 3.497 |
| 1576 | | | | | Mean of Detected | 8.067 | | | | | Mean of Detected | 1.226 |
| 1577 | | | | | SD of Detected | 11.68 | | | | | SD of Detected | 1.411 |
| 1578 | | | | | Minimum Non-Detect | 0.1 | | | | | Minimum Non-Detect | -2.303 |
| 1579 | | | | | Maximum Non-Detect | 50 | | | | | Maximum Non-Detect | 3.912 |
| 1580 | | | | | | | | | | | | |
| 1581 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 12 |
| 1582 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 1583 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 1584 | | | | | | | | | | | | |
| 1585 | **Warning: There are only 7 Detected Values in this data** | | | | | | | | | | | |
| 1586 | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | | | | | |
| 1587 | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | | | | | |
| 1588 | | | | | | | | | | | | |
| 1589 | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | | | | | |
| 1590 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1591 | | | | | | | | | | | | |
| 1592 | | | | | | UCL Statistics | | | | | | |
| 1593 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 1594 | | | | | | Shapiro Wilk Test Statistic | 0.7 | | | | Shapiro Wilk Test Statistic | 0.885 |
| 1595 | | | | | | 5% Shapiro Wilk Critical Value | 0.803 | | | | 5% Shapiro Wilk Critical Value | 0.803 |
| 1596 | | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 1597 | | | | | | | | | | | | |
| 1598 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 1599 | | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | |
| 1600 | | | | | | Mean | 10.97 | | | | Mean | 1.079 |
| 1601 | | | | | | SD | 12.45 | | | | SD | 2.213 |
| 1602 | | | | | | 95% DL/2 (t) UCL | 17.42 | | | | 95% H-Stat (DL/2) UCL | 3776 |
| 1603 | | | | | | | | | | | | |
| 1604 | | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | |
| 1605 | | | | MLE method failed to converge properly | | | | | | | Mean in Log Scale | 0.469 |
| 1606 | | | | | | | | | | | SD in Log Scale | 1.777 |
| 1607 | | | | | | | | | | | Mean in Original Scale | 5.492 |
| 1608 | | | | | | | | | | | SD in Original Scale | 9.376 |
| 1609 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 10.33 |
| 1610 | | | | | | | | | | | 95% BCA Bootstrap UCL | 12.44 |
| 1611 | | | | | | | | | | | | |
| 1612 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 1613 | | | | | | k star (bias corrected) | 0.496 | | | Data appear Gamma Distributed at 5% Significance Level | | |
| 1614 | | | | | | Theta Star | 16.26 | | | | | |
| 1615 | | | | | | nu star | 6.945 | | | | | |
| 1616 | | | | | | | | | | | | |
| 1617 | | | | | | A-D Test Statistic | 0.583 | | | Nonparametric Statistics | | |
| 1618 | | | | | | 5% A-D Critical Value | 0.739 | | | | Kaplan-Meier (KM) Method | |
| 1619 | | | | | | K-S Test Statistic | 0.739 | | | | Mean | 6.446 |
| 1620 | | | | | | 5% K-S Critical Value | 0.324 | | | | SD | 10.01 |
| 1621 | | | | Data appear Gamma Distributed at 5% Significance Level | | | | | | | SE of Mean | 3.603 |
| 1622 | | | | | | | | | | | 95% KM (t) UCL | 12.92 |
| 1623 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 12.37 |
| 1624 | | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | 12.84 |
| 1625 | | | | | | Minimum | 1E-09 | | | | 95% KM (bootstrap t) UCL | 25.8 |
| 1626 | | | | | | Maximum | 33 | | | | 95% KM (BCA) UCL | 12.58 |
| 1627 | | | | | | Mean | 7.928 | | | | 95% KM (Percentile Bootstrap) UCL | 12.54 |
| 1628 | | | | | | Median | 1.45 | | | | 95% KM (Chebyshev) UCL | 22.15 |
| 1629 | | | | | | SD | 11.36 | | | | 97.5% KM (Chebyshev) UCL | 28.95 |
| 1630 | | | | | | k star | 0.18 | | | | 99% KM (Chebyshev) UCL | 42.29 |
| 1631 | | | | | | Theta star | 44.13 | | | | | |
| 1632 | | | | | | Nu star | 4.311 | | | Potential UCLs to Use | | |
| 1633 | | | | | | AppChi2 | 0.848 | | | | 95% KM (BCA) UCL | 12.58 |
| 1634 | | | | | | 95% Gamma Approximate UCL | 40.29 | | | | | |
| 1635 | | | | | | 95% Adjusted Gamma UCL | 53.05 | | | | | |
| 1636 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 1637 | | | | | | | | | | | | |
| 1638 | | | | | | | | | | | | |
| 1639 | Copper | | | | | | | | | | | |
| 1640 | | | | | | | | | | | | |
| 1641 | | | | | | General Statistics | | | | | | |
| 1642 | | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | 6 |
| 1643 | | | | | | Number of Distinct Detected Data | 5 | | | | Number of Non-Detect Data | 6 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1644 | | | | | | | | | | | Percent Non-Detects | 50.00% |
| 1645 | | | | | | | | | | | | |
| 1646 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 1647 | | | | | Minimum Detected | 1.8 | | | | | Minimum Detected | 0.588 |
| 1648 | | | | | Maximum Detected | 69 | | | | | Maximum Detected | 4.234 |
| 1649 | | | | | Mean of Detected | 14.63 | | | | | Mean of Detected | 1.632 |
| 1650 | | | | | SD of Detected | 26.77 | | | | | SD of Detected | 1.415 |
| 1651 | | | | | Minimum Non-Detect | 0.7 | | | | | Minimum Non-Detect | -0.357 |
| 1652 | | | | | Maximum Non-Detect | 25 | | | | | Maximum Non-Detect | 3.219 |
| 1653 | | | | | | | | | | | | |
| 1654 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 11 |
| 1655 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 1 |
| 1656 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 91.67% |
| 1657 | | | | | | | | | | | | |
| 1658 | | | | Warning: There are only 6 Detected Values in this data | | | | | | | | |
| 1659 | | | | Note: It should be noted that even though bootstrap may be performed on this data set | | | | | | | | |
| 1660 | | | | the resulting calculations may not be reliable enough to draw conclusions | | | | | | | | |
| 1661 | | | | | | | | | | | | |
| 1662 | | | | It is recommended to have 10-15 or more distinct observations for accurate and meaningful results. | | | | | | | | |
| 1663 | | | | | | | | | | | | |
| 1664 | | | | | | | | | | | | |
| 1665 | | | | UCL Statistics | | | | | | | | |
| 1666 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 1667 | | | | | Shapiro Wilk Test Statistic | 0.574 | | | | | Shapiro Wilk Test Statistic | 0.799 |
| 1668 | | | | | 5% Shapiro Wilk Critical Value | 0.788 | | | | | 5% Shapiro Wilk Critical Value | 0.788 |
| 1669 | | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 1670 | | | | | | | | | | | | |
| 1671 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 1672 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1673 | | | | | Mean | 10.55 | | | | | Mean | 1.244 |
| 1674 | | | | | SD | 19.07 | | | | | SD | 1.613 |
| 1675 | | | | | 95% DL/2 (t) UCL | 20.44 | | | | | 95% H-Stat (DL/2) UCL | 129.7 |
| 1676 | | | | | | | | | | | | |
| 1677 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 1678 | | | | MLE method failed to converge properly | | | | | | | Mean in Log Scale | 0.485 |
| 1679 | | | | | | | | | | | SD in Log Scale | 1.753 |
| 1680 | | | | | | | | | | | Mean in Original Scale | 7.858 |
| 1681 | | | | | | | | | | | SD in Original Scale | 19.42 |
| 1682 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 18.61 |
| 1683 | | | | | | | | | | | 95% BCA Bootstrap UCL | 24.99 |
| 1684 | | | | | | | | | | | | |
| 1685 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 1686 | | | | | k star (bias corrected) | 0.406 | | | | Data Follow Appr. Gamma Distribution at 5% Significance Level | | |
| 1687 | | | | | Theta Star | 36.07 | | | | | | |
| 1688 | | | | | nu star | 4.869 | | | | | | |
| 1689 | | | | | | | | | | | | |
| 1690 | | | | | A-D Test Statistic | 0.888 | | | | Nonparametric Statistics | | |
| 1691 | | | | | 5% A-D Critical Value | 0.731 | | | | | Kaplan-Meier (KM) Method | |
| 1692 | | | | | K-S Test Statistic | 0.731 | | | | | Mean | 8.523 |
| 1693 | | | | | 5% K-S Critical Value | 0.347 | | | | | SD | 18.37 |
| 1694 | | | | Data follow Appr. Gamma Distribution at 5% Significance Level | | | | | | | SE of Mean | 5.827 |
| 1695 | | | | | | | | | | | 95% KM (t) UCL | 18.99 |
| 1696 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 18.11 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1697 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | | 18.45 |
| 1698 | | | | | Minimum | 1E-09 | | | | 95% KM (bootstrap t) UCL | | 136.5 |
| 1699 | | | | | Maximum | 69 | | | | 95% KM (BCA) UCL | | 19.61 |
| 1700 | | | | | Mean | 14.17 | | | | 95% KM (Percentile Bootstrap) UCL | | 19.13 |
| 1701 | | | | | Median | 2 | | | | 95% KM (Chebyshev) UCL | | 33.92 |
| 1702 | | | | | SD | 24.83 | | | | 97.5% KM (Chebyshev) UCL | | 44.91 |
| 1703 | | | | | k star | 0.13 | | | | 99% KM (Chebyshev) UCL | | 66.5 |
| 1704 | | | | | Theta star | 108.7 | | | | | | |
| 1705 | | | | | Nu star | 3.128 | | | **Potential UCLs to Use** | | | |
| 1706 | | | | | AppChi2 | 0.411 | | | | 95% KM (t) UCL | | 18.99 |
| 1707 | | | | 95% Gamma Approximate UCL | | 107.8 | | | | | | |
| 1708 | | | | 95% Adjusted Gamma UCL | | 149.5 | | | | | | |
| 1709 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1710 | | | | | | | | | | | | |
| 1711 | | | | | | | | | | | | |
| 1712 | **Cyanide** | | | | | | | | | | | |
| 1713 | | | | | | | | | | | | |
| 1714 | | | | | **General Statistics** | | | | | | | |
| 1715 | | | | Number of Valid Data | | 12 | | | | Number of Detected Data | | 0 |
| 1716 | | | | Number of Distinct Detected Data | | 0 | | | | Number of Non-Detect Data | | 12 |
| 1717 | | | | | | | | | | Percent Non-Detects | | 100.00% |
| 1718 | | | | | | | | | | | | |
| 1719 | **Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!** | | | | | | | | | | | |
| 1720 | **Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!** | | | | | | | | | | | |
| 1721 | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 1722 | | | | | | | | | | | | |
| 1723 | **The data set for variable Cyanide was not processed!** | | | | | | | | | | | |
| 1724 | | | | | | | | | | | | |
| 1725 | | | | | | | | | | | | |
| 1726 | | | | | | | | | | | | |
| 1727 | **Dibenz_a,h_anthracene** | | | | | | | | | | | |
| 1728 | | | | | | | | | | | | |
| 1729 | | | | | **General Statistics** | | | | | | | |
| 1730 | | | | Number of Valid Data | | 12 | | | | Number of Detected Data | | 0 |
| 1731 | | | | Number of Distinct Detected Data | | 0 | | | | Number of Non-Detect Data | | 12 |
| 1732 | | | | | | | | | | Percent Non-Detects | | 100.00% |
| 1733 | | | | | | | | | | | | |
| 1734 | **Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!** | | | | | | | | | | | |
| 1735 | **Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!** | | | | | | | | | | | |
| 1736 | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 1737 | | | | | | | | | | | | |
| 1738 | **The data set for variable Dibenz_a,h_anthracene was not processed!** | | | | | | | | | | | |
| 1739 | | | | | | | | | | | | |
| 1740 | | | | | | | | | | | | |
| 1741 | | | | | | | | | | | | |
| 1742 | **Dibenzofuran** | | | | | | | | | | | |
| 1743 | | | | | | | | | | | | |
| 1744 | | | | | **General Statistics** | | | | | | | |
| 1745 | | | | Number of Valid Data | | 12 | | | | Number of Detected Data | | 1 |
| 1746 | | | | Number of Distinct Detected Data | | 1 | | | | Number of Non-Detect Data | | 11 |
| 1747 | | | | | | | | | | Percent Non-Detects | | 91.67% |
| 1748 | | | | | | | | | | | | |
| 1749 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1750 | It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 1751 | | | | | | | | | | | | |
| 1752 | The data set for variable Dibenzofuran was not processed! | | | | | | | | | | | |
| 1753 | | | | | | | | | | | | |
| 1754 | | | | | | | | | | | | |
| 1755 | | | | | | | | | | | | |
| 1756 | Dieldrin | | | | | | | | | | | |
| 1757 | | | | | | | | | | | | |
| 1758 | General Statistics | | | | | | | | | | | |
| 1759 | | | | Number of Valid Data | | 12 | | | Number of Detected Data | | | 1 |
| 1760 | | | | Number of Distinct Detected Data | | 1 | | | Number of Non-Detect Data | | | 11 |
| 1761 | | | | | | | | | Percent Non-Detects | | | 91.67% |
| 1762 | | | | | | | | | | | | |
| 1763 | Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set! | | | | | | | | | | | |
| 1764 | It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 1765 | | | | | | | | | | | | |
| 1766 | The data set for variable Dieldrin was not processed! | | | | | | | | | | | |
| 1767 | | | | | | | | | | | | |
| 1768 | | | | | | | | | | | | |
| 1769 | | | | | | | | | | | | |
| 1770 | Ethylbenzene | | | | | | | | | | | |
| 1771 | | | | | | | | | | | | |
| 1772 | General Statistics | | | | | | | | | | | |
| 1773 | | | | Number of Valid Data | | 12 | | | Number of Detected Data | | | 0 |
| 1774 | | | | Number of Distinct Detected Data | | 0 | | | Number of Non-Detect Data | | | 12 |
| 1775 | | | | | | | | | Percent Non-Detects | | | 100.00% |
| 1776 | | | | | | | | | | | | |
| 1777 | Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs! | | | | | | | | | | | |
| 1778 | Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit! | | | | | | | | | | | |
| 1779 | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 1780 | | | | | | | | | | | | |
| 1781 | The data set for variable Ethylbenzene was not processed! | | | | | | | | | | | |
| 1782 | | | | | | | | | | | | |
| 1783 | | | | | | | | | | | | |
| 1784 | | | | | | | | | | | | |
| 1785 | Gamma-Chlordane | | | | | | | | | | | |
| 1786 | | | | | | | | | | | | |
| 1787 | General Statistics | | | | | | | | | | | |
| 1788 | | | | Number of Valid Data | | 12 | | | Number of Detected Data | | | 0 |
| 1789 | | | | Number of Distinct Detected Data | | 0 | | | Number of Non-Detect Data | | | 12 |
| 1790 | | | | | | | | | Percent Non-Detects | | | 100.00% |
| 1791 | | | | | | | | | | | | |
| 1792 | Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs! | | | | | | | | | | | |
| 1793 | Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit! | | | | | | | | | | | |
| 1794 | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 1795 | | | | | | | | | | | | |
| 1796 | The data set for variable Gamma-Chlordane was not processed! | | | | | | | | | | | |
| 1797 | | | | | | | | | | | | |
| 1798 | | | | | | | | | | | | |
| 1799 | | | | | | | | | | | | |
| 1800 | Indeno(1,2,3-cd)pyrene | | | | | | | | | | | |
| 1801 | | | | | | | | | | | | |
| 1802 | General Statistics | | | | | | | | | | | |

| | A–E | F | G–K | L |
|---|---|---|---|---|
| 1803 | Number of Valid Data | 12 | Number of Detected Data | 2 |
| 1804 | Number of Distinct Detected Data | 2 | Number of Non-Detect Data | 10 |
| 1805 | | | Percent Non-Detects | 83.33% |
| 1806 | | | | |
| 1807 | **Raw Statistics** | | **Log-transformed Statistics** | |
| 1808 | Minimum Detected | 0.00718 | Minimum Detected | -4.936 |
| 1809 | Maximum Detected | 0.0115 | Maximum Detected | -4.465 |
| 1810 | Mean of Detected | 0.00934 | Mean of Detected | -4.701 |
| 1811 | SD of Detected | 0.00305 | SD of Detected | 0.333 |
| 1812 | Minimum Non-Detect | 0.01 | Minimum Non-Detect | -4.605 |
| 1813 | Maximum Non-Detect | 11 | Maximum Non-Detect | 2.398 |
| 1814 | | | | |
| 1815 | Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 12 |
| 1816 | For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 0 |
| 1817 | Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 100.00% |
| 1818 | | | | |
| 1819 | **Warning: Data set has only 2 Distinct Detected Values.** | | | |
| 1820 | **This may not be adequate enough to compute meaningful and reliable test statistics and estimates.** | | | |
| 1821 | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | |
| 1822 | | | | |
| 1823 | **Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.** | | | |
| 1824 | | | | |
| 1825 | **The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.** | | | |
| 1826 | **Those methods will return a 'N/A' value on your output display!** | | | |
| 1827 | | | | |
| 1828 | **It is necessary to have 4 or more Distinct Values for bootstrap methods.** | | | |
| 1829 | **However, results obtained using 4 to 9 distinct values may not be reliable.** | | | |
| 1830 | **It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.** | | | |
| 1831 | | | | |
| 1832 | | | | |
| 1833 | **UCL Statistics** | | | |
| 1834 | **Normal Distribution Test with Detected Values Only** | | **Lognormal Distribution Test with Detected Values Only** | |
| 1835 | Shapiro Wilk Test Statistic | N/A | Shapiro Wilk Test Statistic | N/A |
| 1836 | 5% Shapiro Wilk Critical Value | N/A | 5% Shapiro Wilk Critical Value | N/A |
| 1837 | **Data not Normal at 5% Significance Level** | | **Data not Lognormal at 5% Significance Level** | |
| 1838 | | | | |
| 1839 | **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
| 1840 | DL/2 Substitution Method | | DL/2 Substitution Method | |
| 1841 | Mean | 1.727 | Mean | -2.117 |
| 1842 | SD | 2.513 | SD | 2.905 |
| 1843 | 95% DL/2 (t) UCL | 3.03 | 95% H-Stat (DL/2) UCL | 15291 |
| 1844 | | | | |
| 1845 | Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| 1846 | **MLE method failed to converge properly** | | Mean in Log Scale | N/A |
| 1847 | | | SD in Log Scale | N/A |
| 1848 | | | Mean in Original Scale | N/A |
| 1849 | | | SD in Original Scale | N/A |
| 1850 | | | 95% Percentile Bootstrap UCL | N/A |
| 1851 | | | 95% BCA Bootstrap UCL | N/A |
| 1852 | | | | |
| 1853 | **Gamma Distribution Test with Detected Values Only** | | **Data Distribution Test with Detected Values Only** | |
| 1854 | k star (bias corrected) | N/A | **Data do not follow a Discernable Distribution (0.05)** | |
| 1855 | Theta Star | N/A | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1856 | | | | | nu star | N/A | | | | | | |
| 1857 | | | | | | | | | | | | |
| 1858 | | | | | A-D Test Statistic | N/A | **Nonparametric Statistics** | | | | | |
| 1859 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 1860 | | | | | K-S Test Statistic | N/A | | | | | Mean | 0.00826 |
| 1861 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 0.00187 |
| 1862 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.00132 |
| 1863 | | | | | | | | | | | 95% KM (t) UCL | 0.0106 |
| 1864 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 0.0104 |
| 1865 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.0114 |
| 1866 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | N/A |
| 1867 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | N/A |
| 1868 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0115 |
| 1869 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 0.014 |
| 1870 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 0.0165 |
| 1871 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 0.0214 |
| 1872 | | | | | Theta star | N/A | | | | | | |
| 1873 | | | | | Nu star | N/A | **Potential UCLs to Use** | | | | | |
| 1874 | | | | | AppChi2 | N/A | | | | | 95% KM (t) UCL | 0.0106 |
| 1875 | | | | | 95% Gamma Approximate UCL | N/A | | | | | 95% KM (% Bootstrap) UCL | 0.0115 |
| 1876 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 1877 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1878 | | | | | | | | | | | | |
| 1879 | | | | | | | | | | | | |
| 1880 | **Iron** | | | | | | | | | | | |
| 1881 | | | | | | | | | | | | |
| 1882 | | | | | **General Statistics** | | | | | | | |
| 1883 | | | | | Number of Valid Observations | 12 | | | | | Number of Distinct Observations | 12 |
| 1884 | | | | | | | | | | | | |
| 1885 | | | | **Raw Statistics** | | | **Log-transformed Statistics** | | | | | |
| 1886 | | | | | Minimum | 1500 | | | | | Minimum of Log Data | 7.313 |
| 1887 | | | | | Maximum | 78000 | | | | | Maximum of Log Data | 11.26 |
| 1888 | | | | | Mean | 20398 | | | | | Mean of log Data | 9.109 |
| 1889 | | | | | Median | 7665 | | | | | SD of log Data | 1.429 |
| 1890 | | | | | SD | 24322 | | | | | | |
| 1891 | | | | | Coefficient of Variation | 1.192 | | | | | | |
| 1892 | | | | | Skewness | 1.414 | | | | | | |
| 1893 | | | | | | | | | | | | |
| 1894 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 1895 | | | | **Normal Distribution Test** | | | **Lognormal Distribution Test** | | | | | |
| 1896 | | | | | Shapiro Wilk Test Statistic | 0.801 | | | | | Shapiro Wilk Test Statistic | 0.914 |
| 1897 | | | | | Shapiro Wilk Critical Value | 0.859 | | | | | Shapiro Wilk Critical Value | 0.859 |
| 1898 | | | | **Data not Normal at 5% Significance Level** | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 1899 | | | | | | | | | | | | |
| 1900 | | | | **Assuming Normal Distribution** | | | **Assuming Lognormal Distribution** | | | | | |
| 1901 | | | | | 95% Student's-t UCL | 33007 | | | | | 95% H-UCL | 126295 |
| 1902 | | | | **95% UCLs (Adjusted for Skewness)** | | | | | | | 95% Chebyshev (MVUE) UCL | 64544 |
| 1903 | | | | | 95% Adjusted-CLT UCL | 35009 | | | | | 97.5% Chebyshev (MVUE) UCL | 83059 |
| 1904 | | | | | 95% Modified-t UCL | 33485 | | | | | 99% Chebyshev (MVUE) UCL | 119430 |
| 1905 | | | | | | | | | | | | |
| 1906 | | | | **Gamma Distribution Test** | | | **Data Distribution** | | | | | |
| 1907 | | | | | k star (bias corrected) | 0.609 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | |
| 1908 | | | | | Theta Star | 33521 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1909 | | | | | MLE of Mean | 20398 | | | | | | |
| 1910 | | | | | MLE of Standard Deviation | 26149 | | | | | | |
| 1911 | | | | | nu star | 14.6 | | | | | | |
| 1912 | | | | | Approximate Chi Square Value (.05) | 6.987 | | | **Nonparametric Statistics** | | | |
| 1913 | | | | | Adjusted Level of Significance | 0.029 | | | | | 95% CLT UCL | 31947 |
| 1914 | | | | | Adjusted Chi Square Value | 6.2 | | | | | 95% Jackknife UCL | 33007 |
| 1915 | | | | | | | | | | | 95% Standard Bootstrap UCL | 31457 |
| 1916 | | | | | Anderson-Darling Test Statistic | 0.505 | | | | | 95% Bootstrap-t UCL | 39072 |
| 1917 | | | | | Anderson-Darling 5% Critical Value | 0.767 | | | | | 95% Hall's Bootstrap UCL | 36153 |
| 1918 | | | | | Kolmogorov-Smirnov Test Statistic | 0.193 | | | | | 95% Percentile Bootstrap UCL | 31999 |
| 1919 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.255 | | | | | 95% BCA Bootstrap UCL | 33850 |
| 1920 | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | 95% Chebyshev(Mean, Sd) UCL | 51003 |
| 1921 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 64245 |
| 1922 | | | **Assuming Gamma Distribution** | | | | | | | | 99% Chebyshev(Mean, Sd) UCL | 90257 |
| 1923 | | | | | 95% Approximate Gamma UCL | 42635 | | | | | | |
| 1924 | | | | | 95% Adjusted Gamma UCL | 48049 | | | | | | |
| 1925 | | | | | | | | | | | | |
| 1926 | | | **Potential UCL to Use** | | | | | | | | Use 95% Approximate Gamma UCL | 42635 |
| 1927 | | | | | | | | | | | | |
| 1928 | | | | | | | | | | | | |
| 1929 | **Lead** | | | | | | | | | | | |
| 1930 | | | | | | | | | | | | |
| 1931 | | | | | **General Statistics** | | | | | | | |
| 1932 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 8 |
| 1933 | | | | | Number of Distinct Detected Data | 7 | | | | | Number of Non-Detect Data | 4 |
| 1934 | | | | | | | | | | | Percent Non-Detects | 33.33% |
| 1935 | | | | | | | | | | | | |
| 1936 | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | |
| 1937 | | | | | Minimum Detected | 0.2 | | | | | Minimum Detected | -1.609 |
| 1938 | | | | | Maximum Detected | 48 | | | | | Maximum Detected | 3.871 |
| 1939 | | | | | Mean of Detected | 14.13 | | | | | Mean of Detected | 1.102 |
| 1940 | | | | | SD of Detected | 18.22 | | | | | SD of Detected | 2.282 |
| 1941 | | | | | Minimum Non-Detect | 0.7 | | | | | Minimum Non-Detect | -0.357 |
| 1942 | | | | | Maximum Non-Detect | 3 | | | | | Maximum Non-Detect | 1.099 |
| 1943 | | | | | | | | | | | | |
| 1944 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 8 |
| 1945 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 4 |
| 1946 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 66.67% |
| 1947 | | | | | | | | | | | | |
| 1948 | | | | | **Warning: There are only 8 Detected Values in this data** | | | | | | | |
| 1949 | | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | |
| 1950 | | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | |
| 1951 | | | | | | | | | | | | |
| 1952 | | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | |
| 1953 | | | | | | | | | | | | |
| 1954 | | | | | | | | | | | | |
| 1955 | | | | | **UCL Statistics** | | | | | | | |
| 1956 | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | |
| 1957 | | | | | Shapiro Wilk Test Statistic | 0.789 | | | | | Shapiro Wilk Test Statistic | 0.867 |
| 1958 | | | | | 5% Shapiro Wilk Critical Value | 0.818 | | | | | 5% Shapiro Wilk Critical Value | 0.818 |
| 1959 | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | |
| 1960 | | | | | | | | | | | | |
| 1961 | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1962 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1963 | | | | | Mean | 9.73 | | | | | Mean | 0.627 |
| 1964 | | | | | SD | 15.93 | | | | | SD | 1.999 |
| 1965 | | | | | 95% DL/2 (t) UCL | 17.99 | | | | | 95% H-Stat (DL/2) UCL | 315.9 |
| 1966 | | | | | | | | | | | | |
| 1967 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 1968 | | | | | **MLE yields a negative mean** | | | | | | Mean in Log Scale | 0.406 |
| 1969 | | | | | | | | | | | SD in Log Scale | 2.141 |
| 1970 | | | | | | | | | | | Mean in Original Scale | 9.586 |
| 1971 | | | | | | | | | | | SD in Original Scale | 16.02 |
| 1972 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 17.44 |
| 1973 | | | | | | | | | | | 95% BCA Bootstrap UCL | 19.75 |
| 1974 | | | | | | | | | | | | |
| 1975 | | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | |
| 1976 | | | | | k star (bias corrected) | 0.347 | | | | | **Data appear Gamma Distributed at 5% Significance Level** | |
| 1977 | | | | | Theta Star | 40.73 | | | | | | |
| 1978 | | | | | nu star | 5.552 | | | | | | |
| 1979 | | | | | | | | | | | | |
| 1980 | | | | | A-D Test Statistic | 0.543 | | | | | **Nonparametric Statistics** | |
| 1981 | | | | | 5% A-D Critical Value | 0.776 | | | | | Kaplan-Meier (KM) Method | |
| 1982 | | | | | K-S Test Statistic | 0.776 | | | | | Mean | 9.543 |
| 1983 | | | | | 5% K-S Critical Value | 0.312 | | | | | SD | 15.36 |
| 1984 | | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | SE of Mean | 4.74 |
| 1985 | | | | | | | | | | | 95% KM (t) UCL | 18.06 |
| 1986 | | | | | **Assuming Gamma Distribution** | | | | | | 95% KM (z) UCL | 17.34 |
| 1987 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 17.86 |
| 1988 | | | | | Minimum | 0.2 | | | | | 95% KM (bootstrap t) UCL | 22.2 |
| 1989 | | | | | Maximum | 48 | | | | | 95% KM (BCA) UCL | 18.32 |
| 1990 | | | | | Mean | 13.33 | | | | | 95% KM (Percentile Bootstrap) UCL | 17.46 |
| 1991 | | | | | Median | 8.099 | | | | | 95% KM (Chebyshev) UCL | 30.2 |
| 1992 | | | | | SD | 14.78 | | | | | 97.5% KM (Chebyshev) UCL | 39.14 |
| 1993 | | | | | k star | 0.497 | | | | | 99% KM (Chebyshev) UCL | 56.71 |
| 1994 | | | | | Theta star | 26.84 | | | | | | |
| 1995 | | | | | Nu star | 11.92 | | | | | **Potential UCLs to Use** | |
| 1996 | | | | | AppChi2 | 5.175 | | | | | 95% KM (BCA) UCL | 18.32 |
| 1997 | | | | | 95% Gamma Approximate UCL | 30.71 | | | | | | |
| 1998 | | | | | 95% Adjusted Gamma UCL | 35.2 | | | | | | |
| 1999 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 2000 | | | | | | | | | | | | |
| 2001 | | | | | | | | | | | | |
| 2002 | **Manganese** | | | | | | | | | | | |
| 2003 | | | | | | | | | | | | |
| 2004 | | | | | **General Statistics** | | | | | | | |
| 2005 | | | | | Number of Valid Observations | 12 | | | | | Number of Distinct Observations | 12 |
| 2006 | | | | | | | | | | | | |
| 2007 | | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | |
| 2008 | | | | | Minimum | 203 | | | | | Minimum of Log Data | 5.313 |
| 2009 | | | | | Maximum | 1700 | | | | | Maximum of Log Data | 7.438 |
| 2010 | | | | | Mean | 810.7 | | | | | Mean of log Data | 6.445 |
| 2011 | | | | | Median | 936.5 | | | | | SD of log Data | 0.801 |
| 2012 | | | | | SD | 520.4 | | | | | | |
| 2013 | | | | | Coefficient of Variation | 0.642 | | | | | | |
| 2014 | | | | | Skewness | 0.218 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015 | | | | | | | | | | | | |
| 2016 | **Relevant UCL Statistics** | | | | | | | | | | | |
| 2017 | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | | | | |
| 2018 | | | | | Shapiro Wilk Test Statistic | 0.906 | | | | Shapiro Wilk Test Statistic | | 0.865 |
| 2019 | | | | | Shapiro Wilk Critical Value | 0.859 | | | | Shapiro Wilk Critical Value | | 0.859 |
| 2020 | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 2021 | | | | | | | | | | | | |
| 2022 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 2023 | | | | | 95% Student's-t UCL | 1080 | | | | 95% H-UCL | | 1615 |
| 2024 | **95% UCLs (Adjusted for Skewness)** | | | | | | | | | 95% Chebyshev (MVUE) UCL | | 1729 |
| 2025 | | | | | 95% Adjusted-CLT UCL | 1068 | | | | 97.5% Chebyshev (MVUE) UCL | | 2114 |
| 2026 | | | | | 95% Modified-t UCL | 1082 | | | | 99% Chebyshev (MVUE) UCL | | 2871 |
| 2027 | | | | | | | | | | | | |
| 2028 | **Gamma Distribution Test** | | | | | | **Data Distribution** | | | | | |
| 2029 | | | | | k star (bias corrected) | 1.652 | **Data appear Normal at 5% Significance Level** | | | | | |
| 2030 | | | | | Theta Star | 490.7 | | | | | | |
| 2031 | | | | | MLE of Mean | 810.7 | | | | | | |
| 2032 | | | | | MLE of Standard Deviation | 630.7 | | | | | | |
| 2033 | | | | | nu star | 39.65 | | | | | | |
| 2034 | | | | | Approximate Chi Square Value (.05) | 26.23 | **Nonparametric Statistics** | | | | | |
| 2035 | | | | | Adjusted Level of Significance | 0.029 | | | | 95% CLT UCL | | 1058 |
| 2036 | | | | | Adjusted Chi Square Value | 24.57 | | | | 95% Jackknife UCL | | 1080 |
| 2037 | | | | | | | | | | 95% Standard Bootstrap UCL | | 1043 |
| 2038 | | | | | Anderson-Darling Test Statistic | 0.651 | | | | 95% Bootstrap-t UCL | | 1092 |
| 2039 | | | | | Anderson-Darling 5% Critical Value | 0.741 | | | | 95% Hall's Bootstrap UCL | | 1053 |
| 2040 | | | | | Kolmogorov-Smirnov Test Statistic | 0.253 | | | | 95% Percentile Bootstrap UCL | | 1049 |
| 2041 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.248 | | | | 95% BCA Bootstrap UCL | | 1062 |
| 2042 | **Data follow Appr. Gamma Distribution at 5% Significance Level** | | | | | | | | | 95% Chebyshev(Mean, Sd) UCL | | 1465 |
| 2043 | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 1749 |
| 2044 | **Assuming Gamma Distribution** | | | | | | | | | 99% Chebyshev(Mean, Sd) UCL | | 2305 |
| 2045 | | | | | 95% Approximate Gamma UCL | 1226 | | | | | | |
| 2046 | | | | | 95% Adjusted Gamma UCL | 1308 | | | | | | |
| 2047 | | | | | | | | | | | | |
| 2048 | **Potential UCL to Use** | | | | | | | | | Use 95% Student's-t UCL | | 1080 |
| 2049 | | | | | | | | | | | | |
| 2050 | | | | | | | | | | | | |
| 2051 | **Mercury** | | | | | | | | | | | |
| 2052 | | | | | | | | | | | | |
| 2053 | **General Statistics** | | | | | | | | | | | |
| 2054 | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | | 1 |
| 2055 | | | | | Number of Distinct Detected Data | 1 | | | | Number of Non-Detect Data | | 11 |
| 2056 | | | | | | | | | | Percent Non-Detects | | 91.67% |
| 2057 | | | | | | | | | | | | |
| 2058 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 2059 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 2060 | | | | | | | | | | | | |
| 2061 | **The data set for variable Mercury was not processed!** | | | | | | | | | | | |
| 2062 | | | | | | | | | | | | |
| 2063 | | | | | | | | | | | | |
| 2064 | | | | | | | | | | | | |
| 2065 | **Naphthalene** | | | | | | | | | | | |
| 2066 | | | | | | | | | | | | |
| 2067 | **General Statistics** | | | | | | | | | | | |

| | A–E | F | G–K | L |
|---|---|---|---|---|
| 2068 | Number of Valid Data | 12 | Number of Detected Data | 7 |
| 2069 | Number of Distinct Detected Data | 7 | Number of Non-Detect Data | 5 |
| 2070 | | | Percent Non-Detects | 41.67% |
| 2071 | | | | |
| 2072 | **Raw Statistics** | | **Log-transformed Statistics** | |
| 2073 | Minimum Detected | 0.00914 | Minimum Detected | -4.695 |
| 2074 | Maximum Detected | 3.3 | Maximum Detected | 1.194 |
| 2075 | Mean of Detected | 0.629 | Mean of Detected | -2.679 |
| 2076 | SD of Detected | 1.23 | SD of Detected | 2.353 |
| 2077 | Minimum Non-Detect | 0.1 | Minimum Non-Detect | -2.303 |
| 2078 | Maximum Non-Detect | 11 | Maximum Non-Detect | 2.398 |
| 2079 | | | | |
| 2080 | Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 12 |
| 2081 | For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 0 |
| 2082 | Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 100.00% |
| 2083 | | | | |
| 2084 | **Warning: There are only 7 Detected Values in this data** | | | |
| 2085 | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | |
| 2086 | **the resulting calculations may not be reliable enough to draw conclusions** | | | |
| 2087 | | | | |
| 2088 | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | |
| 2089 | | | | |
| 2090 | | | | |
| 2091 | **UCL Statistics** | | | |
| 2092 | **Normal Distribution Test with Detected Values Only** | | **Lognormal Distribution Test with Detected Values Only** | |
| 2093 | Shapiro Wilk Test Statistic | 0.609 | Shapiro Wilk Test Statistic | 0.827 |
| 2094 | 5% Shapiro Wilk Critical Value | 0.803 | 5% Shapiro Wilk Critical Value | 0.803 |
| 2095 | **Data not Normal at 5% Significance Level** | | **Data appear Lognormal at 5% Significance Level** | |
| 2096 | | | | |
| 2097 | **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
| 2098 | DL/2 Substitution Method | | DL/2 Substitution Method | |
| 2099 | Mean | 0.842 | Mean | -2.419 |
| 2100 | SD | 1.748 | SD | 2.175 |
| 2101 | 95% DL/2 (t) UCL | 1.748 | 95% H-Stat (DL/2) UCL | 122.3 |
| 2102 | | | | |
| 2103 | Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| 2104 | **MLE method failed to converge properly** | | Mean in Log Scale | -3.079 |
| 2105 | | | SD in Log Scale | 1.955 |
| 2106 | | | Mean in Original Scale | 0.385 |
| 2107 | | | SD in Original Scale | 0.957 |
| 2108 | | | 95% Percentile Bootstrap UCL | 0.858 |
| 2109 | | | 95% BCA Bootstrap UCL | 1.124 |
| 2110 | | | | |
| 2111 | **Gamma Distribution Test with Detected Values Only** | | **Data Distribution Test with Detected Values Only** | |
| 2112 | k star (bias corrected) | 0.272 | **Data Follow Appr. Gamma Distribution at 5% Significance Level** | |
| 2113 | Theta Star | 2.309 | | |
| 2114 | nu star | 3.811 | | |
| 2115 | | | | |
| 2116 | A-D Test Statistic | 0.835 | **Nonparametric Statistics** | |
| 2117 | 5% A-D Critical Value | 0.783 | Kaplan-Meier (KM) Method | |
| 2118 | K-S Test Statistic | 0.783 | Mean | 0.409 |
| 2119 | 5% K-S Critical Value | 0.335 | SD | 0.954 |
| 2120 | **Data follow Appr. Gamma Distribution at 5% Significance Level** | | SE of Mean | 0.311 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2121 | | | | | | | | | | | 95% KM (t) UCL | 0.967 |
| 2122 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 0.92 |
| 2123 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.953 |
| 2124 | | | | | Minimum | 0.00914 | | | | | 95% KM (bootstrap t) UCL | 12.99 |
| 2125 | | | | | Maximum | 3.3 | | | | | 95% KM (BCA) UCL | 0.923 |
| 2126 | | | | | Mean | 0.602 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.932 |
| 2127 | | | | | Median | 0.314 | | | | | 95% KM (Chebyshev) UCL | 1.763 |
| 2128 | | | | | SD | 0.929 | | | | | 97.5% KM (Chebyshev) UCL | 2.349 |
| 2129 | | | | | k star | 0.393 | | | | | 99% KM (Chebyshev) UCL | 3.5 |
| 2130 | | | | | Theta star | 1.532 | | | | | | |
| 2131 | | | | | Nu star | 9.437 | | | **Potential UCLs to Use** | | | |
| 2132 | | | | | AppChi2 | 3.593 | | | | | 95% KM (BCA) UCL | 0.923 |
| 2133 | | | | | 95% Gamma Approximate UCL | 1.582 | | | | | | |
| 2134 | | | | | 95% Adjusted Gamma UCL | 1.856 | | | | | | |
| 2135 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 2136 | | | | | | | | | | | | |
| 2137 | | | | | | | | | | | | |
| 2138 | **Nickel** | | | | | | | | | | | |
| 2139 | | | | | | | | | | | | |
| 2140 | | | | | **General Statistics** | | | | | | | |
| 2141 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 7 |
| 2142 | | | | | Number of Distinct Detected Data | 7 | | | | | Number of Non-Detect Data | 5 |
| 2143 | | | | | | | | | | | Percent Non-Detects | 41.67% |
| 2144 | | | | | | | | | | | | |
| 2145 | | | | | **Raw Statistics** | | | | **Log-transformed Statistics** | | | |
| 2146 | | | | | Minimum Detected | 2.1 | | | | | Minimum Detected | 0.742 |
| 2147 | | | | | Maximum Detected | 115.1 | | | | | Maximum Detected | 4.746 |
| 2148 | | | | | Mean of Detected | 34.21 | | | | | Mean of Detected | 2.567 |
| 2149 | | | | | SD of Detected | 44.85 | | | | | SD of Detected | 1.585 |
| 2150 | | | | | Minimum Non-Detect | 0.5 | | | | | Minimum Non-Detect | -0.693 |
| 2151 | | | | | Maximum Non-Detect | 40 | | | | | Maximum Non-Detect | 3.689 |
| 2152 | | | | | | | | | | | | |
| 2153 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 10 |
| 2154 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 2 |
| 2155 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 83.33% |
| 2156 | | | | | | | | | | | | |
| 2157 | | | | | **Warning: There are only 7 Detected Values in this data** | | | | | | | |
| 2158 | | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | |
| 2159 | | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | |
| 2160 | | | | | | | | | | | | |
| 2161 | | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | |
| 2162 | | | | | | | | | | | | |
| 2163 | | | | | | | | | | | | |
| 2164 | | | | | **UCL Statistics** | | | | | | | |
| 2165 | | | | | **Normal Distribution Test with Detected Values Only** | | | | **Lognormal Distribution Test with Detected Values Only** | | | |
| 2166 | | | | | Shapiro Wilk Test Statistic | 0.77 | | | | | Shapiro Wilk Test Statistic | 0.902 |
| 2167 | | | | | 5% Shapiro Wilk Critical Value | 0.803 | | | | | 5% Shapiro Wilk Critical Value | 0.803 |
| 2168 | | | | | **Data not Normal at 5% Significance Level** | | | | **Data appear Lognormal at 5% Significance Level** | | | |
| 2169 | | | | | | | | | | | | |
| 2170 | | | | | **Assuming Normal Distribution** | | | | **Assuming Lognormal Distribution** | | | |
| 2171 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 2172 | | | | | Mean | 25 | | | | | Mean | 2.03 |
| 2173 | | | | | SD | 35.62 | | | | | SD | 1.954 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2174 | | | | | 95% DL/2 (t) UCL | 43.47 | | | | 95% H-Stat (DL/2) UCL | | 1305 |
| 2175 | | | | | | | | | | | | |
| 2176 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | | Log ROS Method | |
| 2177 | | | **MLE method failed to converge properly** | | | | | | | | Mean in Log Scale | 1.603 |
| 2178 | | | | | | | | | | | SD in Log Scale | 1.87 |
| 2179 | | | | | | | | | | | Mean in Original Scale | 21.13 |
| 2180 | | | | | | | | | | | SD in Original Scale | 36.93 |
| 2181 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 39.86 |
| 2182 | | | | | | | | | | | 95% BCA Bootstrap UCL | 44.2 |
| 2183 | | | | | | | | | | | | |
| 2184 | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | |
| 2185 | | | | | k star (bias corrected) | 0.458 | | | **Data appear Gamma Distributed at 5% Significance Level** | | | |
| 2186 | | | | | Theta Star | 74.74 | | | | | | |
| 2187 | | | | | nu star | 6.409 | | | | | | |
| 2188 | | | | | | | | | | | | |
| 2189 | | | | | A-D Test Statistic | 0.501 | | | **Nonparametric Statistics** | | | |
| 2190 | | | | | 5% A-D Critical Value | 0.743 | | | | | Kaplan-Meier (KM) Method | |
| 2191 | | | | | K-S Test Statistic | 0.743 | | | | | Mean | 22.12 |
| 2192 | | | | | 5% K-S Critical Value | 0.325 | | | | | SD | 35.13 |
| 2193 | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | SE of Mean | 11.08 |
| 2194 | | | | | | | | | | | 95% KM (t) UCL | 42.02 |
| 2195 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 40.34 |
| 2196 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 41.19 |
| 2197 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 70.73 |
| 2198 | | | | | Maximum | 115.1 | | | | | 95% KM (BCA) UCL | 41.25 |
| 2199 | | | | | Mean | 27.6 | | | | | 95% KM (Percentile Bootstrap) UCL | 42.14 |
| 2200 | | | | | Median | 5.8 | | | | | 95% KM (Chebyshev) UCL | 70.42 |
| 2201 | | | | | SD | 38.69 | | | | | 97.5% KM (Chebyshev) UCL | 91.32 |
| 2202 | | | | | k star | 0.148 | | | | | 99% KM (Chebyshev) UCL | 132.4 |
| 2203 | | | | | Theta star | 186.1 | | | | | | |
| 2204 | | | | | Nu star | 3.558 | | | **Potential UCLs to Use** | | | |
| 2205 | | | | | AppChi2 | 0.555 | | | | | 95% KM (BCA) UCL | 41.25 |
| 2206 | | | | | 95% Gamma Approximate UCL | 176.8 | | | | | | |
| 2207 | | | | | 95% Adjusted Gamma UCL | 240.9 | | | | | | |
| 2208 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 2209 | | | | | | | | | | | | |
| 2210 | | | | | | | | | | | | |
| 2211 | **N-Nitrosodiphenylamine** | | | | | | | | | | | |
| 2212 | | | | | | | | | | | | |
| 2213 | | | | | **General Statistics** | | | | | | | |
| 2214 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 4 |
| 2215 | | | | | Number of Distinct Detected Data | 4 | | | | | Number of Non-Detect Data | 8 |
| 2216 | | | | | | | | | | | Percent Non-Detects | 66.67% |
| 2217 | | | | | | | | | | | | |
| 2218 | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | |
| 2219 | | | | | Minimum Detected | 0.67 | | | | | Minimum Detected | -0.4 |
| 2220 | | | | | Maximum Detected | 14.2 | | | | | Maximum Detected | 2.653 |
| 2221 | | | | | Mean of Detected | 5.493 | | | | | Mean of Detected | 1.169 |
| 2222 | | | | | SD of Detected | 6.035 | | | | | SD of Detected | 1.277 |
| 2223 | | | | | Minimum Non-Detect | 0.52 | | | | | Minimum Non-Detect | -0.654 |
| 2224 | | | | | Maximum Non-Detect | 5 | | | | | Maximum Non-Detect | 1.609 |
| 2225 | | | | | | | | | | | | |
| 2226 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 11 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2227 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 1 |
| 2228 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 91.67% |
| 2229 | | | | | | | | | | | | |
| 2230 | **Warning: There are only 4 Distinct Detected Values in this data** | | | | | | | | | | | |
| 2231 | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | | | | | |
| 2232 | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | | | | | |
| 2233 | | | | | | | | | | | | |
| 2234 | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | | | | | |
| 2235 | | | | | | | | | | | | |
| 2236 | | | | | | | | | | | | |
| 2237 | **UCL Statistics** | | | | | | | | | | | |
| 2238 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 2239 | | | | | Shapiro Wilk Test Statistic | 0.858 | | | | | Shapiro Wilk Test Statistic | 0.999 |
| 2240 | | | | | 5% Shapiro Wilk Critical Value | 0.748 | | | | | 5% Shapiro Wilk Critical Value | 0.748 |
| 2241 | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 2242 | | | | | | | | | | | | |
| 2243 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 2244 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 2245 | | | | | Mean | 2.381 | | | | | Mean | -0.119 |
| 2246 | | | | | SD | 3.987 | | | | | SD | 1.426 |
| 2247 | | | | | 95% DL/2 (t) UCL | 4.448 | | | | | 95% H-Stat (DL/2) UCL | 7.535 |
| 2248 | | | | | | | | | | | | |
| 2249 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 2250 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | -0.943 |
| 2251 | | | | | | | | | | | SD in Log Scale | 1.827 |
| 2252 | | | | | | | | | | | Mean in Original Scale | 1.959 |
| 2253 | | | | | | | | | | | SD in Original Scale | 4.095 |
| 2254 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 4.049 |
| 2255 | | | | | | | | | | | 95% BCA Bootstrap UCL | 5.291 |
| 2256 | | | | | | | | | | | | |
| 2257 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 2258 | | | | | k star (bias corrected) | 0.435 | **Data appear Normal at 5% Significance Level** | | | | | |
| 2259 | | | | | Theta Star | 12.64 | | | | | | |
| 2260 | | | | | nu star | 3.476 | | | | | | |
| 2261 | | | | | | | | | | | | |
| 2262 | | | | | A-D Test Statistic | 0.213 | **Nonparametric Statistics** | | | | | |
| 2263 | | | | | 5% A-D Critical Value | 0.666 | | | | | Kaplan-Meier (KM) Method | |
| 2264 | | | | | K-S Test Statistic | 0.666 | | | | | Mean | 2.384 |
| 2265 | | | | | 5% K-S Critical Value | 0.402 | | | | | SD | 3.778 |
| 2266 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 1.275 |
| 2267 | | | | | | | | | | | 95% KM (t) UCL | 4.674 |
| 2268 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 4.481 |
| 2269 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 4.348 |
| 2270 | | | | | Minimum | 0.67 | | | | | 95% KM (bootstrap t) UCL | 5.975 |
| 2271 | | | | | Maximum | 14.2 | | | | | 95% KM (BCA) UCL | 14.2 |
| 2272 | | | | | Mean | 5.734 | | | | | 95% KM (Percentile Bootstrap) UCL | 6.283 |
| 2273 | | | | | Median | 5.323 | | | | | 95% KM (Chebyshev) UCL | 7.941 |
| 2274 | | | | | SD | 3.34 | | | | | 97.5% KM (Chebyshev) UCL | 10.35 |
| 2275 | | | | | k star | 2.125 | | | | | 99% KM (Chebyshev) UCL | 15.07 |
| 2276 | | | | | Theta star | 2.698 | | | | | | |
| 2277 | | | | | Nu star | 51 | **Potential UCLs to Use** | | | | | |
| 2278 | | | | | AppChi2 | 35.6 | | | | | 95% KM (t) UCL | 4.674 |
| 2279 | | | | | 95% Gamma Approximate UCL | 8.215 | | | | | 95% KM (Percentile Bootstrap) UCL | 6.283 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2280 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 2281 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 2282 | | | | | | | | | | | | |
| 2283 | | | | | | | | | | | | |
| 2284 | Pentachlorophenol | | | | | | | | | | | |
| 2285 | | | | | | | | | | | | |
| 2286 | | | | | | General Statistics | | | | | | |
| 2287 | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | | 0 |
| 2288 | | | | | Number of Distinct Detected Data | 0 | | | | Number of Non-Detect Data | | 12 |
| 2289 | | | | | | | | | | Percent Non-Detects | | 100.00% |
| 2290 | | | | | | | | | | | | |
| 2291 | | | | | Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs! | | | | | | | |
| 2292 | | | | | Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit! | | | | | | | |
| 2293 | | | | | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | |
| 2294 | | | | | | | | | | | | |
| 2295 | | | | | The data set for variable Pentachlorophenol was not processed! | | | | | | | |
| 2296 | | | | | | | | | | | | |
| 2297 | | | | | | | | | | | | |
| 2298 | | | | | | | | | | | | |
| 2299 | Phenanthrene | | | | | | | | | | | |
| 2300 | | | | | | | | | | | | |
| 2301 | | | | | | General Statistics | | | | | | |
| 2302 | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | | 7 |
| 2303 | | | | | Number of Distinct Detected Data | 7 | | | | Number of Non-Detect Data | | 5 |
| 2304 | | | | | | | | | | Percent Non-Detects | | 41.67% |
| 2305 | | | | | | | | | | | | |
| 2306 | | | | | Raw Statistics | | | | | Log-transformed Statistics | | |
| 2307 | | | | | Minimum Detected | 0.01 | | | | Minimum Detected | | -4.605 |
| 2308 | | | | | Maximum Detected | 0.89 | | | | Maximum Detected | | -0.117 |
| 2309 | | | | | Mean of Detected | 0.164 | | | | Mean of Detected | | -3.166 |
| 2310 | | | | | SD of Detected | 0.324 | | | | SD of Detected | | 1.645 |
| 2311 | | | | | Minimum Non-Detect | 0.1 | | | | Minimum Non-Detect | | -2.303 |
| 2312 | | | | | Maximum Non-Detect | 11 | | | | Maximum Non-Detect | | 2.398 |
| 2313 | | | | | | | | | | | | |
| 2314 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 12 |
| 2315 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 0 |
| 2316 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 100.00% |
| 2317 | | | | | | | | | | | | |
| 2318 | | | | | Warning: There are only 7 Detected Values in this data | | | | | | | |
| 2319 | | | | | Note: It should be noted that even though bootstrap may be performed on this data set | | | | | | | |
| 2320 | | | | | the resulting calculations may not be reliable enough to draw conclusions | | | | | | | |
| 2321 | | | | | | | | | | | | |
| 2322 | | | | | It is recommended to have 10-15 or more distinct observations for accurate and meaningful results. | | | | | | | |
| 2323 | | | | | | | | | | | | |
| 2324 | | | | | | | | | | | | |
| 2325 | | | | | | UCL Statistics | | | | | | |
| 2326 | | | | | Normal Distribution Test with Detected Values Only | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 2327 | | | | | Shapiro Wilk Test Statistic | 0.561 | | | | Shapiro Wilk Test Statistic | | 0.859 |
| 2328 | | | | | 5% Shapiro Wilk Critical Value | 0.803 | | | | 5% Shapiro Wilk Critical Value | | 0.803 |
| 2329 | | | | | Data not Normal at 5% Significance Level | | | | | Data appear Lognormal at 5% Significance Level | | |
| 2330 | | | | | | | | | | | | |
| 2331 | | | | | Assuming Normal Distribution | | | | | Assuming Lognormal Distribution | | |
| 2332 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2333 | | | | | Mean | 0.57 | | | | | Mean | -2.703 |
| 2334 | | | | | SD | 1.572 | | | | | SD | 1.847 |
| 2335 | | | | | 95% DL/2 (t) UCL | 1.385 | | | | | 95% H-Stat (DL/2) UCL | 19.72 |
| 2336 | | | | | | | | | | | | |
| 2337 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | | Log ROS Method | |
| 2338 | | | | **MLE method failed to converge properly** | | | | | | | Mean in Log Scale | -3.444 |
| 2339 | | | | | | | | | | | SD in Log Scale | 1.365 |
| 2340 | | | | | | | | | | | Mean in Original Scale | 0.107 |
| 2341 | | | | | | | | | | | SD in Original Scale | 0.25 |
| 2342 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.247 |
| 2343 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.332 |
| 2344 | | | | | | | | | | | | |
| 2345 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 2346 | | | | | k star (bias corrected) | 0.365 | | | | **Data Follow Appr. Gamma Distribution at 5% Significance Level** | | |
| 2347 | | | | | Theta Star | 0.448 | | | | | | |
| 2348 | | | | | nu star | 5.115 | | | | | | |
| 2349 | | | | | | | | | | | | |
| 2350 | | | | | A-D Test Statistic | 0.817 | | | | **Nonparametric Statistics** | | |
| 2351 | | | | | 5% A-D Critical Value | 0.756 | | | | | Kaplan-Meier (KM) Method | |
| 2352 | | | | | K-S Test Statistic | 0.756 | | | | | Mean | 0.112 |
| 2353 | | | | | 5% K-S Critical Value | 0.328 | | | | | SD | 0.249 |
| 2354 | | | | **Data follow Appr. Gamma Distribution at 5% Significance Level** | | | | | | | SE of Mean | 0.0812 |
| 2355 | | | | | | | | | | | 95% KM (t) UCL | 0.258 |
| 2356 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 0.246 |
| 2357 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.254 |
| 2358 | | | | | Minimum | 0.01 | | | | | 95% KM (bootstrap t) UCL | 1.233 |
| 2359 | | | | | Maximum | 0.89 | | | | | 95% KM (BCA) UCL | 0.274 |
| 2360 | | | | | Mean | 0.157 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.257 |
| 2361 | | | | | Median | 0.0964 | | | | | 95% KM (Chebyshev) UCL | 0.466 |
| 2362 | | | | | SD | 0.242 | | | | | 97.5% KM (Chebyshev) UCL | 0.619 |
| 2363 | | | | | k star | 0.598 | | | | | 99% KM (Chebyshev) UCL | 0.92 |
| 2364 | | | | | Theta star | 0.263 | | | | | | |
| 2365 | | | | | Nu star | 14.34 | | | | **Potential UCLs to Use** | | |
| 2366 | | | | | AppChi2 | 6.808 | | | | | 95% KM (BCA) UCL | 0.274 |
| 2367 | | | | | 95% Gamma Approximate UCL | 0.331 | | | | | | |
| 2368 | | | | | 95% Adjusted Gamma UCL | 0.374 | | | | | | |
| 2369 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 2370 | | | | | | | | | | | | |
| 2371 | | | | | | | | | | | | |
| 2372 | **Silver** | | | | | | | | | | | |
| 2373 | | | | | | | | | | | | |
| 2374 | | | | | **General Statistics** | | | | | | | |
| 2375 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 1 |
| 2376 | | | | | Number of Distinct Detected Data | 1 | | | | | Number of Non-Detect Data | 11 |
| 2377 | | | | | | | | | | | Percent Non-Detects | 91.67% |
| 2378 | | | | | | | | | | | | |
| 2379 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 2380 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 2381 | | | | | | | | | | | | |
| 2382 | | | | | **The data set for variable Silver was not processed!** | | | | | | | |
| 2383 | | | | | | | | | | | | |
| 2384 | | | | | | | | | | | | |
| 2385 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2386 | Thallium | | | | | | | | | | | |
| 2387 | | | | | | | | | | | | |
| 2388 | | | | | General Statistics | | | | | | | |
| 2389 | | | | | Number of Valid Data | 12 | | | Number of Detected Data | | | 2 |
| 2390 | | | | | Number of Distinct Detected Data | 2 | | | Number of Non-Detect Data | | | 10 |
| 2391 | | | | | | | | | Percent Non-Detects | | | 83.33% |
| 2392 | | | | | | | | | | | | |
| 2393 | | | | Raw Statistics | | | | | Log-transformed Statistics | | | |
| 2394 | | | | | Minimum Detected | 0.15 | | | Minimum Detected | | | -1.897 |
| 2395 | | | | | Maximum Detected | 5.8 | | | Maximum Detected | | | 1.758 |
| 2396 | | | | | Mean of Detected | 2.975 | | | Mean of Detected | | | -0.0696 |
| 2397 | | | | | SD of Detected | 3.995 | | | SD of Detected | | | 2.584 |
| 2398 | | | | | Minimum Non-Detect | 0.1 | | | Minimum Non-Detect | | | -2.303 |
| 2399 | | | | | Maximum Non-Detect | 10 | | | Maximum Non-Detect | | | 2.303 |
| 2400 | | | | | | | | | | | | |
| 2401 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | Number treated as Non-Detect | | | 12 |
| 2402 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | Number treated as Detected | | | 0 |
| 2403 | Observations < Largest ND are treated as NDs | | | | | | | | Single DL Non-Detect Percentage | | | 100.00% |
| 2404 | | | | | | | | | | | | |
| 2405 | | | | | Warning: Data set has only 2 Distinct Detected Values. | | | | | | | |
| 2406 | | | | | This may not be adequate enough to compute meaningful and reliable test statistics and estimates. | | | | | | | |
| 2407 | | | | | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | |
| 2408 | | | | | | | | | | | | |
| 2409 | | | | | Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations. | | | | | | | |
| 2410 | | | | | | | | | | | | |
| 2411 | | | | | The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods. | | | | | | | |
| 2412 | | | | | Those methods will return a 'N/A' value on your output display! | | | | | | | |
| 2413 | | | | | | | | | | | | |
| 2414 | | | | | It is necessary to have 4 or more Distinct Values for bootstrap methods. | | | | | | | |
| 2415 | | | | | However, results obtained using 4 to 9 distinct values may not be reliable. | | | | | | | |
| 2416 | | | | | It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates. | | | | | | | |
| 2417 | | | | | | | | | | | | |
| 2418 | | | | | | | | | | | | |
| 2419 | | | | | UCL Statistics | | | | | | | |
| 2420 | | | | Normal Distribution Test with Detected Values Only | | | | | Lognormal Distribution Test with Detected Values Only | | | |
| 2421 | | | | | Shapiro Wilk Test Statistic | N/A | | | Shapiro Wilk Test Statistic | | | N/A |
| 2422 | | | | | 5% Shapiro Wilk Critical Value | N/A | | | 5% Shapiro Wilk Critical Value | | | N/A |
| 2423 | | | | Data not Normal at 5% Significance Level | | | | | Data not Lognormal at 5% Significance Level | | | |
| 2424 | | | | | | | | | | | | |
| 2425 | | | | Assuming Normal Distribution | | | | | Assuming Lognormal Distribution | | | |
| 2426 | | | | | DL/2 Substitution Method | | | | DL/2 Substitution Method | | | |
| 2427 | | | | | Mean | 1.125 | | | Mean | | | -1.394 |
| 2428 | | | | | SD | 2.034 | | | SD | | | 1.761 |
| 2429 | | | | | 95% DL/2 (t) UCL | 2.18 | | | 95% H-Stat (DL/2) UCL | | | 6.978 |
| 2430 | | | | | | | | | | | | |
| 2431 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | Log ROS Method | | | |
| 2432 | | | | | MLE method failed to converge properly | | | | Mean in Log Scale | | | N/A |
| 2433 | | | | | | | | | SD in Log Scale | | | N/A |
| 2434 | | | | | | | | | Mean in Original Scale | | | N/A |
| 2435 | | | | | | | | | SD in Original Scale | | | N/A |
| 2436 | | | | | | | | | 95% Percentile Bootstrap UCL | | | N/A |
| 2437 | | | | | | | | | 95% BCA Bootstrap UCL | | | N/A |
| 2438 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
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| 2439 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 2440 | | | | | k star (bias corrected) | N/A | **Data do not follow a Discernable Distribution (0.05)** | | | | | |
| 2441 | | | | | Theta Star | N/A | | | | | | |
| 2442 | | | | | nu star | N/A | | | | | | |
| 2443 | | | | | | | | | | | | |
| 2444 | | | | | A-D Test Statistic | N/A | **Nonparametric Statistics** | | | | | |
| 2445 | | | | | 5% A-D Critical Value | N/A | | | | Kaplan-Meier (KM) Method | | |
| 2446 | | | | | K-S Test Statistic | N/A | | | | Mean | | 0.664 |
| 2447 | | | | | 5% K-S Critical Value | N/A | | | | SD | | 1.624 |
| 2448 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | SE of Mean | | 0.693 |
| 2449 | | | | | | | | | | 95% KM (t) UCL | | 1.907 |
| 2450 | **Assuming Gamma Distribution** | | | | | | | | | 95% KM (z) UCL | | 1.803 |
| 2451 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | | 4.516 |
| 2452 | | | | | Minimum | N/A | | | | 95% KM (bootstrap t) UCL | | N/A |
| 2453 | | | | | Maximum | N/A | | | | 95% KM (BCA) UCL | | 5.8 |
| 2454 | | | | | Mean | N/A | | | | 95% KM (Percentile Bootstrap) UCL | | 5.8 |
| 2455 | | | | | Median | N/A | | | | 95% KM (Chebyshev) UCL | | 3.683 |
| 2456 | | | | | SD | N/A | | | | 97.5% KM (Chebyshev) UCL | | 4.989 |
| 2457 | | | | | k star | N/A | | | | 99% KM (Chebyshev) UCL | | 7.555 |
| 2458 | | | | | Theta star | N/A | | | | | | |
| 2459 | | | | | Nu star | N/A | **Potential UCLs to Use** | | | | | |
| 2460 | | | | | AppChi2 | N/A | | | | 99% KM (Chebyshev) UCL | | 7.555 |
| 2461 | | | | | 95% Gamma Approximate UCL | N/A | | | | | | |
| 2462 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 2463 | **Warning: Recommended UCL exceeds the maximum observation** | | | | | | | | | | | |
| 2464 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 2465 | | | | | | | | | | | | |
| 2466 | | | | | | | | | | | | |
| 2467 | **Total PCBs** | | | | | | | | | | | |
| 2468 | | | | | | | | | | | | |
| 2469 | | | | | **General Statistics** | | | | | | | |
| 2470 | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | | 2 |
| 2471 | | | | | Number of Distinct Detected Data | 2 | | | | Number of Non-Detect Data | | 10 |
| 2472 | | | | | | | | | | Percent Non-Detects | | 83.33% |
| 2473 | | | | | | | | | | | | |
| 2474 | | | | | **Raw Statistics** | | **Log-transformed Statistics** | | | | | |
| 2475 | | | | | Minimum Detected | 0.412 | | | | Minimum Detected | | -0.887 |
| 2476 | | | | | Maximum Detected | 4.28 | | | | Maximum Detected | | 1.454 |
| 2477 | | | | | Mean of Detected | 2.346 | | | | Mean of Detected | | 0.284 |
| 2478 | | | | | SD of Detected | 2.735 | | | | SD of Detected | | 1.655 |
| 2479 | | | | | Minimum Non-Detect | 0.021 | | | | Minimum Non-Detect | | -3.863 |
| 2480 | | | | | Maximum Non-Detect | 0.22 | | | | Maximum Non-Detect | | -1.514 |
| 2481 | | | | | | | | | | | | |
| 2482 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 10 |
| 2483 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 2 |
| 2484 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 83.33% |
| 2485 | | | | | | | | | | | | |
| 2486 | **Warning: Data set has only 2 Distinct Detected Values.** | | | | | | | | | | | |
| 2487 | **This may not be adequate enough to compute meaningful and reliable test statistics and estimates.** | | | | | | | | | | | |
| 2488 | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 2489 | | | | | | | | | | | | |
| 2490 | **Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.** | | | | | | | | | | | |
| 2491 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
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| 2492 | The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods. | | | | | | | | | | | |
| 2493 | Those methods will return a 'N/A' value on your output display! | | | | | | | | | | | |
| 2494 | | | | | | | | | | | | |
| 2495 | It is necessary to have 4 or more Distinct Values for bootstrap methods. | | | | | | | | | | | |
| 2496 | However, results obtained using 4 to 9 distinct values may not be reliable. | | | | | | | | | | | |
| 2497 | It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates. | | | | | | | | | | | |
| 2498 | | | | | | | | | | | | |
| 2499 | | | | | | | | | | | | |
| 2500 | UCL Statistics | | | | | | | | | | | |
| 2501 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 2502 | | | | | Shapiro Wilk Test Statistic | N/A | | | | Shapiro Wilk Test Statistic | | N/A |
| 2503 | | | | | 5% Shapiro Wilk Critical Value | N/A | | | | 5% Shapiro Wilk Critical Value | | N/A |
| 2504 | Data not Normal at 5% Significance Level | | | | | | Data not Lognormal at 5% Significance Level | | | | | |
| 2505 | | | | | | | | | | | | |
| 2506 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 2507 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 2508 | | | | | Mean | 0.444 | | | | Mean | | -2.462 |
| 2509 | | | | | SD | 1.213 | | | | SD | | 1.593 |
| 2510 | | | | | 95% DL/2 (t) UCL | 1.073 | | | | 95% H-Stat (DL/2) UCL | | 1.367 |
| 2511 | | | | | | | | | | | | |
| 2512 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 2513 | MLE method failed to converge properly | | | | | | | | | Mean in Log Scale | | N/A |
| 2514 | | | | | | | | | | SD in Log Scale | | N/A |
| 2515 | | | | | | | | | | Mean in Original Scale | | N/A |
| 2516 | | | | | | | | | | SD in Original Scale | | N/A |
| 2517 | | | | | | | | | | 95% Percentile Bootstrap UCL | | N/A |
| 2518 | | | | | | | | | | 95% BCA Bootstrap UCL | | N/A |
| 2519 | | | | | | | | | | | | |
| 2520 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 2521 | | | | | k star (bias corrected) | N/A | Data do not follow a Discernable Distribution (0.05) | | | | | |
| 2522 | | | | | Theta Star | N/A | | | | | | |
| 2523 | | | | | nu star | N/A | | | | | | |
| 2524 | | | | | | | | | | | | |
| 2525 | | | | | A-D Test Statistic | N/A | Nonparametric Statistics | | | | | |
| 2526 | | | | | 5% A-D Critical Value | N/A | | | | Kaplan-Meier (KM) Method | | |
| 2527 | | | | | K-S Test Statistic | N/A | | | | Mean | | 0.734 |
| 2528 | | | | | 5% K-S Critical Value | N/A | | | | SD | | 1.069 |
| 2529 | Data not Gamma Distributed at 5% Significance Level | | | | | | | | | SE of Mean | | 0.436 |
| 2530 | | | | | | | | | | 95% KM (t) UCL | | 1.518 |
| 2531 | Assuming Gamma Distribution | | | | | | | | | 95% KM (z) UCL | | 1.452 |
| 2532 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | | 3.381 |
| 2533 | | | | | Minimum | N/A | | | | 95% KM (bootstrap t) UCL | | N/A |
| 2534 | | | | | Maximum | N/A | | | | 95% KM (BCA) UCL | | 4.28 |
| 2535 | | | | | Mean | N/A | | | | 95% KM (Percentile Bootstrap) UCL | | 4.28 |
| 2536 | | | | | Median | N/A | | | | 95% KM (Chebyshev) UCL | | 2.637 |
| 2537 | | | | | SD | N/A | | | | 97.5% KM (Chebyshev) UCL | | 3.46 |
| 2538 | | | | | k star | N/A | | | | 99% KM (Chebyshev) UCL | | 5.077 |
| 2539 | | | | | Theta star | N/A | | | | | | |
| 2540 | | | | | Nu star | N/A | Potential UCLs to Use | | | | | |
| 2541 | | | | | AppChi2 | N/A | | | | 97.5% KM (Chebyshev) UCL | | 3.46 |
| 2542 | | | | | 95% Gamma Approximate UCL | N/A | | | | | | |
| 2543 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 2544 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
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| 2545 | | | | | | | | | | | | |
| 2546 | | | | | | | | | | | | |
| 2547 | Vanadium | | | | | | | | | | | |
| 2548 | | | | | | | | | | | | |
| 2549 | | | | | | General Statistics | | | | | | |
| 2550 | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | | 6 |
| 2551 | | | | | Number of Distinct Detected Data | 6 | | | | Number of Non-Detect Data | | 6 |
| 2552 | | | | | | | | | | Percent Non-Detects | | 50.00% |
| 2553 | | | | | | | | | | | | |
| 2554 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 2555 | | | | | Minimum Detected | 0.89 | | | | Minimum Detected | | -0.117 |
| 2556 | | | | | Maximum Detected | 2.5 | | | | Maximum Detected | | 0.916 |
| 2557 | | | | | Mean of Detected | 1.598 | | | | Mean of Detected | | 0.393 |
| 2558 | | | | | SD of Detected | 0.668 | | | | SD of Detected | | 0.43 |
| 2559 | | | | | Minimum Non-Detect | 0.4 | | | | Minimum Non-Detect | | -0.916 |
| 2560 | | | | | Maximum Non-Detect | 50 | | | | Maximum Non-Detect | | 3.912 |
| 2561 | | | | | | | | | | | | |
| 2562 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 12 |
| 2563 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 0 |
| 2564 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 100.00% |
| 2565 | | | | | | | | | | | | |
| 2566 | | | | | Warning: There are only 6 Detected Values in this data | | | | | | | |
| 2567 | | | | | Note: It should be noted that even though bootstrap may be performed on this data set | | | | | | | |
| 2568 | | | | | the resulting calculations may not be reliable enough to draw conclusions | | | | | | | |
| 2569 | | | | | | | | | | | | |
| 2570 | | | | | It is recommended to have 10-15 or more distinct observations for accurate and meaningful results. | | | | | | | |
| 2571 | | | | | | | | | | | | |
| 2572 | | | | | | | | | | | | |
| 2573 | | | | | | UCL Statistics | | | | | | |
| 2574 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 2575 | | | | | Shapiro Wilk Test Statistic | 0.908 | | | | Shapiro Wilk Test Statistic | | 0.915 |
| 2576 | | | | | 5% Shapiro Wilk Critical Value | 0.788 | | | | 5% Shapiro Wilk Critical Value | | 0.788 |
| 2577 | | | | Data appear Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 2578 | | | | | | | | | | | | |
| 2579 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 2580 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 2581 | | | | | Mean | 3.545 | | | | Mean | | 0.444 |
| 2582 | | | | | SD | 6.813 | | | | SD | | 1.239 |
| 2583 | | | | | 95% DL/2 (t) UCL | 7.077 | | | | 95% H-Stat (DL/2) UCL | | 16.55 |
| 2584 | | | | | | | | | | | | |
| 2585 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 2586 | | | | MLE method failed to converge properly | | | | | | Mean in Log Scale | | 0.125 |
| 2587 | | | | | | | | | | SD in Log Scale | | 0.535 |
| 2588 | | | | | | | | | | Mean in Original Scale | | 1.284 |
| 2589 | | | | | | | | | | SD in Original Scale | | 0.656 |
| 2590 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 1.588 |
| 2591 | | | | | | | | | | 95% BCA Bootstrap UCL | | 1.614 |
| 2592 | | | | | | | | | | | | |
| 2593 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 2594 | | | | | k star (bias corrected) | 3.486 | | | | Data appear Normal at 5% Significance Level | | |
| 2595 | | | | | Theta Star | 0.459 | | | | | | |
| 2596 | | | | | nu star | 41.83 | | | | | | |
| 2597 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
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| 2598 | | | | | A-D Test Statistic | 0.346 | Nonparametric Statistics | | | | | |
| 2599 | | | | | 5% A-D Critical Value | 0.698 | | | | | Kaplan-Meier (KM) Method | |
| 2600 | | | | | K-S Test Statistic | 0.698 | | | | | Mean | 1.421 |
| 2601 | | | | | 5% K-S Critical Value | 0.333 | | | | | SD | 0.611 |
| 2602 | Data appear Gamma Distributed at 5% Significance Level | | | | | | | | | | SE of Mean | 0.237 |
| 2603 | | | | | | | | | | | 95% KM (t) UCL | 1.846 |
| 2604 | | | Assuming Gamma Distribution | | | | | | | | 95% KM (z) UCL | 1.81 |
| 2605 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 1.836 |
| 2606 | | | | | Minimum | 0.842 | | | | | 95% KM (bootstrap t) UCL | 1.971 |
| 2607 | | | | | Maximum | 2.5 | | | | | 95% KM (BCA) UCL | 1.92 |
| 2608 | | | | | Mean | 1.578 | | | | | 95% KM (Percentile Bootstrap) UCL | 1.878 |
| 2609 | | | | | Median | 1.559 | | | | | 95% KM (Chebyshev) UCL | 2.453 |
| 2610 | | | | | SD | 0.632 | | | | | 97.5% KM (Chebyshev) UCL | 2.899 |
| 2611 | | | | | k star | 4.903 | | | | | 99% KM (Chebyshev) UCL | 3.776 |
| 2612 | | | | | Theta star | 0.322 | | | | | | |
| 2613 | | | | | Nu star | 117.7 | Potential UCLs to Use | | | | | |
| 2614 | | | | | AppChi2 | 93.62 | | | | | 95% KM (t) UCL | 1.846 |
| 2615 | | | | | 95% Gamma Approximate UCL | 1.983 | | | | | 95% KM (Percentile Bootstrap) UCL | 1.878 |
| 2616 | | | | | 95% Adjusted Gamma UCL | 2.055 | | | | | | |
| 2617 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 2618 | | | | | | | | | | | | |
| 2619 | | | | | | | | | | | | |
| 2620 | Xylene (Total) | | | | | | | | | | | |
| 2621 | | | | | | | | | | | | |
| 2622 | | | | | General Statistics | | | | | | | |
| 2623 | | | | | Number of Valid Data | 12 | | | | | Number of Detected Data | 2 |
| 2624 | | | | | Number of Distinct Detected Data | 2 | | | | | Number of Non-Detect Data | 10 |
| 2625 | | | | | | | | | | | Percent Non-Detects | 83.33% |
| 2626 | | | | | | | | | | | | |
| 2627 | | | | | Raw Statistics | | | | | | Log-transformed Statistics | |
| 2628 | | | | | Minimum Detected | 0.68 | | | | | Minimum Detected | -0.386 |
| 2629 | | | | | Maximum Detected | 2.12 | | | | | Maximum Detected | 0.751 |
| 2630 | | | | | Mean of Detected | 1.4 | | | | | Mean of Detected | 0.183 |
| 2631 | | | | | SD of Detected | 1.018 | | | | | SD of Detected | 0.804 |
| 2632 | | | | | Minimum Non-Detect | 0.5 | | | | | Minimum Non-Detect | -0.693 |
| 2633 | | | | | Maximum Non-Detect | 4 | | | | | Maximum Non-Detect | 1.386 |
| 2634 | | | | | | | | | | | | |
| 2635 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 12 |
| 2636 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 2637 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 2638 | | | | | | | | | | | | |
| 2639 | Warning: Data set has only 2 Distinct Detected Values. | | | | | | | | | | | |
| 2640 | This may not be adequate enough to compute meaningful and reliable test statistics and estimates. | | | | | | | | | | | |
| 2641 | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 2642 | | | | | | | | | | | | |
| 2643 | Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations. | | | | | | | | | | | |
| 2644 | | | | | | | | | | | | |
| 2645 | The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods. | | | | | | | | | | | |
| 2646 | Those methods will return a 'N/A' value on your output display! | | | | | | | | | | | |
| 2647 | | | | | | | | | | | | |
| 2648 | It is necessary to have 4 or more Distinct Values for bootstrap methods. | | | | | | | | | | | |
| 2649 | However, results obtained using 4 to 9 distinct values may not be reliable. | | | | | | | | | | | |
| 2650 | It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates. | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
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| 2651 | | | | | | | | | | | | |
| 2652 | | | | | | | | | | | | |
| 2653 | | | | | | UCL Statistics | | | | | | |
| 2654 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 2655 | | | | | | Shapiro Wilk Test Statistic | N/A | | | | Shapiro Wilk Test Statistic | N/A |
| 2656 | | | | | | 5% Shapiro Wilk Critical Value | N/A | | | | 5% Shapiro Wilk Critical Value | N/A |
| 2657 | | | | Data not Normal at 5% Significance Level | | | | | | Data not Lognormal at 5% Significance Level | | |
| 2658 | | | | | | | | | | | | |
| 2659 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 2660 | | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | |
| 2661 | | | | | | Mean | 1.004 | | | | Mean | -0.33 |
| 2662 | | | | | | SD | 0.786 | | | | SD | 0.893 |
| 2663 | | | | | | 95% DL/2 (t) UCL | 1.412 | | | | 95% H-Stat (DL/2) UCL | 3.227 |
| 2664 | | | | | | | | | | | | |
| 2665 | | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | |
| 2666 | | | | MLE method failed to converge properly | | | | | | | Mean in Log Scale | N/A |
| 2667 | | | | | | | | | | | SD in Log Scale | N/A |
| 2668 | | | | | | | | | | | Mean in Original Scale | N/A |
| 2669 | | | | | | | | | | | SD in Original Scale | N/A |
| 2670 | | | | | | | | | | | 95% Percentile Bootstrap UCL | N/A |
| 2671 | | | | | | | | | | | 95% BCA Bootstrap UCL | N/A |
| 2672 | | | | | | | | | | | | |
| 2673 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 2674 | | | | | | k star (bias corrected) | N/A | | | Data do not follow a Discernable Distribution (0.05) | | |
| 2675 | | | | | | Theta Star | N/A | | | | | |
| 2676 | | | | | | nu star | N/A | | | | | |
| 2677 | | | | | | | | | | | | |
| 2678 | | | | | | A-D Test Statistic | N/A | | | Nonparametric Statistics | | |
| 2679 | | | | | | 5% A-D Critical Value | N/A | | | | Kaplan-Meier (KM) Method | |
| 2680 | | | | | | K-S Test Statistic | N/A | | | | Mean | 0.84 |
| 2681 | | | | | | 5% K-S Critical Value | N/A | | | | SD | 0.453 |
| 2682 | | | | Data not Gamma Distributed at 5% Significance Level | | | | | | | SE of Mean | 0.213 |
| 2683 | | | | | | | | | | | 95% KM (t) UCL | 1.223 |
| 2684 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 1.191 |
| 2685 | | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | 1.815 |
| 2686 | | | | | | Minimum | N/A | | | | 95% KM (bootstrap t) UCL | N/A |
| 2687 | | | | | | Maximum | N/A | | | | 95% KM (BCA) UCL | N/A |
| 2688 | | | | | | Mean | N/A | | | | 95% KM (Percentile Bootstrap) UCL | N/A |
| 2689 | | | | | | Median | N/A | | | | 95% KM (Chebyshev) UCL | 1.77 |
| 2690 | | | | | | SD | N/A | | | | 97.5% KM (Chebyshev) UCL | 2.172 |
| 2691 | | | | | | k star | N/A | | | | 99% KM (Chebyshev) UCL | 2.963 |
| 2692 | | | | | | Theta star | N/A | | | | | |
| 2693 | | | | | | Nu star | N/A | | | Potential UCLs to Use | | |
| 2694 | | | | | | AppChi2 | N/A | | | | 95% KM (t) UCL | 1.223 |
| 2695 | | | | | | 95% Gamma Approximate UCL | N/A | | | | 95% KM (% Bootstrap) UCL | N/A |
| 2696 | | | | | | 95% Adjusted Gamma UCL | N/A | | | | | |
| 2697 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 2698 | | | | | | | | | | | | |
| 2699 | | | | | | | | | | | | |
| 2700 | Zinc | | | | | | | | | | | |
| 2701 | | | | | | | | | | | | |
| 2702 | | | | | | General Statistics | | | | | | |
| 2703 | | | | | | Number of Valid Data | 12 | | | | Number of Detected Data | 7 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2704 | | | | | Number of Distinct Detected Data | 7 | | | | | Number of Non-Detect Data | 5 |
| 2705 | | | | | | | | | | | Percent Non-Detects | 41.67% |
| 2706 | | | | | | | | | | | | |
| 2707 | | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | |
| 2708 | | | | | Minimum Detected | 29.4 | | | | | Minimum Detected | 3.381 |
| 2709 | | | | | Maximum Detected | 4100 | | | | | Maximum Detected | 8.319 |
| 2710 | | | | | Mean of Detected | 911.5 | | | | | Mean of Detected | 5.606 |
| 2711 | | | | | SD of Detected | 1447 | | | | | SD of Detected | 1.868 |
| 2712 | | | | | Minimum Non-Detect | 2 | | | | | Minimum Non-Detect | 0.693 |
| 2713 | | | | | Maximum Non-Detect | 20 | | | | | Maximum Non-Detect | 2.996 |
| 2714 | | | | | | | | | | | | |
| 2715 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 5 |
| 2716 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 7 |
| 2717 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 41.67% |
| 2718 | | | | | | | | | | | | |
| 2719 | **Warning: There are only 7 Detected Values in this data** | | | | | | | | | | | |
| 2720 | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | | | | | |
| 2721 | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | | | | | |
| 2722 | | | | | | | | | | | | |
| 2723 | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | | | | | |
| 2724 | | | | | | | | | | | | |
| 2725 | | | | | | | | | | | | |
| 2726 | **UCL Statistics** | | | | | | | | | | | |
| 2727 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 2728 | | | | | Shapiro Wilk Test Statistic | 0.652 | | | | | Shapiro Wilk Test Statistic | 0.896 |
| 2729 | | | | | 5% Shapiro Wilk Critical Value | 0.803 | | | | | 5% Shapiro Wilk Critical Value | 0.803 |
| 2730 | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 2731 | | | | | | | | | | | | |
| 2732 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 2733 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 2734 | | | | | Mean | 534.4 | | | | | Mean | 3.846 |
| 2735 | | | | | SD | 1166 | | | | | SD | 2.686 |
| 2736 | | | | | 95% DL/2 (t) UCL | 1139 | | | | | 95% H-Stat (DL/2) UCL | 97494 |
| 2737 | | | | | | | | | | | | |
| 2738 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 2739 | | | | | Mean | 0.357 | | | | | Mean in Log Scale | 3.516 |
| 2740 | | | | | SD | 1614 | | | | | SD in Log Scale | 3.004 |
| 2741 | | | | | 95% MLE (t) UCL | 837.3 | | | | | Mean in Original Scale | 532.8 |
| 2742 | | | | | 95% MLE (Tiku) UCL | 955.2 | | | | | SD in Original Scale | 1166 |
| 2743 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 1157 |
| 2744 | | | | | | | | | | | 95% BCA Bootstrap UCL | 1437 |
| 2745 | | | | | | | | | | | | |
| 2746 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 2747 | | | | | k star (bias corrected) | 0.393 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | |
| 2748 | | | | | Theta Star | 2317 | | | | | | |
| 2749 | | | | | nu star | 5.507 | | | | | | |
| 2750 | | | | | | | | | | | | |
| 2751 | | | | | A-D Test Statistic | 0.457 | **Nonparametric Statistics** | | | | | |
| 2752 | | | | | 5% A-D Critical Value | 0.75 | | | | | Kaplan-Meier (KM) Method | |
| 2753 | | | | | K-S Test Statistic | 0.75 | | | | | Mean | 544 |
| 2754 | | | | | 5% K-S Critical Value | 0.327 | | | | | SD | 1112 |
| 2755 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 346.6 |
| 2756 | | | | | | | | | | | 95% KM (t) UCL | 1166 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2757 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 1114 |
| 2758 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 1143 |
| 2759 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 2447 |
| 2760 | | | | | Maximum | 4100 | | | | | 95% KM (BCA) UCL | 1270 |
| 2761 | | | | | Mean | 628.9 | | | | | 95% KM (Percentile Bootstrap) UCL | 1160 |
| 2762 | | | | | Median | 278.6 | | | | | 95% KM (Chebyshev) UCL | 2055 |
| 2763 | | | | | SD | 1136 | | | | | 97.5% KM (Chebyshev) UCL | 2708 |
| 2764 | | | | | k star | 0.167 | | | | | 99% KM (Chebyshev) UCL | 3992 |
| 2765 | | | | | Theta star | 3766 | | | | | | |
| 2766 | | | | | Nu star | 4.008 | | | **Potential UCLs to Use** | | | |
| 2767 | | | | | AppChi2 | 0.725 | | | | | 95% KM (BCA) UCL | 1270 |
| 2768 | | | | | 95% Gamma Approximate UCL | 3478 | | | | | | |
| 2769 | | | | | 95% Adjusted Gamma UCL | 4641 | | | | | | |
| 2770 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 2771 | | | | | | | | | | | | |

# Sediment

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | **General UCL Statistics for Data Sets with Non-Detects** | | | | | | | | |
| 2 | | **User Selected Options** | | | | | | | | | | |
| 3 | | | From File | C:\aa_Projects\Peterson\Unnamed Island\UCLs\SD conc_Crosstab.xls.wst | | | | | | | | |
| 4 | | | Full Precision | OFF | | | | | | | | |
| 5 | | | Confidence Coefficient | 95% | | | | | | | | |
| 6 | | | Number of Bootstrap Operations | 2000 | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | **Aluminum** | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | **General Statistics** | | | | | | |
| 12 | | | | | | Number of Valid Observations | 17 | | | | Number of Distinct Observations | 17 |
| 13 | | | | | | | | | | | | |
| 14 | | | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | |
| 15 | | | | | | Minimum | 2310 | | | | Minimum of Log Data | 7.745 |
| 16 | | | | | | Maximum | 12000 | | | | Maximum of Log Data | 9.393 |
| 17 | | | | | | Mean | 5916 | | | | Mean of log Data | 8.541 |
| 18 | | | | | | Median | 4950 | | | | SD of log Data | 0.563 |
| 19 | | | | | | SD | 3178 | | | | | |
| 20 | | | | | | Coefficient of Variation | 0.537 | | | | | |
| 21 | | | | | | Skewness | 0.493 | | | | | |
| 22 | | | | | | | | | | | | |
| 23 | | | | | | **Relevant UCL Statistics** | | | | | | |
| 24 | | | | | | **Normal Distribution Test** | | | | | **Lognormal Distribution Test** | |
| 25 | | | | | | Shapiro Wilk Test Statistic | 0.895 | | | | Shapiro Wilk Test Statistic | 0.907 |
| 26 | | | | | | Shapiro Wilk Critical Value | 0.892 | | | | Shapiro Wilk Critical Value | 0.892 |
| 27 | | | | | | **Data appear Normal at 5% Significance Level** | | | | | **Data appear Lognormal at 5% Significance Level** | |
| 28 | | | | | | | | | | | | |
| 29 | | | | | | **Assuming Normal Distribution** | | | | | **Assuming Lognormal Distribution** | |
| 30 | | | | | | 95% Student's-t UCL | 7262 | | | | 95% H-UCL | 8067 |
| 31 | | | | | | **95% UCLs (Adjusted for Skewness)** | | | | | 95% Chebyshev (MVUE) UCL | 9620 |
| 32 | | | | | | 95% Adjusted-CLT UCL | 7283 | | | | 97.5% Chebyshev (MVUE) UCL | 11213 |
| 33 | | | | | | 95% Modified-t UCL | 7277 | | | | 99% Chebyshev (MVUE) UCL | 14343 |
| 34 | | | | | | | | | | | | |
| 35 | | | | | | **Gamma Distribution Test** | | | | | **Data Distribution** | |
| 36 | | | | | | k star (bias corrected) | 3.018 | | | | **Data appear Normal at 5% Significance Level** | |
| 37 | | | | | | Theta Star | 1961 | | | | | |
| 38 | | | | | | MLE of Mean | 5916 | | | | | |
| 39 | | | | | | MLE of Standard Deviation | 3406 | | | | | |
| 40 | | | | | | nu star | 102.6 | | | | | |
| 41 | | | | | | Approximate Chi Square Value (.05) | 80.23 | | | | **Nonparametric Statistics** | |
| 42 | | | | | | Adjusted Level of Significance | 0.0346 | | | | 95% CLT UCL | 7184 |
| 43 | | | | | | Adjusted Chi Square Value | 78.16 | | | | 95% Jackknife UCL | 7262 |
| 44 | | | | | | | | | | | 95% Standard Bootstrap UCL | 7165 |
| 45 | | | | | | Anderson-Darling Test Statistic | 0.661 | | | | 95% Bootstrap-t UCL | 7267 |
| 46 | | | | | | Anderson-Darling 5% Critical Value | 0.744 | | | | 95% Hall's Bootstrap UCL | 7199 |
| 47 | | | | | | Kolmogorov-Smirnov Test Statistic | 0.178 | | | | 95% Percentile Bootstrap UCL | 7178 |
| 48 | | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.21 | | | | 95% BCA Bootstrap UCL | 7266 |
| 49 | | | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | 95% Chebyshev(Mean, Sd) UCL | 9276 |
| 50 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 10730 |
| 51 | | | | | | **Assuming Gamma Distribution** | | | | | 99% Chebyshev(Mean, Sd) UCL | 13586 |
| 52 | | | | | | 95% Approximate Gamma UCL | 7566 | | | | | |
| 53 | | | | | | 95% Adjusted Gamma UCL | 7766 | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 54 | | | | | | | | | | | | |
| 55 | **Potential UCL to Use** | | | | | | Use 95% Student's-t UCL | | | | | 7262 |
| 56 | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | |
| 58 | **Antimony** | | | | | | | | | | | |
| 59 | | | | | | | | | | | | |
| 60 | **General Statistics** | | | | | | | | | | | |
| 61 | Number of Valid Data | | | | | 17 | Number of Detected Data | | | | | 12 |
| 62 | Number of Distinct Detected Data | | | | | 11 | Number of Non-Detect Data | | | | | 5 |
| 63 | | | | | | | Percent Non-Detects | | | | | 29.41% |
| 64 | | | | | | | | | | | | |
| 65 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 66 | Minimum Detected | | | | | 0.27 | Minimum Detected | | | | | -1.309 |
| 67 | Maximum Detected | | | | | 18.9 | Maximum Detected | | | | | 2.939 |
| 68 | Mean of Detected | | | | | 3.028 | Mean of Detected | | | | | 0.378 |
| 69 | SD of Detected | | | | | 5.195 | SD of Detected | | | | | 1.128 |
| 70 | Minimum Non-Detect | | | | | 0.36 | Minimum Non-Detect | | | | | -1.022 |
| 71 | Maximum Non-Detect | | | | | 0.56 | Maximum Non-Detect | | | | | -0.58 |
| 72 | | | | | | | | | | | | |
| 73 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | Number treated as Non-Detect | | | | | 7 |
| 74 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | Number treated as Detected | | | | | 10 |
| 75 | Observations < Largest ND are treated as NDs | | | | | | Single DL Non-Detect Percentage | | | | | 41.18% |
| 76 | | | | | | | | | | | | |
| 77 | **UCL Statistics** | | | | | | | | | | | |
| 78 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 79 | Shapiro Wilk Test Statistic | | | | | 0.532 | Shapiro Wilk Test Statistic | | | | | 0.942 |
| 80 | 5% Shapiro Wilk Critical Value | | | | | 0.859 | 5% Shapiro Wilk Critical Value | | | | | 0.859 |
| 81 | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 82 | | | | | | | | | | | | |
| 83 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 84 | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | | | | | |
| 85 | Mean | | | | | 2.204 | Mean | | | | | -0.172 |
| 86 | SD | | | | | 4.504 | SD | | | | | 1.286 |
| 87 | 95% DL/2 (t) UCL | | | | | 4.111 | 95% H-Stat (DL/2) UCL | | | | | 4.189 |
| 88 | | | | | | | | | | | | |
| 89 | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | | | | | |
| 90 | Mean | | | | | 0.256 | Mean in Log Scale | | | | | -0.213 |
| 91 | SD | | | | | 6.156 | SD in Log Scale | | | | | 1.331 |
| 92 | 95% MLE (t) UCL | | | | | 2.863 | Mean in Original Scale | | | | | 2.195 |
| 93 | 95% MLE (Tiku) UCL | | | | | 3.223 | SD in Original Scale | | | | | 4.508 |
| 94 | | | | | | | 95% Percentile Bootstrap UCL | | | | | 4.261 |
| 95 | | | | | | | 95% BCA Bootstrap UCL | | | | | 5.5 |
| 96 | | | | | | | | | | | | |
| 97 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 98 | k star (bias corrected) | | | | | 0.665 | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 99 | Theta Star | | | | | 4.557 | | | | | | |
| 100 | nu star | | | | | 15.95 | | | | | | |
| 101 | | | | | | | | | | | | |
| 102 | A-D Test Statistic | | | | | 0.957 | **Nonparametric Statistics** | | | | | |
| 103 | 5% A-D Critical Value | | | | | 0.763 | Kaplan-Meier (KM) Method | | | | | |
| 104 | K-S Test Statistic | | | | | 0.763 | Mean | | | | | 2.221 |
| 105 | 5% K-S Critical Value | | | | | 0.254 | SD | | | | | 4.361 |
| 106 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | SE of Mean | | | | | 1.105 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 107 | | | | | | | | | | | 95% KM (t) UCL | 4.15 |
| 108 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 4.039 |
| 109 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 4.086 |
| 110 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 11.58 |
| 111 | | | | | Maximum | 18.9 | | | | | 95% KM (BCA) UCL | 4.469 |
| 112 | | | | | Mean | 2.16 | | | | | 95% KM (Percentile Bootstrap) UCL | 4.189 |
| 113 | | | | | Median | 0.77 | | | | | 95% KM (Chebyshev) UCL | 7.037 |
| 114 | | | | | SD | 4.525 | | | | | 97.5% KM (Chebyshev) UCL | 9.121 |
| 115 | | | | | k star | 0.182 | | | | | 99% KM (Chebyshev) UCL | 13.21 |
| 116 | | | | | Theta star | 11.9 | | | | | | |
| 117 | | | | | Nu star | 6.171 | | | **Potential UCLs to Use** | | | |
| 118 | | | | | AppChi2 | 1.728 | | | | | 97.5% KM (Chebyshev) UCL | 9.121 |
| 119 | | | | | 95% Gamma Approximate UCL | 7.713 | | | | | | |
| 120 | | | | | 95% Adjusted Gamma UCL | 8.921 | | | | | | |
| 121 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 122 | | | | | | | | | | | | |
| 123 | | | | | | | | | | | | |
| 124 | **Aroclor-1242** | | | | | | | | | | | |
| 125 | | | | | | | | | | | | |
| 126 | | | | | **General Statistics** | | | | | | | |
| 127 | | | | | Number of Valid Data | 17 | | | | | Number of Detected Data | 0 |
| 128 | | | | | Number of Distinct Detected Data | 0 | | | | | Number of Non-Detect Data | 17 |
| 129 | | | | | | | | | | | Percent Non-Detects | 100.00% |
| 130 | | | | | | | | | | | | |
| 131 | **Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!** | | | | | | | | | | | |
| 132 | **Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!** | | | | | | | | | | | |
| 133 | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 134 | | | | | | | | | | | | |
| 135 | **The data set for variable Aroclor-1242 was not processed!** | | | | | | | | | | | |
| 136 | | | | | | | | | | | | |
| 137 | | | | | | | | | | | | |
| 138 | | | | | | | | | | | | |
| 139 | **Aroclor-1254** | | | | | | | | | | | |
| 140 | | | | | | | | | | | | |
| 141 | | | | | **General Statistics** | | | | | | | |
| 142 | | | | | Number of Valid Data | 17 | | | | | Number of Detected Data | 5 |
| 143 | | | | | Number of Distinct Detected Data | 5 | | | | | Number of Non-Detect Data | 12 |
| 144 | | | | | | | | | | | Percent Non-Detects | 70.59% |
| 145 | | | | | | | | | | | | |
| 146 | | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | |
| 147 | | | | | Minimum Detected | 0.05 | | | | | Minimum Detected | -2.996 |
| 148 | | | | | Maximum Detected | 0.42 | | | | | Maximum Detected | -0.868 |
| 149 | | | | | Mean of Detected | 0.247 | | | | | Mean of Detected | -1.602 |
| 150 | | | | | SD of Detected | 0.139 | | | | | SD of Detected | 0.827 |
| 151 | | | | | Minimum Non-Detect | 0.0071 | | | | | Minimum Non-Detect | -4.948 |
| 152 | | | | | Maximum Non-Detect | 0.011 | | | | | Maximum Non-Detect | -4.51 |
| 153 | | | | | | | | | | | | |
| 154 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 12 |
| 155 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 5 |
| 156 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 70.59% |
| 157 | | | | | | | | | | | | |
| 158 | **Warning: There are only 5 Detected Values in this data** | | | | | | | | | | | |
| 159 | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 160 | the resulting calculations may not be reliable enough to draw conclusions | | | | | | | | | | | |
| 161 | | | | | | | | | | | | |
| 162 | It is recommended to have 10-15 or more distinct observations for accurate and meaningful results. | | | | | | | | | | | |
| 163 | | | | | | | | | | | | |
| 164 | | | | | | | | | | | | |
| 165 | UCL Statistics | | | | | | | | | | | |
| 166 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 167 | | | | | Shapiro Wilk Test Statistic | 0.979 | | | Shapiro Wilk Test Statistic | | | 0.846 |
| 168 | | | | | 5% Shapiro Wilk Critical Value | 0.762 | | | 5% Shapiro Wilk Critical Value | | | 0.762 |
| 169 | Data appear Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | | | | |
| 170 | | | | | | | | | | | | |
| 171 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 172 | | | | | DL/2 Substitution Method | | | | DL/2 Substitution Method | | | |
| 173 | | | | | Mean | 0.0757 | | | Mean | | | -4.353 |
| 174 | | | | | SD | 0.134 | | | SD | | | 1.88 |
| 175 | | | | | 95% DL/2 (t) UCL | 0.132 | | | 95% H-Stat (DL/2) UCL | | | 0.236 |
| 176 | | | | | | | | | | | | |
| 177 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | Log ROS Method | | | |
| 178 | MLE yields a negative mean | | | | | | | | Mean in Log Scale | | | -3.537 |
| 179 | | | | | | | | | SD in Log Scale | | | 1.385 |
| 180 | | | | | | | | | Mean in Original Scale | | | 0.0825 |
| 181 | | | | | | | | | SD in Original Scale | | | 0.13 |
| 182 | | | | | | | | | 95% Percentile Bootstrap UCL | | | 0.137 |
| 183 | | | | | | | | | 95% BCA Bootstrap UCL | | | 0.144 |
| 184 | | | | | | | | | | | | |
| 185 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 186 | | | | | k star (bias corrected) | 1.168 | Data appear Normal at 5% Significance Level | | | | | |
| 187 | | | | | Theta Star | 0.212 | | | | | | |
| 188 | | | | | nu star | 11.68 | | | | | | |
| 189 | | | | | | | | | | | | |
| 190 | | | | | A-D Test Statistic | 0.377 | Nonparametric Statistics | | | | | |
| 191 | | | | | 5% A-D Critical Value | 0.683 | | | Kaplan-Meier (KM) Method | | | |
| 192 | | | | | K-S Test Statistic | 0.683 | | | Mean | | | 0.108 |
| 193 | | | | | 5% K-S Critical Value | 0.36 | | | SD | | | 0.112 |
| 194 | Data appear Gamma Distributed at 5% Significance Level | | | | | | | | SE of Mean | | | 0.0304 |
| 195 | | | | | | | | | 95% KM (t) UCL | | | 0.161 |
| 196 | Assuming Gamma Distribution | | | | | | | | 95% KM (z) UCL | | | 0.158 |
| 197 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | 95% KM (jackknife) UCL | | | 0.204 |
| 198 | | | | | Minimum | 0.05 | | | 95% KM (bootstrap t) UCL | | | 0.15 |
| 199 | | | | | Maximum | 0.42 | | | 95% KM (BCA) UCL | | | 0.327 |
| 200 | | | | | Mean | 0.247 | | | 95% KM (Percentile Bootstrap) UCL | | | 0.264 |
| 201 | | | | | Median | 0.247 | | | 95% KM (Chebyshev) UCL | | | 0.241 |
| 202 | | | | | SD | 0.0695 | | | 97.5% KM (Chebyshev) UCL | | | 0.298 |
| 203 | | | | | k star | 6.962 | | | 99% KM (Chebyshev) UCL | | | 0.411 |
| 204 | | | | | Theta star | 0.0355 | | | | | | |
| 205 | | | | | Nu star | 236.7 | Potential UCLs to Use | | | | | |
| 206 | | | | | AppChi2 | 202.1 | | | 95% KM (t) UCL | | | 0.161 |
| 207 | | | | | 95% Gamma Approximate UCL | 0.29 | | | 95% KM (Percentile Bootstrap) UCL | | | 0.264 |
| 208 | | | | | 95% Adjusted Gamma UCL | 0.295 | | | | | | |
| 209 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 210 | | | | | | | | | | | | |
| 211 | | | | | | | | | | | | |
| 212 | Aroclor-1260 | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 213 | | | | | | | | | | | | |
| 214 | | | | | | General Statistics | | | | | | |
| 215 | | | | | Number of Valid Data | 16 | | | | | Number of Detected Data | 10 |
| 216 | | | | | Number of Distinct Detected Data | 9 | | | | | Number of Non-Detect Data | 6 |
| 217 | | | | | | | | | | | Percent Non-Detects | 37.50% |
| 218 | | | | | | | | | | | | |
| 219 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 220 | | | | | Minimum Detected | 0.01 | | | | | Minimum Detected | -4.605 |
| 221 | | | | | Maximum Detected | 0.55 | | | | | Maximum Detected | -0.598 |
| 222 | | | | | Mean of Detected | 0.183 | | | | | Mean of Detected | -2.143 |
| 223 | | | | | SD of Detected | 0.173 | | | | | SD of Detected | 1.117 |
| 224 | | | | | Minimum Non-Detect | 0.0075 | | | | | Minimum Non-Detect | -4.893 |
| 225 | | | | | Maximum Non-Detect | 0.0097 | | | | | Maximum Non-Detect | -4.636 |
| 226 | | | | | | | | | | | | |
| 227 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 6 |
| 228 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 10 |
| 229 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 37.50% |
| 230 | | | | | | | | | | | | |
| 231 | | | | | | UCL Statistics | | | | | | |
| 232 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 233 | | | | | Shapiro Wilk Test Statistic | 0.805 | | | | | Shapiro Wilk Test Statistic | 0.904 |
| 234 | | | | | 5% Shapiro Wilk Critical Value | 0.842 | | | | | 5% Shapiro Wilk Critical Value | 0.842 |
| 235 | | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 236 | | | | | | | | | | | | |
| 237 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 238 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 239 | | | | | Mean | 0.116 | | | | | Mean | -3.389 |
| 240 | | | | | SD | 0.161 | | | | | SD | 1.874 |
| 241 | | | | | 95% DL/2 (t) UCL | 0.187 | | | | | 95% H-Stat (DL/2) UCL | 0.723 |
| 242 | | | | | | | | | | | | |
| 243 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 244 | | | | | Mean | 0.0584 | | | | | Mean in Log Scale | -3.121 |
| 245 | | | | | SD | 0.22 | | | | | SD in Log Scale | 1.572 |
| 246 | | | | | 95% MLE (t) UCL | 0.155 | | | | | Mean in Original Scale | 0.118 |
| 247 | | | | | 95% MLE (Tiku) UCL | 0.165 | | | | | SD in Original Scale | 0.16 |
| 248 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.187 |
| 249 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.21 |
| 250 | | | | | | | | | | | | |
| 251 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 252 | | | | | k star (bias corrected) | 0.951 | | | | Data appear Gamma Distributed at 5% Significance Level | | |
| 253 | | | | | Theta Star | 0.193 | | | | | | |
| 254 | | | | | nu star | 19.02 | | | | | | |
| 255 | | | | | | | | | | | | |
| 256 | | | | | A-D Test Statistic | 0.448 | | | | Nonparametric Statistics | | |
| 257 | | | | | 5% A-D Critical Value | 0.744 | | | | | Kaplan-Meier (KM) Method | |
| 258 | | | | | K-S Test Statistic | 0.744 | | | | | Mean | 0.118 |
| 259 | | | | | 5% K-S Critical Value | 0.272 | | | | | SD | 0.154 |
| 260 | | | | Data appear Gamma Distributed at 5% Significance Level | | | | | | | SE of Mean | 0.0407 |
| 261 | | | | | | | | | | | 95% KM (t) UCL | 0.19 |
| 262 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 0.185 |
| 263 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.182 |
| 264 | | | | | Minimum | 0.01 | | | | | 95% KM (bootstrap t) UCL | 0.243 |
| 265 | | | | | Maximum | 0.55 | | | | | 95% KM (BCA) UCL | 0.219 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 266 | | | | | Mean | 0.141 | | | | 95% KM (Percentile Bootstrap) UCL | | 0.197 |
| 267 | | | | | Median | 0.099 | | | | 95% KM (Chebyshev) UCL | | 0.296 |
| 268 | | | | | SD | 0.147 | | | | 97.5% KM (Chebyshev) UCL | | 0.372 |
| 269 | | | | | k star | 1.118 | | | | 99% KM (Chebyshev) UCL | | 0.523 |
| 270 | | | | | Theta star | 0.126 | | | | | | |
| 271 | | | | | Nu star | 35.76 | | | | **Potential UCLs to Use** | | |
| 272 | | | | | AppChi2 | 23.08 | | | | 95% KM (BCA) UCL | | 0.219 |
| 273 | | | | | 95% Gamma Approximate UCL | 0.218 | | | | | | |
| 274 | | | | | 95% Adjusted Gamma UCL | 0.23 | | | | | | |
| 275 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 276 | | | | | | | | | | | | |
| 277 | | | | | | | | | | | | |
| 278 | **Arsenic** | | | | | | | | | | | |
| 279 | | | | | | | | | | | | |
| 280 | | | | | **General Statistics** | | | | | | | |
| 281 | | | | | Number of Valid Data | 17 | | | | Number of Detected Data | | 16 |
| 282 | | | | | Number of Distinct Detected Data | 15 | | | | Number of Non-Detect Data | | 1 |
| 283 | | | | | | | | | | Percent Non-Detects | | 5.88% |
| 284 | | | | | | | | | | | | |
| 285 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 286 | | | | | Minimum Detected | 1.1 | | | | Minimum Detected | | 0.0953 |
| 287 | | | | | Maximum Detected | 21.5 | | | | Maximum Detected | | 3.068 |
| 288 | | | | | Mean of Detected | 9.763 | | | | Mean of Detected | | 1.981 |
| 289 | | | | | SD of Detected | 6.623 | | | | SD of Detected | | 0.894 |
| 290 | | | | | Minimum Non-Detect | 0.44 | | | | Minimum Non-Detect | | -0.821 |
| 291 | | | | | Maximum Non-Detect | 0.44 | | | | Maximum Non-Detect | | -0.821 |
| 292 | | | | | | | | | | | | |
| 293 | | | | | | | | | | | | |
| 294 | | | | | **UCL Statistics** | | | | | | | |
| 295 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 296 | | | | | Shapiro Wilk Test Statistic | 0.928 | | | | Shapiro Wilk Test Statistic | | 0.916 |
| 297 | | | | | 5% Shapiro Wilk Critical Value | 0.887 | | | | 5% Shapiro Wilk Critical Value | | 0.887 |
| 298 | | | | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 299 | | | | | | | | | | | | |
| 300 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 301 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 302 | | | | | Mean | 9.201 | | | | Mean | | 1.776 |
| 303 | | | | | SD | 6.817 | | | | SD | | 1.212 |
| 304 | | | | | 95% DL/2 (t) UCL | 12.09 | | | | 95% H-Stat (DL/2) UCL | | 22.7 |
| 305 | | | | | | | | | | | | |
| 306 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | Log ROS Method | | |
| 307 | | | | | Mean | 9.018 | | | | Mean in Log Scale | | 1.857 |
| 308 | | | | | SD | 6.933 | | | | SD in Log Scale | | 1.007 |
| 309 | | | | | 95% MLE (t) UCL | 11.95 | | | | Mean in Original Scale | | 9.239 |
| 310 | | | | | 95% MLE (Tiku) UCL | 11.91 | | | | SD in Original Scale | | 6.766 |
| 311 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 11.88 |
| 312 | | | | | | | | | | 95% BCA Bootstrap UCL | | 12.04 |
| 313 | | | | | | | | | | | | |
| 314 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 315 | | | | | k star (bias corrected) | 1.53 | | | | **Data appear Normal at 5% Significance Level** | | |
| 316 | | | | | Theta Star | 6.382 | | | | | | |
| 317 | | | | | nu star | 48.95 | | | | | | |
| 318 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 319 | | | | | A-D Test Statistic | 0.306 | Nonparametric Statistics | | | | | |
| 320 | | | | | 5% A-D Critical Value | 0.752 | | | | | Kaplan-Meier (KM) Method | |
| 321 | | | | | K-S Test Statistic | 0.752 | | | | | Mean | 9.253 |
| 322 | | | | | 5% K-S Critical Value | 0.218 | | | | | SD | 6.546 |
| 323 | Data appear Gamma Distributed at 5% Significance Level | | | | | | | | | | SE of Mean | 1.64 |
| 324 | | | | | | | | | | | 95% KM (t) UCL | 12.12 |
| 325 | | | Assuming Gamma Distribution | | | | | | | | 95% KM (z) UCL | 11.95 |
| 326 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 12.09 |
| 327 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 12.39 |
| 328 | | | | | Maximum | 21.5 | | | | | 95% KM (BCA) UCL | 12.15 |
| 329 | | | | | Mean | 9.188 | | | | | 95% KM (Percentile Bootstrap) UCL | 11.93 |
| 330 | | | | | Median | 7.3 | | | | | 95% KM (Chebyshev) UCL | 16.4 |
| 331 | | | | | SD | 6.836 | | | | | 97.5% KM (Chebyshev) UCL | 19.49 |
| 332 | | | | | k star | 0.382 | | | | | 99% KM (Chebyshev) UCL | 25.57 |
| 333 | | | | | Theta star | 24.07 | | | | | | |
| 334 | | | | | Nu star | 12.98 | Potential UCLs to Use | | | | | |
| 335 | | | | | AppChi2 | 5.879 | | | | | 95% KM (t) UCL | 12.12 |
| 336 | | | | | 95% Gamma Approximate UCL | 20.29 | | | | | 95% KM (Percentile Bootstrap) UCL | 11.93 |
| 337 | | | | | 95% Adjusted Gamma UCL | 22.15 | | | | | | |
| 338 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 339 | | | | | | | | | | | | |
| 340 | | | | | | | | | | | | |
| 341 | Benzo(a)pyrene | | | | | | | | | | | |
| 342 | | | | | | | | | | | | |
| 343 | | | | | General Statistics | | | | | | | |
| 344 | | | | | Number of Valid Data | 17 | | | | | Number of Detected Data | 16 |
| 345 | | | | | Number of Distinct Detected Data | 15 | | | | | Number of Non-Detect Data | 1 |
| 346 | | | | | | | | | | | Percent Non-Detects | 5.88% |
| 347 | | | | | | | | | | | | |
| 348 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 349 | | | | | Minimum Detected | 0.315 | | | | | Minimum Detected | -1.155 |
| 350 | | | | | Maximum Detected | 3.95 | | | | | Maximum Detected | 1.374 |
| 351 | | | | | Mean of Detected | 1.385 | | | | | Mean of Detected | 0.049 |
| 352 | | | | | SD of Detected | 1.047 | | | | | SD of Detected | 0.789 |
| 353 | | | | | Minimum Non-Detect | 0.0037 | | | | | Minimum Non-Detect | -5.599 |
| 354 | | | | | Maximum Non-Detect | 0.0037 | | | | | Maximum Non-Detect | -5.599 |
| 355 | | | | | | | | | | | | |
| 356 | | | | | | | | | | | | |
| 357 | | | | | UCL Statistics | | | | | | | |
| 358 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 359 | | | | | Shapiro Wilk Test Statistic | 0.883 | | | | | Shapiro Wilk Test Statistic | 0.949 |
| 360 | | | | | 5% Shapiro Wilk Critical Value | 0.887 | | | | | 5% Shapiro Wilk Critical Value | 0.887 |
| 361 | | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 362 | | | | | | | | | | | | |
| 363 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 364 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 365 | | | | | Mean | 1.303 | | | | | Mean | -0.324 |
| 366 | | | | | SD | 1.067 | | | | | SD | 1.717 |
| 367 | | | | | 95% DL/2 (t) UCL | 1.755 | | | | | 95% H-Stat (DL/2) UCL | 9.701 |
| 368 | | | | | | | | | | | | |
| 369 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 370 | | | | | Mean | 1.272 | | | | | Mean in Log Scale | -0.0653 |
| 371 | | | | | SD | 1.088 | | | | | SD in Log Scale | 0.898 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 372 | | | | | 95% MLE (t) UCL | 1.732 | | | | | Mean in Original Scale | 1.312 |
| 373 | | | | | 95% MLE (Tiku) UCL | 1.723 | | | | | SD in Original Scale | 1.057 |
| 374 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 1.745 |
| 375 | | | | | | | | | | | 95% BCA Bootstrap UCL | 1.768 |
| 376 | | | | | | | | | | | | |
| 377 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 378 | | | | | k star (bias corrected) | 1.633 | | | | Data appear Gamma Distributed at 5% Significance Level | | |
| 379 | | | | | Theta Star | 0.848 | | | | | | |
| 380 | | | | | nu star | 52.26 | | | | | | |
| 381 | | | | | | | | | | | | |
| 382 | | | | | A-D Test Statistic | 0.322 | | | | Nonparametric Statistics | | |
| 383 | | | | | 5% A-D Critical Value | 0.751 | | | | | Kaplan-Meier (KM) Method | |
| 384 | | | | | K-S Test Statistic | 0.751 | | | | | Mean | 1.322 |
| 385 | | | | | 5% K-S Critical Value | 0.218 | | | | | SD | 1.015 |
| 386 | | | | Data appear Gamma Distributed at 5% Significance Level | | | | | | | SE of Mean | 0.254 |
| 387 | | | | | | | | | | | 95% KM (t) UCL | 1.766 |
| 388 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 1.74 |
| 389 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 1.762 |
| 390 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 1.874 |
| 391 | | | | | Maximum | 3.95 | | | | | 95% KM (BCA) UCL | 1.738 |
| 392 | | | | | Mean | 1.303 | | | | | 95% KM (Percentile Bootstrap) UCL | 1.726 |
| 393 | | | | | Median | 1.1 | | | | | 95% KM (Chebyshev) UCL | 2.43 |
| 394 | | | | | SD | 1.068 | | | | | 97.5% KM (Chebyshev) UCL | 2.909 |
| 395 | | | | | k star | 0.409 | | | | | 99% KM (Chebyshev) UCL | 3.851 |
| 396 | | | | | Theta star | 3.185 | | | | | | |
| 397 | | | | | Nu star | 13.91 | | | | Potential UCLs to Use | | |
| 398 | | | | | AppChi2 | 6.512 | | | | | 95% KM (Chebyshev) UCL | 2.43 |
| 399 | | | | | 95% Gamma Approximate UCL | 2.784 | | | | | | |
| 400 | | | | | 95% Adjusted Gamma UCL | 3.028 | | | | | | |
| 401 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 402 | | | | | | | | | | | | |
| 403 | | | | | | | | | | | | |
| 404 | Benzo(b)fluoranthene | | | | | | | | | | | |
| 405 | | | | | | | | | | | | |
| 406 | | | | | General Statistics | | | | | | | |
| 407 | | | | | Number of Valid Data | 15 | | | | | Number of Detected Data | 14 |
| 408 | | | | | Number of Distinct Detected Data | 12 | | | | | Number of Non-Detect Data | 1 |
| 409 | | | | | | | | | | | Percent Non-Detects | 6.67% |
| 410 | | | | | | | | | | | | |
| 411 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 412 | | | | | Minimum Detected | 0.35 | | | | | Minimum Detected | -1.05 |
| 413 | | | | | Maximum Detected | 3.2 | | | | | Maximum Detected | 1.163 |
| 414 | | | | | Mean of Detected | 1.403 | | | | | Mean of Detected | 0.0893 |
| 415 | | | | | SD of Detected | 0.951 | | | | | SD of Detected | 0.762 |
| 416 | | | | | Minimum Non-Detect | 0.0037 | | | | | Minimum Non-Detect | -5.599 |
| 417 | | | | | Maximum Non-Detect | 0.0037 | | | | | Maximum Non-Detect | -5.599 |
| 418 | | | | | | | | | | | | |
| 419 | | | | | | | | | | | | |
| 420 | | | | | UCL Statistics | | | | | | | |
| 421 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 422 | | | | | Shapiro Wilk Test Statistic | 0.88 | | | | | Shapiro Wilk Test Statistic | 0.901 |
| 423 | | | | | 5% Shapiro Wilk Critical Value | 0.874 | | | | | 5% Shapiro Wilk Critical Value | 0.874 |
| 424 | | | | Data appear Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
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| 425 | | | | | | | | | | | | |
| 426 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 427 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 428 | | | | | Mean | 1.309 | | | | | Mean | -0.336 |
| 429 | | | | | SD | 0.985 | | | | | SD | 1.804 |
| 430 | | | | | 95% DL/2 (t) UCL | 1.757 | | | | | 95% H-Stat (DL/2) UCL | 14 |
| 431 | | | | | | | | | | | | |
| 432 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 433 | | | | | Mean | 1.278 | | | | | Mean in Log Scale | -0.0329 |
| 434 | | | | | SD | 1.007 | | | | | SD in Log Scale | 0.874 |
| 435 | | | | | 95% MLE (t) UCL | 1.736 | | | | | Mean in Original Scale | 1.321 |
| 436 | | | | | 95% MLE (Tiku) UCL | 1.731 | | | | | SD in Original Scale | 0.969 |
| 437 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 1.725 |
| 438 | | | | | | | | | | | 95% BCA Bootstrap UCL | 1.773 |
| 439 | | | | | | | | | | | | |
| 440 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 441 | | | | | k star (bias corrected) | 1.743 | **Data appear Normal at 5% Significance Level** | | | | | |
| 442 | | | | | Theta Star | 0.805 | | | | | | |
| 443 | | | | | nu star | 48.81 | | | | | | |
| 444 | | | | | | | | | | | | |
| 445 | | | | | A-D Test Statistic | 0.665 | **Nonparametric Statistics** | | | | | |
| 446 | | | | | 5% A-D Critical Value | 0.745 | | | | | Kaplan-Meier (KM) Method | |
| 447 | | | | | K-S Test Statistic | 0.745 | | | | | Mean | 1.333 |
| 448 | | | | | 5% K-S Critical Value | 0.231 | | | | | SD | 0.923 |
| 449 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.247 |
| 450 | | | | | | | | | | | 95% KM (t) UCL | 1.768 |
| 451 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 1.739 |
| 452 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 1.764 |
| 453 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 1.803 |
| 454 | | | | | Maximum | 3.2 | | | | | 95% KM (BCA) UCL | 1.755 |
| 455 | | | | | Mean | 1.309 | | | | | 95% KM (Percentile Bootstrap) UCL | 1.753 |
| 456 | | | | | Median | 1.1 | | | | | 95% KM (Chebyshev) UCL | 2.411 |
| 457 | | | | | SD | 0.985 | | | | | 97.5% KM (Chebyshev) UCL | 2.877 |
| 458 | | | | | k star | 0.378 | | | | | 99% KM (Chebyshev) UCL | 3.793 |
| 459 | | | | | Theta star | 3.464 | | | | | | |
| 460 | | | | | Nu star | 11.34 | **Potential UCLs to Use** | | | | | |
| 461 | | | | | AppChi2 | 4.796 | | | | | 95% KM (t) UCL | 1.768 |
| 462 | | | | | 95% Gamma Approximate UCL | 3.096 | | | | | 95% KM (Percentile Bootstrap) UCL | 1.753 |
| 463 | | | | | 95% Adjusted Gamma UCL | 3.467 | | | | | | |
| 464 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 465 | | | | | | | | | | | | |
| 466 | | | | | | | | | | | | |
| 467 | **Benzo(k)fluoranthene** | | | | | | | | | | | |
| 468 | | | | | | | | | | | | |
| 469 | | | | | **General Statistics** | | | | | | | |
| 470 | | | | | Number of Valid Data | 17 | | | | | Number of Detected Data | 16 |
| 471 | | | | | Number of Distinct Detected Data | 15 | | | | | Number of Non-Detect Data | 1 |
| 472 | | | | | | | | | | | Percent Non-Detects | 5.88% |
| 473 | | | | | | | | | | | | |
| 474 | | | | | **Raw Statistics** | | **Log-transformed Statistics** | | | | | |
| 475 | | | | | Minimum Detected | 0.147 | | | | | Minimum Detected | -1.917 |
| 476 | | | | | Maximum Detected | 2.245 | | | | | Maximum Detected | 0.809 |
| 477 | | | | | Mean of Detected | 0.78 | | | | | Mean of Detected | -0.604 |

| | A–E | F | G–K | L |
|---|---|---|---|---|
| 478 | SD of Detected | 0.65 | SD of Detected | 0.902 |
| 479 | Minimum Non-Detect | 0.0037 | Minimum Non-Detect | -5.599 |
| 480 | Maximum Non-Detect | 0.0037 | Maximum Non-Detect | -5.599 |
| 481 | | | | |
| 482 | | | | |
| 483 | **UCL Statistics** | | | |
| 484 | **Normal Distribution Test with Detected Values Only** | | **Lognormal Distribution Test with Detected Values Only** | |
| 485 | Shapiro Wilk Test Statistic | 0.865 | Shapiro Wilk Test Statistic | 0.926 |
| 486 | 5% Shapiro Wilk Critical Value | 0.887 | 5% Shapiro Wilk Critical Value | 0.887 |
| 487 | **Data not Normal at 5% Significance Level** | | **Data appear Lognormal at 5% Significance Level** | |
| 488 | | | | |
| 489 | **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
| 490 | DL/2 Substitution Method | | DL/2 Substitution Method | |
| 491 | Mean | 0.734 | Mean | -0.939 |
| 492 | SD | 0.657 | SD | 1.633 |
| 493 | 95% DL/2 (t) UCL | 1.013 | 95% H-Stat (DL/2) UCL | 4.167 |
| 494 | | | | |
| 495 | Maximum Likelihood Estimate(MLE) Method | | Log ROS Method | |
| 496 | Mean | 0.714 | Mean in Log Scale | -0.734 |
| 497 | SD | 0.669 | SD in Log Scale | 1.024 |
| 498 | 95% MLE (t) UCL | 0.998 | Mean in Original Scale | 0.738 |
| 499 | 95% MLE (Tiku) UCL | 0.989 | SD in Original Scale | 0.653 |
| 500 | | | 95% Percentile Bootstrap UCL | 0.986 |
| 501 | | | 95% BCA Bootstrap UCL | 1.019 |
| 502 | | | | |
| 503 | **Gamma Distribution Test with Detected Values Only** | | **Data Distribution Test with Detected Values Only** | |
| 504 | k star (bias corrected) | 1.301 | **Data appear Gamma Distributed at 5% Significance Level** | |
| 505 | Theta Star | 0.6 | | |
| 506 | nu star | 41.62 | | |
| 507 | | | | |
| 508 | A-D Test Statistic | 0.512 | **Nonparametric Statistics** | |
| 509 | 5% A-D Critical Value | 0.754 | Kaplan-Meier (KM) Method | |
| 510 | K-S Test Statistic | 0.754 | Mean | 0.743 |
| 511 | 5% K-S Critical Value | 0.219 | SD | 0.629 |
| 512 | **Data appear Gamma Distributed at 5% Significance Level** | | SE of Mean | 0.157 |
| 513 | | | 95% KM (t) UCL | 1.018 |
| 514 | **Assuming Gamma Distribution** | | 95% KM (z) UCL | 1.002 |
| 515 | Gamma ROS Statistics using Extrapolated Data | | 95% KM (jackknife) UCL | 1.016 |
| 516 | Minimum | 1E-09 | 95% KM (bootstrap t) UCL | 1.099 |
| 517 | Maximum | 2.245 | 95% KM (BCA) UCL | 1.015 |
| 518 | Mean | 0.734 | 95% KM (Percentile Bootstrap) UCL | 0.994 |
| 519 | Median | 0.48 | 95% KM (Chebyshev) UCL | 1.429 |
| 520 | SD | 0.657 | 97.5% KM (Chebyshev) UCL | 1.726 |
| 521 | k star | 0.4 | 99% KM (Chebyshev) UCL | 2.31 |
| 522 | Theta star | 1.834 | | |
| 523 | Nu star | 13.61 | **Potential UCLs to Use** | |
| 524 | AppChi2 | 6.305 | 95% KM (Chebyshev) UCL | 1.429 |
| 525 | 95% Gamma Approximate UCL | 1.585 | | |
| 526 | 95% Adjusted Gamma UCL | 1.726 | | |
| 527 | **Note: DL/2 is not a recommended method.** | | | |
| 528 | | | | |
| 529 | | | | |
| 530 | **Benzo_a_anthracene** | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 531 | | | | | | | | | | | | |
| 532 | | | | | | General Statistics | | | | | | |
| 533 | | | | | Number of Valid Data | 17 | | | | | Number of Detected Data | 16 |
| 534 | | | | | Number of Distinct Detected Data | 15 | | | | | Number of Non-Detect Data | 1 |
| 535 | | | | | | | | | | | Percent Non-Detects | 5.88% |
| 536 | | | | | | | | | | | | |
| 537 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 538 | | | | | Minimum Detected | 0.33 | | | | | Minimum Detected | -1.109 |
| 539 | | | | | Maximum Detected | 4.035 | | | | | Maximum Detected | 1.395 |
| 540 | | | | | Mean of Detected | 1.275 | | | | | Mean of Detected | -0.0471 |
| 541 | | | | | SD of Detected | 1.049 | | | | | SD of Detected | 0.784 |
| 542 | | | | | Minimum Non-Detect | 0.0037 | | | | | Minimum Non-Detect | -5.599 |
| 543 | | | | | Maximum Non-Detect | 0.0037 | | | | | Maximum Non-Detect | -5.599 |
| 544 | | | | | | | | | | | | |
| 545 | | | | | | | | | | | | |
| 546 | | | | | | UCL Statistics | | | | | | |
| 547 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 548 | | | | | Shapiro Wilk Test Statistic | 0.834 | | | | | Shapiro Wilk Test Statistic | 0.951 |
| 549 | | | | | 5% Shapiro Wilk Critical Value | 0.887 | | | | | 5% Shapiro Wilk Critical Value | 0.887 |
| 550 | | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 551 | | | | | | | | | | | | |
| 552 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 553 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 554 | | | | | Mean | 1.2 | | | | | Mean | -0.414 |
| 555 | | | | | SD | 1.061 | | | | | SD | 1.694 |
| 556 | | | | | 95% DL/2 (t) UCL | 1.649 | | | | | 95% H-Stat (DL/2) UCL | 8.231 |
| 557 | | | | | | | | | | | | |
| 558 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 559 | | | | | Mean | 1.168 | | | | | Mean in Log Scale | -0.161 |
| 560 | | | | | SD | 1.081 | | | | | SD in Log Scale | 0.893 |
| 561 | | | | | 95% MLE (t) UCL | 1.625 | | | | | Mean in Original Scale | 1.208 |
| 562 | | | | | 95% MLE (Tiku) UCL | 1.612 | | | | | SD in Original Scale | 1.052 |
| 563 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 1.621 |
| 564 | | | | | | | | | | | 95% BCA Bootstrap UCL | 1.717 |
| 565 | | | | | | | | | | | | |
| 566 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 567 | | | | | k star (bias corrected) | 1.565 | | | | Data appear Gamma Distributed at 5% Significance Level | | |
| 568 | | | | | Theta Star | 0.815 | | | | | | |
| 569 | | | | | nu star | 50.08 | | | | | | |
| 570 | | | | | | | | | | | | |
| 571 | | | | | A-D Test Statistic | 0.376 | | | | Nonparametric Statistics | | |
| 572 | | | | | 5% A-D Critical Value | 0.751 | | | | | Kaplan-Meier (KM) Method | |
| 573 | | | | | K-S Test Statistic | 0.751 | | | | | Mean | 1.219 |
| 574 | | | | | 5% K-S Critical Value | 0.218 | | | | | SD | 1.01 |
| 575 | | | | Data appear Gamma Distributed at 5% Significance Level | | | | | | | SE of Mean | 0.253 |
| 576 | | | | | | | | | | | 95% KM (t) UCL | 1.661 |
| 577 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 1.635 |
| 578 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 1.659 |
| 579 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 1.827 |
| 580 | | | | | Maximum | 4.035 | | | | | 95% KM (BCA) UCL | 1.677 |
| 581 | | | | | Mean | 1.2 | | | | | 95% KM (Percentile Bootstrap) UCL | 1.658 |
| 582 | | | | | Median | 0.84 | | | | | 95% KM (Chebyshev) UCL | 2.322 |
| 583 | | | | | SD | 1.062 | | | | | 97.5% KM (Chebyshev) UCL | 2.799 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 584 | | | | | k star | 0.408 | | | | 99% KM (Chebyshev) UCL | | 3.736 |
| 585 | | | | | Theta star | 2.944 | | | | | | |
| 586 | | | | | Nu star | 13.86 | **Potential UCLs to Use** | | | | | |
| 587 | | | | | AppChi2 | 6.472 | | | | 95% KM (Chebyshev) UCL | | 2.322 |
| 588 | | | | 95% Gamma Approximate UCL | | 2.568 | | | | | | |
| 589 | | | | 95% Adjusted Gamma UCL | | 2.794 | | | | | | |
| 590 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 591 | | | | | | | | | | | | |
| 592 | | | | | | | | | | | | |
| 593 | **bis(2-Ethylhexyl)phthalate** | | | | | | | | | | | |
| 594 | | | | | | | | | | | | |
| 595 | | | | | **General Statistics** | | | | | | | |
| 596 | | | | | Number of Valid Data | 17 | | | | Number of Detected Data | | 16 |
| 597 | | | | | Number of Distinct Detected Data | 15 | | | | Number of Non-Detect Data | | 1 |
| 598 | | | | | | | | | | Percent Non-Detects | | 5.88% |
| 599 | | | | | | | | | | | | |
| 600 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 601 | | | | | Minimum Detected | 0.06 | | | | Minimum Detected | | -2.813 |
| 602 | | | | | Maximum Detected | 20 | | | | Maximum Detected | | 2.996 |
| 603 | | | | | Mean of Detected | 3.045 | | | | Mean of Detected | | -0.441 |
| 604 | | | | | SD of Detected | 5.572 | | | | SD of Detected | | 1.852 |
| 605 | | | | | Minimum Non-Detect | 0.53 | | | | Minimum Non-Detect | | -0.635 |
| 606 | | | | | Maximum Non-Detect | 0.53 | | | | Maximum Non-Detect | | -0.635 |
| 607 | | | | | | | | | | | | |
| 608 | | | | | | | | | | | | |
| 609 | | | | | **UCL Statistics** | | | | | | | |
| 610 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 611 | | | | | Shapiro Wilk Test Statistic | 0.61 | | | | Shapiro Wilk Test Statistic | | 0.919 |
| 612 | | | | | 5% Shapiro Wilk Critical Value | 0.887 | | | | 5% Shapiro Wilk Critical Value | | 0.887 |
| 613 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 614 | | | | | | | | | | | | |
| 615 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 616 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 617 | | | | | Mean | 2.882 | | | | Mean | | -0.493 |
| 618 | | | | | SD | 5.437 | | | | SD | | 1.806 |
| 619 | | | | | 95% DL/2 (t) UCL | 5.184 | | | | 95% H-Stat (DL/2) UCL | | 20.65 |
| 620 | | | | | | | | | | | | |
| 621 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 622 | | | | **MLE yields a negative mean** | | | | | | Mean in Log Scale | | -0.509 |
| 623 | | | | | | | | | | SD in Log Scale | | 1.815 |
| 624 | | | | | | | | | | Mean in Original Scale | | 2.878 |
| 625 | | | | | | | | | | SD in Original Scale | | 5.439 |
| 626 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 5.053 |
| 627 | | | | | | | | | | 95% BCA Bootstrap UCL | | 6.022 |
| 628 | | | | | | | | | | | | |
| 629 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 630 | | | | | k star (bias corrected) | 0.383 | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 631 | | | | | Theta Star | 7.953 | | | | | | |
| 632 | | | | | nu star | 12.25 | | | | | | |
| 633 | | | | | | | | | | | | |
| 634 | | | | | A-D Test Statistic | 1.08 | | | | **Nonparametric Statistics** | | |
| 635 | | | | | 5% A-D Critical Value | 0.813 | | | | Kaplan-Meier (KM) Method | | |
| 636 | | | | | K-S Test Statistic | 0.813 | | | | Mean | | 2.877 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 637 | | | | | 5% K-S Critical Value | 0.229 | | | | | SD | 5.277 |
| 638 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 1.322 |
| 639 | | | | | | | | | | | 95% KM (t) UCL | 5.185 |
| 640 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 5.052 |
| 641 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 5.181 |
| 642 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 7.642 |
| 643 | | | | | Maximum | 20 | | | | | 95% KM (BCA) UCL | 5.157 |
| 644 | | | | | Mean | 2.866 | | | | | 95% KM (Percentile Bootstrap) UCL | 5.167 |
| 645 | | | | | Median | 0.37 | | | | | 95% KM (Chebyshev) UCL | 8.639 |
| 646 | | | | | SD | 5.446 | | | | | 97.5% KM (Chebyshev) UCL | 11.13 |
| 647 | | | | | k star | 0.255 | | | | | 99% KM (Chebyshev) UCL | 16.03 |
| 648 | | | | | Theta star | 11.23 | | | | | | |
| 649 | | | | | Nu star | 8.677 | | | **Potential UCLs to Use** | | | |
| 650 | | | | | AppChi2 | 3.133 | | | | | 99% KM (Chebyshev) UCL | 16.03 |
| 651 | | | | | 95% Gamma Approximate UCL | 7.937 | | | | | | |
| 652 | | | | | 95% Adjusted Gamma UCL | 8.902 | | | | | | |
| 653 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 654 | | | | | | | | | | | | |
| 655 | | | | | | | | | | | | |
| 656 | **Cadmium** | | | | | | | | | | | |
| 657 | | | | | | | | | | | | |
| 658 | | | | | **General Statistics** | | | | | | | |
| 659 | | | | | Number of Valid Observations | 17 | | | | | Number of Distinct Observations | 17 |
| 660 | | | | | | | | | | | | |
| 661 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 662 | | | | | Minimum | 0.45 | | | | | Minimum of Log Data | -0.799 |
| 663 | | | | | Maximum | 25 | | | | | Maximum of Log Data | 3.219 |
| 664 | | | | | Mean | 7.848 | | | | | Mean of log Data | 1.428 |
| 665 | | | | | Median | 4.3 | | | | | SD of log Data | 1.294 |
| 666 | | | | | SD | 7.602 | | | | | | |
| 667 | | | | | Coefficient of Variation | 0.969 | | | | | | |
| 668 | | | | | Skewness | 0.842 | | | | | | |
| 669 | | | | | | | | | | | | |
| 670 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 671 | | | | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | |
| 672 | | | | | Shapiro Wilk Test Statistic | 0.862 | | | | | Shapiro Wilk Test Statistic | 0.929 |
| 673 | | | | | Shapiro Wilk Critical Value | 0.892 | | | | | Shapiro Wilk Critical Value | 0.892 |
| 674 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 675 | | | | | | | | | | | | |
| 676 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 677 | | | | | 95% Student's-t UCL | 11.07 | | | | | 95% H-UCL | 26.56 |
| 678 | | | | **95% UCLs (Adjusted for Skewness)** | | | | | | | 95% Chebyshev (MVUE) UCL | 22.81 |
| 679 | | | | | 95% Adjusted-CLT UCL | 11.28 | | | | | 97.5% Chebyshev (MVUE) UCL | 28.83 |
| 680 | | | | | 95% Modified-t UCL | 11.13 | | | | | 99% Chebyshev (MVUE) UCL | 40.66 |
| 681 | | | | | | | | | | | | |
| 682 | | | | **Gamma Distribution Test** | | | | | | **Data Distribution** | | |
| 683 | | | | | k star (bias corrected) | 0.799 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 684 | | | | | Theta Star | 9.824 | | | | | | |
| 685 | | | | | MLE of Mean | 7.848 | | | | | | |
| 686 | | | | | MLE of Standard Deviation | 8.78 | | | | | | |
| 687 | | | | | nu star | 27.16 | | | | | | |
| 688 | | | | | Approximate Chi Square Value (.05) | 16.28 | | | | **Nonparametric Statistics** | | |
| 689 | | | | | Adjusted Level of Significance | 0.0346 | | | | | 95% CLT UCL | 10.88 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 690 | | | | | Adjusted Chi Square Value | 15.4 | | | | | 95% Jackknife UCL | 11.07 |
| 691 | | | | | | | | | | | 95% Standard Bootstrap UCL | 10.75 |
| 692 | | | | | Anderson-Darling Test Statistic | 0.514 | | | | | 95% Bootstrap-t UCL | 11.59 |
| 693 | | | | | Anderson-Darling 5% Critical Value | 0.769 | | | | | 95% Hall's Bootstrap UCL | 11.33 |
| 694 | | | | | Kolmogorov-Smirnov Test Statistic | 0.168 | | | | | 95% Percentile Bootstrap UCL | 10.95 |
| 695 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.216 | | | | | 95% BCA Bootstrap UCL | 11.25 |
| 696 | | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | 95% Chebyshev(Mean, Sd) UCL | 15.88 |
| 697 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 19.36 |
| 698 | | | | | **Assuming Gamma Distribution** | | | | | | 99% Chebyshev(Mean, Sd) UCL | 26.19 |
| 699 | | | | | 95% Approximate Gamma UCL | 13.1 | | | | | | |
| 700 | | | | | 95% Adjusted Gamma UCL | 13.84 | | | | | | |
| 701 | | | | | | | | | | | | |
| 702 | | | | | **Potential UCL to Use** | | | | | | Use 95% Approximate Gamma UCL | 13.1 |
| 703 | | | | | | | | | | | | |
| 704 | | | | | | | | | | | | |
| 705 | **Carbazole** | | | | | | | | | | | |
| 706 | | | | | | | | | | | | |
| 707 | | | | | **General Statistics** | | | | | | | |
| 708 | | | | | Number of Valid Data | 17 | | | | | Number of Detected Data | 11 |
| 709 | | | | | Number of Distinct Detected Data | 11 | | | | | Number of Non-Detect Data | 6 |
| 710 | | | | | | | | | | | Percent Non-Detects | 35.29% |
| 711 | | | | | | | | | | | | |
| 712 | | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | |
| 713 | | | | | Minimum Detected | 0.045 | | | | | Minimum Detected | -3.101 |
| 714 | | | | | Maximum Detected | 0.2 | | | | | Maximum Detected | -1.609 |
| 715 | | | | | Mean of Detected | 0.117 | | | | | Mean of Detected | -2.229 |
| 716 | | | | | SD of Detected | 0.0487 | | | | | SD of Detected | 0.446 |
| 717 | | | | | Minimum Non-Detect | 0.15 | | | | | Minimum Non-Detect | -1.897 |
| 718 | | | | | Maximum Non-Detect | 0.49 | | | | | Maximum Non-Detect | -0.713 |
| 719 | | | | | | | | | | | | |
| 720 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 17 |
| 721 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 722 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 723 | | | | | | | | | | | | |
| 724 | | | | | **UCL Statistics** | | | | | | | |
| 725 | | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | |
| 726 | | | | | Shapiro Wilk Test Statistic | 0.942 | | | | | Shapiro Wilk Test Statistic | 0.95 |
| 727 | | | | | 5% Shapiro Wilk Critical Value | 0.85 | | | | | 5% Shapiro Wilk Critical Value | 0.85 |
| 728 | | | | | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | |
| 729 | | | | | | | | | | | | |
| 730 | | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | |
| 731 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 732 | | | | | Mean | 0.141 | | | | | Mean | -2.059 |
| 733 | | | | | SD | 0.0605 | | | | | SD | 0.487 |
| 734 | | | | | 95% DL/2 (t) UCL | 0.167 | | | | | 95% H-Stat (DL/2) UCL | 0.27 |
| 735 | | | | | | | | | | | | |
| 736 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 737 | | | | | **MLE method failed to converge properly** | | | | | | Mean in Log Scale | -2.251 |
| 738 | | | | | | | | | | | SD in Log Scale | 0.357 |
| 739 | | | | | | | | | | | Mean in Original Scale | 0.112 |
| 740 | | | | | | | | | | | SD in Original Scale | 0.0395 |
| 741 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.127 |
| 742 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.13 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 743 | | | | | | | | | | | | |
| 744 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 745 | | | | | k star (bias corrected) | 4.458 | **Data appear Normal at 5% Significance Level** | | | | | |
| 746 | | | | | Theta Star | 0.0263 | | | | | | |
| 747 | | | | | nu star | 98.07 | | | | | | |
| 748 | | | | | | | | | | | | |
| 749 | | | | | A-D Test Statistic | 0.303 | **Nonparametric Statistics** | | | | | |
| 750 | | | | | 5% A-D Critical Value | 0.731 | | | | | Kaplan-Meier (KM) Method | |
| 751 | | | | | K-S Test Statistic | 0.731 | | | | | Mean | 0.115 |
| 752 | | | | | 5% K-S Critical Value | 0.256 | | | | | SD | 0.0457 |
| 753 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.014 |
| 754 | | | | | | | | | | | 95% KM (t) UCL | 0.139 |
| 755 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 0.138 |
| 756 | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | | 95% KM (jackknife) UCL | 0.139 |
| 757 | | | | | Minimum | 0.045 | | | | | 95% KM (bootstrap t) UCL | 0.142 |
| 758 | | | | | Maximum | 0.2 | | | | | 95% KM (BCA) UCL | 0.136 |
| 759 | | | | | Mean | 0.12 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.136 |
| 760 | | | | | Median | 0.13 | | | | | 95% KM (Chebyshev) UCL | 0.175 |
| 761 | | | | | SD | 0.0392 | | | | | 97.5% KM (Chebyshev) UCL | 0.202 |
| 762 | | | | | k star | 7.431 | | | | | 99% KM (Chebyshev) UCL | 0.253 |
| 763 | | | | | Theta star | 0.0162 | | | | | | |
| 764 | | | | | Nu star | 252.6 | **Potential UCLs to Use** | | | | | |
| 765 | | | | | AppChi2 | 216.8 | | | | | 95% KM (t) UCL | 0.139 |
| 766 | | | | | 95% Gamma Approximate UCL | 0.14 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.136 |
| 767 | | | | | 95% Adjusted Gamma UCL | 0.142 | | | | | | |
| 768 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 769 | | | | | | | | | | | | |
| 770 | | | | | | | | | | | | |
| 771 | **Chromium** | | | | | | | | | | | |
| 772 | | | | | | | | | | | | |
| 773 | | | | | **General Statistics** | | | | | | | |
| 774 | | | | | Number of Valid Observations | 17 | | | | | Number of Distinct Observations | 17 |
| 775 | | | | | | | | | | | | |
| 776 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 777 | | | | | Minimum | 4.8 | | | | | Minimum of Log Data | 1.569 |
| 778 | | | | | Maximum | 354 | | | | | Maximum of Log Data | 5.869 |
| 779 | | | | | Mean | 103.2 | | | | | Mean of log Data | 4.063 |
| 780 | | | | | Median | 70.1 | | | | | SD of log Data | 1.25 |
| 781 | | | | | SD | 100.1 | | | | | | |
| 782 | | | | | Coefficient of Variation | 0.971 | | | | | | |
| 783 | | | | | Skewness | 1.237 | | | | | | |
| 784 | | | | | | | | | | | | |
| 785 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 786 | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | | | | |
| 787 | | | | | Shapiro Wilk Test Statistic | 0.865 | | | | | Shapiro Wilk Test Statistic | 0.959 |
| 788 | | | | | Shapiro Wilk Critical Value | 0.892 | | | | | Shapiro Wilk Critical Value | 0.892 |
| 789 | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 790 | | | | | | | | | | | | |
| 791 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 792 | | | | | 95% Student's-t UCL | 145.6 | | | | | 95% H-UCL | 330.5 |
| 793 | **95% UCLs (Adjusted for Skewness)** | | | | | | | | | | 95% Chebyshev (MVUE) UCL | 295.6 |
| 794 | | | | | 95% Adjusted-CLT UCL | 150.9 | | | | | 97.5% Chebyshev (MVUE) UCL | 372.4 |
| 795 | | | | | 95% Modified-t UCL | 146.8 | | | | | 99% Chebyshev (MVUE) UCL | 523.3 |

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| 796 | | | | | | | | | | | | |
| 797 | **Gamma Distribution Test** | | | | | | **Data Distribution** | | | | | |
| 798 | | | | | k star (bias corrected) | 0.868 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | |
| 799 | | | | | Theta Star | 118.9 | | | | | | |
| 800 | | | | | MLE of Mean | 103.2 | | | | | | |
| 801 | | | | | MLE of Standard Deviation | 110.8 | | | | | | |
| 802 | | | | | nu star | 29.5 | | | | | | |
| 803 | | | | | Approximate Chi Square Value (.05) | 18.1 | **Nonparametric Statistics** | | | | | |
| 804 | | | | | Adjusted Level of Significance | 0.0346 | | | | | 95% CLT UCL | 143.1 |
| 805 | | | | | Adjusted Chi Square Value | 17.16 | | | | | 95% Jackknife UCL | 145.6 |
| 806 | | | | | | | | | | | 95% Standard Bootstrap UCL | 142.4 |
| 807 | | | | | Anderson-Darling Test Statistic | 0.161 | | | | | 95% Bootstrap-t UCL | 162.9 |
| 808 | | | | | Anderson-Darling 5% Critical Value | 0.766 | | | | | 95% Hall's Bootstrap UCL | 154.6 |
| 809 | | | | | Kolmogorov-Smirnov Test Statistic | 0.0971 | | | | | 95% Percentile Bootstrap UCL | 144.7 |
| 810 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.215 | | | | | 95% BCA Bootstrap UCL | 149 |
| 811 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | 95% Chebyshev(Mean, Sd) UCL | 209.1 |
| 812 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 254.9 |
| 813 | **Assuming Gamma Distribution** | | | | | | | | | | 99% Chebyshev(Mean, Sd) UCL | 344.9 |
| 814 | | | | | 95% Approximate Gamma UCL | 168.2 | | | | | | |
| 815 | | | | | 95% Adjusted Gamma UCL | 177.3 | | | | | | |
| 816 | | | | | | | | | | | | |
| 817 | **Potential UCL to Use** | | | | | | | | | | Use 95% Approximate Gamma UCL | 168.2 |
| 818 | | | | | | | | | | | | |
| 819 | | | | | | | | | | | | |
| 820 | **Cobalt** | | | | | | | | | | | |
| 821 | | | | | | | | | | | | |
| 822 | | | | | **General Statistics** | | | | | | | |
| 823 | | | | | Number of Valid Data | 17 | | | | | Number of Detected Data | 3 |
| 824 | | | | | Number of Distinct Detected Data | 3 | | | | | Number of Non-Detect Data | 14 |
| 825 | | | | | | | | | | | Percent Non-Detects | 82.35% |
| 826 | | | | | | | | | | | | |
| 827 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 828 | | | | | Minimum Detected | 4.6 | | | | | Minimum Detected | 1.526 |
| 829 | | | | | Maximum Detected | 14 | | | | | Maximum Detected | 2.639 |
| 830 | | | | | Mean of Detected | 9.233 | | | | | Mean of Detected | 2.124 |
| 831 | | | | | SD of Detected | 4.701 | | | | | SD of Detected | 0.561 |
| 832 | | | | | Minimum Non-Detect | 8.9 | | | | | Minimum Non-Detect | 2.186 |
| 833 | | | | | Maximum Non-Detect | 14 | | | | | Maximum Non-Detect | 2.639 |
| 834 | | | | | | | | | | | | |
| 835 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 16 |
| 836 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 1 |
| 837 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 94.12% |
| 838 | | | | | | | | | | | | |
| 839 | **Warning: There are only 3 Distinct Detected Values in this data set** | | | | | | | | | | | |
| 840 | **The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.** | | | | | | | | | | | |
| 841 | **Those methods will return a 'N/A' value on your output display!** | | | | | | | | | | | |
| 842 | | | | | | | | | | | | |
| 843 | **It is necessary to have 4 or more Distinct Values for bootstrap methods.** | | | | | | | | | | | |
| 844 | **However, results obtained using 4 to 9 distinct values may not be reliable.** | | | | | | | | | | | |
| 845 | **It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.** | | | | | | | | | | | |
| 846 | | | | | | | | | | | | |
| 847 | | | | | | | | | | | | |
| 848 | **UCL Statistics** | | | | | | | | | | | |

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| 849 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 850 | | | | | Shapiro Wilk Test Statistic | 0.999 | | | | | Shapiro Wilk Test Statistic | 0.983 |
| 851 | | | | | 5% Shapiro Wilk Critical Value | 0.767 | | | | | 5% Shapiro Wilk Critical Value | 0.767 |
| 852 | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 853 | | | | | | | | | | | | |
| 854 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 855 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 856 | | | | | Mean | 6.453 | | | | | Mean | 1.822 |
| 857 | | | | | SD | 2.264 | | | | | SD | 0.28 |
| 858 | | | | | 95% DL/2 (t) UCL | 7.411 | | | | | 95% H-Stat (DL/2) UCL | 8.656 |
| 859 | | | | | | | | | | | | |
| 860 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 861 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | 1.798 |
| 862 | | | | | | | | | | | SD in Log Scale | 0.323 |
| 863 | | | | | | | | | | | Mean in Original Scale | 6.377 |
| 864 | | | | | | | | | | | SD in Original Scale | 2.448 |
| 865 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 7.378 |
| 866 | | | | | | | | | | | 95% BCA Bootstrap UCL | 7.705 |
| 867 | | | | | | | | | | | | |
| 868 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 869 | | | | | k star (bias corrected) | N/A | **Data appear Normal at 5% Significance Level** | | | | | |
| 870 | | | | | Theta Star | N/A | | | | | | |
| 871 | | | | | nu star | N/A | | | | | | |
| 872 | | | | | | | | | | | | |
| 873 | | | | | A-D Test Statistic | N/A | **Nonparametric Statistics** | | | | | |
| 874 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 875 | | | | | K-S Test Statistic | N/A | | | | | Mean | 6.565 |
| 876 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 2.773 |
| 877 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 1.516 |
| 878 | | | | | | | | | | | 95% KM (t) UCL | 9.211 |
| 879 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 9.058 |
| 880 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 10.06 |
| 881 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | 8.894 |
| 882 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | 14 |
| 883 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 14 |
| 884 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 13.17 |
| 885 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 16.03 |
| 886 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 21.65 |
| 887 | | | | | Theta star | N/A | | | | | | |
| 888 | | | | | Nu star | N/A | **Potential UCLs to Use** | | | | | |
| 889 | | | | | AppChi2 | N/A | | | | | 95% KM (t) UCL | 9.211 |
| 890 | | | | | 95% Gamma Approximate UCL | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 14 |
| 891 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 892 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 893 | | | | | | | | | | | | |
| 894 | | | | | | | | | | | | |
| 895 | **Copper** | | | | | | | | | | | |
| 896 | | | | | | | | | | | | |
| 897 | | | | | **General Statistics** | | | | | | | |
| 898 | | | | | Number of Valid Data | 17 | | | | | Number of Detected Data | 16 |
| 899 | | | | | Number of Distinct Detected Data | 16 | | | | | Number of Non-Detect Data | 1 |
| 900 | | | | | | | | | | | Percent Non-Detects | 5.88% |
| 901 | | | | | | | | | | | | |

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| 902 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 903 | | | | | Minimum Detected | 12.7 | | | | | Minimum Detected | 2.542 |
| 904 | | | | | Maximum Detected | 653 | | | | | Maximum Detected | 6.482 |
| 905 | | | | | Mean of Detected | 156.2 | | | | | Mean of Detected | 4.465 |
| 906 | | | | | SD of Detected | 174.9 | | | | | SD of Detected | 1.183 |
| 907 | | | | | Minimum Non-Detect | 5.5 | | | | | Minimum Non-Detect | 1.705 |
| 908 | | | | | Maximum Non-Detect | 5.5 | | | | | Maximum Non-Detect | 1.705 |
| 909 | | | | | | | | | | | | |
| 910 | | | | | | | | | | | | |
| 911 | **UCL Statistics** | | | | | | | | | | | |
| 912 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 913 | | | | | Shapiro Wilk Test Statistic | 0.781 | | | | | Shapiro Wilk Test Statistic | 0.969 |
| 914 | | | | | 5% Shapiro Wilk Critical Value | 0.887 | | | | | 5% Shapiro Wilk Critical Value | 0.887 |
| 915 | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 916 | | | | | | | | | | | | |
| 917 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 918 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 919 | | | | | Mean | 147.2 | | | | | Mean | 4.261 |
| 920 | | | | | SD | 173.4 | | | | | SD | 1.419 |
| 921 | | | | | 95% DL/2 (t) UCL | 220.6 | | | | | 95% H-Stat (DL/2) UCL | 469 |
| 922 | | | | | | | | | | | | |
| 923 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 924 | | | | | Mean | 141.4 | | | | | Mean in Log Scale | 4.292 |
| 925 | | | | | SD | 175.8 | | | | | SD in Log Scale | 1.348 |
| 926 | | | | | 95% MLE (t) UCL | 215.9 | | | | | Mean in Original Scale | 147.3 |
| 927 | | | | | 95% MLE (Tiku) UCL | 211.7 | | | | | SD in Original Scale | 173.3 |
| 928 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 216.3 |
| 929 | | | | | | | | | | | 95% BCA Bootstrap UCL | 238.6 |
| 930 | | | | | | | | | | | | |
| 931 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 932 | | | | | k star (bias corrected) | 0.842 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | |
| 933 | | | | | Theta Star | 185.5 | | | | | | |
| 934 | | | | | nu star | 26.95 | | | | | | |
| 935 | | | | | | | | | | | | |
| 936 | | | | | A-D Test Statistic | 0.259 | **Nonparametric Statistics** | | | | | |
| 937 | | | | | 5% A-D Critical Value | 0.764 | | | | | Kaplan-Meier (KM) Method | |
| 938 | | | | | K-S Test Statistic | 0.764 | | | | | Mean | 147.8 |
| 939 | | | | | 5% K-S Critical Value | 0.221 | | | | | SD | 167.8 |
| 940 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 42.02 |
| 941 | | | | | | | | | | | 95% KM (t) UCL | 221.2 |
| 942 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 216.9 |
| 943 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 220.9 |
| 944 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 285.3 |
| 945 | | | | | Maximum | 653 | | | | | 95% KM (BCA) UCL | 224.2 |
| 946 | | | | | Mean | 147.1 | | | | | 95% KM (Percentile Bootstrap) UCL | 221 |
| 947 | | | | | Median | 71 | | | | | 95% KM (Chebyshev) UCL | 331 |
| 948 | | | | | SD | 173.6 | | | | | 97.5% KM (Chebyshev) UCL | 410.2 |
| 949 | | | | | k star | 0.317 | | | | | 99% KM (Chebyshev) UCL | 565.9 |
| 950 | | | | | Theta star | 464.3 | | | | | | |
| 951 | | | | | Nu star | 10.77 | **Potential UCLs to Use** | | | | | |
| 952 | | | | | AppChi2 | 4.428 | | | | | 95% KM (Chebyshev) UCL | 331 |
| 953 | | | | | 95% Gamma Approximate UCL | 357.6 | | | | | | |
| 954 | | | | | 95% Adjusted Gamma UCL | 395 | | | | | | |

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| 955 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 956 | | | | | | | | | | | | |
| 957 | | | | | | | | | | | | |
| 958 | Dibenz_a,h_anthracene | | | | | | | | | | | |
| 959 | | | | | | | | | | | | |
| 960 | | | | | General Statistics | | | | | | | |
| 961 | | | | | Number of Valid Data | 17 | | | Number of Detected Data | | | 13 |
| 962 | | | | | Number of Distinct Detected Data | 11 | | | Number of Non-Detect Data | | | 4 |
| 963 | | | | | | | | | Percent Non-Detects | | | 23.53% |
| 964 | | | | | | | | | | | | |
| 965 | | | | Raw Statistics | | | | | Log-transformed Statistics | | | |
| 966 | | | | | Minimum Detected | 0.042 | | | Minimum Detected | | | -3.17 |
| 967 | | | | | Maximum Detected | 0.58 | | | Maximum Detected | | | -0.545 |
| 968 | | | | | Mean of Detected | 0.227 | | | Mean of Detected | | | -1.86 |
| 969 | | | | | SD of Detected | 0.192 | | | SD of Detected | | | 0.936 |
| 970 | | | | | Minimum Non-Detect | 0.0037 | | | Minimum Non-Detect | | | -5.599 |
| 971 | | | | | Maximum Non-Detect | 0.48 | | | Maximum Non-Detect | | | -0.734 |
| 972 | | | | | | | | | | | | |
| 973 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | Number treated as Non-Detect | | | 14 |
| 974 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | Number treated as Detected | | | 3 |
| 975 | Observations < Largest ND are treated as NDs | | | | | | | | Single DL Non-Detect Percentage | | | 82.35% |
| 976 | | | | | | | | | | | | |
| 977 | | | | | UCL Statistics | | | | | | | |
| 978 | | | | Normal Distribution Test with Detected Values Only | | | | | Lognormal Distribution Test with Detected Values Only | | | |
| 979 | | | | | Shapiro Wilk Test Statistic | 0.849 | | | Shapiro Wilk Test Statistic | | | 0.925 |
| 980 | | | | | 5% Shapiro Wilk Critical Value | 0.866 | | | 5% Shapiro Wilk Critical Value | | | 0.866 |
| 981 | | | | Data not Normal at 5% Significance Level | | | | | Data appear Lognormal at 5% Significance Level | | | |
| 982 | | | | | | | | | | | | |
| 983 | | | | Assuming Normal Distribution | | | | | Assuming Lognormal Distribution | | | |
| 984 | | | | | DL/2 Substitution Method | | | | DL/2 Substitution Method | | | |
| 985 | | | | | Mean | 0.212 | | | Mean | | | -2.062 |
| 986 | | | | | SD | 0.175 | | | SD | | | 1.366 |
| 987 | | | | | 95% DL/2 (t) UCL | 0.286 | | | 95% H-Stat (DL/2) UCL | | | 1.364 |
| 988 | | | | | | | | | | | | |
| 989 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | Log ROS Method | | | |
| 990 | | | | | Mean | 0.536 | | | Mean in Log Scale | | | -2.076 |
| 991 | | | | | SD | 0.0424 | | | SD in Log Scale | | | 0.973 |
| 992 | | | | | 95% MLE (t) UCL | 0.554 | | | Mean in Original Scale | | | 0.191 |
| 993 | | | | | 95% MLE (Tiku) UCL | 0.578 | | | SD in Original Scale | | | 0.179 |
| 994 | | | | | | | | | 95% Percentile Bootstrap UCL | | | 0.263 |
| 995 | | | | | | | | | 95% BCA Bootstrap UCL | | | 0.276 |
| 996 | | | | | | | | | | | | |
| 997 | | | | Gamma Distribution Test with Detected Values Only | | | | | Data Distribution Test with Detected Values Only | | | |
| 998 | | | | | k star (bias corrected) | 1.188 | | | Data appear Gamma Distributed at 5% Significance Level | | | |
| 999 | | | | | Theta Star | 0.191 | | | | | | |
| 1000 | | | | | nu star | 30.88 | | | | | | |
| 1001 | | | | | | | | | | | | |
| 1002 | | | | | A-D Test Statistic | 0.469 | | | Nonparametric Statistics | | | |
| 1003 | | | | | 5% A-D Critical Value | 0.751 | | | Kaplan-Meier (KM) Method | | | |
| 1004 | | | | | K-S Test Statistic | 0.751 | | | Mean | | | 0.197 |
| 1005 | | | | | 5% K-S Critical Value | 0.241 | | | SD | | | 0.174 |
| 1006 | | | | Data appear Gamma Distributed at 5% Significance Level | | | | | SE of Mean | | | 0.0453 |
| 1007 | | | | | | | | | 95% KM (t) UCL | | | 0.276 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1008 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 0.272 |
| 1009 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.276 |
| 1010 | | | | | Minimum | 0.0112 | | | | | 95% KM (bootstrap t) UCL | 0.301 |
| 1011 | | | | | Maximum | 0.58 | | | | | 95% KM (BCA) UCL | 0.279 |
| 1012 | | | | | Mean | 0.214 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.269 |
| 1013 | | | | | Median | 0.212 | | | | | 95% KM (Chebyshev) UCL | 0.394 |
| 1014 | | | | | SD | 0.174 | | | | | 97.5% KM (Chebyshev) UCL | 0.48 |
| 1015 | | | | | k star | 1.17 | | | | | 99% KM (Chebyshev) UCL | 0.647 |
| 1016 | | | | | Theta star | 0.183 | | | | | | |
| 1017 | | | | | Nu star | 39.78 | | | | Potential UCLs to Use | | |
| 1018 | | | | | AppChi2 | 26.33 | | | | | 95% KM (BCA) UCL | 0.279 |
| 1019 | | | | | 95% Gamma Approximate UCL | 0.323 | | | | | | |
| 1020 | | | | | 95% Adjusted Gamma UCL | 0.337 | | | | | | |
| 1021 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 1022 | | | | | | | | | | | | |
| 1023 | | | | | | | | | | | | |
| 1024 | Dibenzofuran | | | | | | | | | | | |
| 1025 | | | | | | | | | | | | |
| 1026 | | | | | General Statistics | | | | | | | |
| 1027 | | | | | Number of Valid Data | 17 | | | | | Number of Detected Data | 6 |
| 1028 | | | | | Number of Distinct Detected Data | 6 | | | | | Number of Non-Detect Data | 11 |
| 1029 | | | | | | | | | | | Percent Non-Detects | 64.71% |
| 1030 | | | | | | | | | | | | |
| 1031 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 1032 | | | | | Minimum Detected | 0.045 | | | | | Minimum Detected | -3.101 |
| 1033 | | | | | Maximum Detected | 0.1 | | | | | Maximum Detected | -2.303 |
| 1034 | | | | | Mean of Detected | 0.0755 | | | | | Mean of Detected | -2.619 |
| 1035 | | | | | SD of Detected | 0.0207 | | | | | SD of Detected | 0.299 |
| 1036 | | | | | Minimum Non-Detect | 0.15 | | | | | Minimum Non-Detect | -1.897 |
| 1037 | | | | | Maximum Non-Detect | 0.53 | | | | | Maximum Non-Detect | -0.635 |
| 1038 | | | | | | | | | | | | |
| 1039 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 17 |
| 1040 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 1041 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 1042 | | | | | | | | | | | | |
| 1043 | | | | Warning: There are only 6 Detected Values in this data | | | | | | | | |
| 1044 | | | | Note: It should be noted that even though bootstrap may be performed on this data set | | | | | | | | |
| 1045 | | | | the resulting calculations may not be reliable enough to draw conclusions | | | | | | | | |
| 1046 | | | | | | | | | | | | |
| 1047 | | | | It is recommended to have 10-15 or more distinct observations for accurate and meaningful results. | | | | | | | | |
| 1048 | | | | | | | | | | | | |
| 1049 | | | | | | | | | | | | |
| 1050 | | | | | UCL Statistics | | | | | | | |
| 1051 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 1052 | | | | | Shapiro Wilk Test Statistic | 0.949 | | | | | Shapiro Wilk Test Statistic | 0.927 |
| 1053 | | | | | 5% Shapiro Wilk Critical Value | 0.788 | | | | | 5% Shapiro Wilk Critical Value | 0.788 |
| 1054 | | | | Data appear Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 1055 | | | | | | | | | | | | |
| 1056 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 1057 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1058 | | | | | Mean | 0.15 | | | | | Mean | -2.037 |
| 1059 | | | | | SD | 0.0756 | | | | | SD | 0.577 |
| 1060 | | | | | 95% DL/2 (t) UCL | 0.182 | | | | | 95% H-Stat (DL/2) UCL | 0.442 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1061 | | | | | | | | | | | | |
| 1062 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | | Log ROS Method | |
| 1063 | | | | **MLE method failed to converge properly** | | | | | | | Mean in Log Scale | -2.619 |
| 1064 | | | | | | | | | | | SD in Log Scale | 0.167 |
| 1065 | | | | | | | | | | | Mean in Original Scale | 0.0738 |
| 1066 | | | | | | | | | | | SD in Original Scale | 0.0117 |
| 1067 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.0782 |
| 1068 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.0785 |
| 1069 | | | | | | | | | | | | |
| 1070 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 1071 | | | | | k star (bias corrected) | 7.308 | | | | **Data appear Normal at 5% Significance Level** | | |
| 1072 | | | | | Theta Star | 0.0103 | | | | | | |
| 1073 | | | | | nu star | 87.7 | | | | | | |
| 1074 | | | | | | | | | | | | |
| 1075 | | | | | A-D Test Statistic | 0.299 | | | | **Nonparametric Statistics** | | |
| 1076 | | | | | 5% A-D Critical Value | 0.698 | | | | | Kaplan-Meier (KM) Method | |
| 1077 | | | | | K-S Test Statistic | 0.698 | | | | | Mean | 0.0755 |
| 1078 | | | | | 5% K-S Critical Value | 0.332 | | | | | SD | 0.0189 |
| 1079 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 0.00846 |
| 1080 | | | | | | | | | | | 95% KM (t) UCL | 0.0903 |
| 1081 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 0.0894 |
| 1082 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.0912 |
| 1083 | | | | | Minimum | 0.045 | | | | | 95% KM (bootstrap t) UCL | 0.0911 |
| 1084 | | | | | Maximum | 0.1 | | | | | 95% KM (BCA) UCL | 0.0878 |
| 1085 | | | | | Mean | 0.0777 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0892 |
| 1086 | | | | | Median | 0.0789 | | | | | 95% KM (Chebyshev) UCL | 0.112 |
| 1087 | | | | | SD | 0.0117 | | | | | 97.5% KM (Chebyshev) UCL | 0.128 |
| 1088 | | | | | k star | 32.79 | | | | | 99% KM (Chebyshev) UCL | 0.16 |
| 1089 | | | | | Theta star | 0.00237 | | | | | | |
| 1090 | | | | | Nu star | 1115 | | | | **Potential UCLs to Use** | | |
| 1091 | | | | | AppChi2 | 1038 | | | | | 95% KM (t) UCL | 0.0903 |
| 1092 | | | | | 95% Gamma Approximate UCL | 0.0834 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0892 |
| 1093 | | | | | 95% Adjusted Gamma UCL | 0.0841 | | | | | | |
| 1094 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1095 | | | | | | | | | | | | |
| 1096 | | | | | | | | | | | | |
| 1097 | **Dieldrin** | | | | | | | | | | | |
| 1098 | | | | | | | | | | | | |
| 1099 | | | | | | **General Statistics** | | | | | | |
| 1100 | | | | | Number of Valid Data | 14 | | | | | Number of Detected Data | 6 |
| 1101 | | | | | Number of Distinct Detected Data | 6 | | | | | Number of Non-Detect Data | 8 |
| 1102 | | | | | | | | | | | Percent Non-Detects | 57.14% |
| 1103 | | | | | | | | | | | | |
| 1104 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1105 | | | | | Minimum Detected | 0.002 | | | | | Minimum Detected | -6.215 |
| 1106 | | | | | Maximum Detected | 0.021 | | | | | Maximum Detected | -3.863 |
| 1107 | | | | | Mean of Detected | 0.0105 | | | | | Mean of Detected | -4.896 |
| 1108 | | | | | SD of Detected | 0.00828 | | | | | SD of Detected | 0.97 |
| 1109 | | | | | Minimum Non-Detect | 0.00072 | | | | | Minimum Non-Detect | -7.236 |
| 1110 | | | | | Maximum Non-Detect | 0.0011 | | | | | Maximum Non-Detect | -6.812 |
| 1111 | | | | | | | | | | | | |
| 1112 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 8 |
| 1113 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 6 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1114 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 57.14% |
| 1115 | | | | | | | | | | | | |
| 1116 | **Warning: There are only 6 Detected Values in this data** | | | | | | | | | | | |
| 1117 | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | | | | | |
| 1118 | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | | | | | |
| 1119 | | | | | | | | | | | | |
| 1120 | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | | | | | |
| 1121 | | | | | | | | | | | | |
| 1122 | | | | | | | | | | | | |
| 1123 | **UCL Statistics** | | | | | | | | | | | |
| 1124 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 1125 | | | | | Shapiro Wilk Test Statistic | 0.862 | | | | Shapiro Wilk Test Statistic | | 0.892 |
| 1126 | | | | | 5% Shapiro Wilk Critical Value | 0.788 | | | | 5% Shapiro Wilk Critical Value | | 0.788 |
| 1127 | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 1128 | | | | | | | | | | | | |
| 1129 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 1130 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 1131 | | | | | Mean | 0.00475 | | | | Mean | | -6.55 |
| 1132 | | | | | SD | 0.00731 | | | | SD | | 1.607 |
| 1133 | | | | | 95% DL/2 (t) UCL | 0.00821 | | | | 95% H-Stat (DL/2) UCL | | 0.0225 |
| 1134 | | | | | | | | | | | | |
| 1135 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 1136 | **MLE yields a negative mean** | | | | | | | | | Mean in Log Scale | | -6.56 |
| 1137 | | | | | | | | | | SD in Log Scale | | 1.611 |
| 1138 | | | | | | | | | | Mean in Original Scale | | 0.00475 |
| 1139 | | | | | | | | | | SD in Original Scale | | 0.00731 |
| 1140 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.008 |
| 1141 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.00866 |
| 1142 | | | | | | | | | | | | |
| 1143 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 1144 | | | | | k star (bias corrected) | 0.913 | **Data appear Normal at 5% Significance Level** | | | | | |
| 1145 | | | | | Theta Star | 0.0115 | | | | | | |
| 1146 | | | | | nu star | 10.95 | | | | | | |
| 1147 | | | | | | | | | | | | |
| 1148 | | | | | A-D Test Statistic | 0.442 | **Nonparametric Statistics** | | | | | |
| 1149 | | | | | 5% A-D Critical Value | 0.707 | | | | Kaplan-Meier (KM) Method | | |
| 1150 | | | | | K-S Test Statistic | 0.707 | | | | Mean | | 0.00566 |
| 1151 | | | | | 5% K-S Critical Value | 0.337 | | | | SD | | 0.00651 |
| 1152 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | SE of Mean | | 0.0019 |
| 1153 | | | | | | | | | | 95% KM (t) UCL | | 0.00903 |
| 1154 | **Assuming Gamma Distribution** | | | | | | | | | 95% KM (z) UCL | | 0.00879 |
| 1155 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | | 0.00855 |
| 1156 | | | | | Minimum | 0.002 | | | | 95% KM (bootstrap t) UCL | | 0.00888 |
| 1157 | | | | | Maximum | 0.021 | | | | 95% KM (BCA) UCL | | 0.014 |
| 1158 | | | | | Mean | 0.0105 | | | | 95% KM (Percentile Bootstrap) UCL | | 0.0099 |
| 1159 | | | | | Median | 0.0105 | | | | 95% KM (Chebyshev) UCL | | 0.014 |
| 1160 | | | | | SD | 0.00514 | | | | 97.5% KM (Chebyshev) UCL | | 0.0176 |
| 1161 | | | | | k star | 2.843 | | | | 99% KM (Chebyshev) UCL | | 0.0246 |
| 1162 | | | | | Theta star | 0.0037 | | | | | | |
| 1163 | | | | | Nu star | 79.61 | **Potential UCLs to Use** | | | | | |
| 1164 | | | | | AppChi2 | 60.05 | | | | 95% KM (t) UCL | | 0.00903 |
| 1165 | | | | | 95% Gamma Approximate UCL | 0.014 | | | | 95% KM (Percentile Bootstrap) UCL | | 0.0099 |
| 1166 | | | | | 95% Adjusted Gamma UCL | 0.0145 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1167 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 1168 | | | | | | | | | | | | |
| 1169 | | | | | | | | | | | | |
| 1170 | Indeno(1,2,3-cd)pyrene | | | | | | | | | | | |
| 1171 | | | | | | | | | | | | |
| 1172 | | | | | General Statistics | | | | | | | |
| 1173 | | | | | Number of Valid Data | 17 | | | Number of Detected Data | | | 16 |
| 1174 | | | | | Number of Distinct Detected Data | 13 | | | Number of Non-Detect Data | | | 1 |
| 1175 | | | | | | | | | Percent Non-Detects | | | 5.88% |
| 1176 | | | | | | | | | | | | |
| 1177 | | | Raw Statistics | | | | | | Log-transformed Statistics | | | |
| 1178 | | | | | Minimum Detected | 0.13 | | | Minimum Detected | | | -2.04 |
| 1179 | | | | | Maximum Detected | 1.4 | | | Maximum Detected | | | 0.336 |
| 1180 | | | | | Mean of Detected | 0.608 | | | Mean of Detected | | | -0.774 |
| 1181 | | | | | SD of Detected | 0.448 | | | SD of Detected | | | 0.8 |
| 1182 | | | | | Minimum Non-Detect | 0.0037 | | | Minimum Non-Detect | | | -5.599 |
| 1183 | | | | | Maximum Non-Detect | 0.0037 | | | Maximum Non-Detect | | | -5.599 |
| 1184 | | | | | | | | | | | | |
| 1185 | | | | | | | | | | | | |
| 1186 | | | | | UCL Statistics | | | | | | | |
| 1187 | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | |
| 1188 | | | | | Shapiro Wilk Test Statistic | 0.847 | | | Shapiro Wilk Test Statistic | | | 0.93 |
| 1189 | | | | | 5% Shapiro Wilk Critical Value | 0.887 | | | 5% Shapiro Wilk Critical Value | | | 0.887 |
| 1190 | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | | |
| 1191 | | | | | | | | | | | | |
| 1192 | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | |
| 1193 | | | | | DL/2 Substitution Method | | | | DL/2 Substitution Method | | | |
| 1194 | | | | | Mean | 0.573 | | | Mean | | | -1.098 |
| 1195 | | | | | SD | 0.458 | | | SD | | | 1.547 |
| 1196 | | | | | 95% DL/2 (t) UCL | 0.767 | | | 95% H-Stat (DL/2) UCL | | | 2.758 |
| 1197 | | | | | | | | | | | | |
| 1198 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | Log ROS Method | | | |
| 1199 | | | | | Mean | 0.559 | | | Mean in Log Scale | | | -0.889 |
| 1200 | | | | | SD | 0.466 | | | SD in Log Scale | | | 0.908 |
| 1201 | | | | | 95% MLE (t) UCL | 0.757 | | | Mean in Original Scale | | | 0.577 |
| 1202 | | | | | 95% MLE (Tiku) UCL | 0.753 | | | SD in Original Scale | | | 0.453 |
| 1203 | | | | | | | | | 95% Percentile Bootstrap UCL | | | 0.758 |
| 1204 | | | | | | | | | 95% BCA Bootstrap UCL | | | 0.785 |
| 1205 | | | | | | | | | | | | |
| 1206 | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | |
| 1207 | | | | | k star (bias corrected) | 1.631 | | | Data appear Gamma Distributed at 5% Significance Level | | | |
| 1208 | | | | | Theta Star | 0.373 | | | | | | |
| 1209 | | | | | nu star | 52.18 | | | | | | |
| 1210 | | | | | | | | | | | | |
| 1211 | | | | | A-D Test Statistic | 0.435 | | | Nonparametric Statistics | | | |
| 1212 | | | | | 5% A-D Critical Value | 0.751 | | | Kaplan-Meier (KM) Method | | | |
| 1213 | | | | | K-S Test Statistic | 0.751 | | | Mean | | | 0.58 |
| 1214 | | | | | 5% K-S Critical Value | 0.218 | | | SD | | | 0.435 |
| 1215 | | | Data appear Gamma Distributed at 5% Significance Level | | | | | | SE of Mean | | | 0.109 |
| 1216 | | | | | | | | | 95% KM (t) UCL | | | 0.771 |
| 1217 | | | Assuming Gamma Distribution | | | | | | 95% KM (z) UCL | | | 0.76 |
| 1218 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | 95% KM (jackknife) UCL | | | 0.77 |
| 1219 | | | | | Minimum | 1E-09 | | | 95% KM (bootstrap t) UCL | | | 0.833 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1220 | | | | | Maximum | 1.4 | | | | 95% KM (BCA) UCL | | 0.771 |
| 1221 | | | | | Mean | 0.573 | | | | 95% KM (Percentile Bootstrap) UCL | | 0.766 |
| 1222 | | | | | Median | 0.46 | | | | 95% KM (Chebyshev) UCL | | 1.055 |
| 1223 | | | | | SD | 0.458 | | | | 97.5% KM (Chebyshev) UCL | | 1.261 |
| 1224 | | | | | k star | 0.42 | | | | 99% KM (Chebyshev) UCL | | 1.665 |
| 1225 | | | | | Theta star | 1.363 | | | | | | |
| 1226 | | | | | Nu star | 14.29 | | | | **Potential UCLs to Use** | | |
| 1227 | | | | | AppChi2 | 6.768 | | | | 95% KM (Chebyshev) UCL | | 1.055 |
| 1228 | | | | | 95% Gamma Approximate UCL | 1.209 | | | | | | |
| 1229 | | | | | 95% Adjusted Gamma UCL | 1.313 | | | | | | |
| 1230 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1231 | | | | | | | | | | | | |
| 1232 | | | | | | | | | | | | |
| 1233 | **Iron** | | | | | | | | | | | |
| 1234 | | | | | | | | | | | | |
| 1235 | | | | | **General Statistics** | | | | | | | |
| 1236 | | | | | Number of Valid Observations | 17 | | | | Number of Distinct Observations | | 17 |
| 1237 | | | | | | | | | | | | |
| 1238 | | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | | |
| 1239 | | | | | Minimum | 4155 | | | | Minimum of Log Data | | 8.332 |
| 1240 | | | | | Maximum | 49600 | | | | Maximum of Log Data | | 10.81 |
| 1241 | | | | | Mean | 13591 | | | | Mean of log Data | | 9.288 |
| 1242 | | | | | Median | 11700 | | | | SD of log Data | | 0.672 |
| 1243 | | | | | SD | 11005 | | | | | | |
| 1244 | | | | | Coefficient of Variation | 0.81 | | | | | | |
| 1245 | | | | | Skewness | 2.376 | | | | | | |
| 1246 | | | | | | | | | | | | |
| 1247 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 1248 | | | | | **Normal Distribution Test** | | | | | **Lognormal Distribution Test** | | |
| 1249 | | | | | Shapiro Wilk Test Statistic | 0.753 | | | | Shapiro Wilk Test Statistic | | 0.964 |
| 1250 | | | | | Shapiro Wilk Critical Value | 0.892 | | | | Shapiro Wilk Critical Value | | 0.892 |
| 1251 | | | | | **Data not Normal at 5% Significance Level** | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1252 | | | | | | | | | | | | |
| 1253 | | | | | **Assuming Normal Distribution** | | | | | **Assuming Lognormal Distribution** | | |
| 1254 | | | | | 95% Student's-t UCL | 18251 | | | | 95% H-UCL | | 19696 |
| 1255 | | | | | **95% UCLs (Adjusted for Skewness)** | | | | | 95% Chebyshev (MVUE) UCL | | 23353 |
| 1256 | | | | | 95% Adjusted-CLT UCL | 19625 | | | | 97.5% Chebyshev (MVUE) UCL | | 27685 |
| 1257 | | | | | 95% Modified-t UCL | 18508 | | | | 99% Chebyshev (MVUE) UCL | | 36194 |
| 1258 | | | | | | | | | | | | |
| 1259 | | | | | **Gamma Distribution Test** | | | | | **Data Distribution** | | |
| 1260 | | | | | k star (bias corrected) | 1.965 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 1261 | | | | | Theta Star | 6918 | | | | | | |
| 1262 | | | | | MLE of Mean | 13591 | | | | | | |
| 1263 | | | | | MLE of Standard Deviation | 9696 | | | | | | |
| 1264 | | | | | nu star | 66.8 | | | | | | |
| 1265 | | | | | Approximate Chi Square Value (.05) | 48.99 | | | | **Nonparametric Statistics** | | |
| 1266 | | | | | Adjusted Level of Significance | 0.0346 | | | | 95% CLT UCL | | 17982 |
| 1267 | | | | | Adjusted Chi Square Value | 47.4 | | | | 95% Jackknife UCL | | 18251 |
| 1268 | | | | | | | | | | 95% Standard Bootstrap UCL | | 17825 |
| 1269 | | | | | Anderson-Darling Test Statistic | 0.369 | | | | 95% Bootstrap-t UCL | | 22048 |
| 1270 | | | | | Anderson-Darling 5% Critical Value | 0.748 | | | | 95% Hall's Bootstrap UCL | | 38077 |
| 1271 | | | | | Kolmogorov-Smirnov Test Statistic | 0.123 | | | | 95% Percentile Bootstrap UCL | | 18386 |
| 1272 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.211 | | | | 95% BCA Bootstrap UCL | | 19221 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1273 | Data appear Gamma Distributed at 5% Significance Level | | | | | | | | | | 95% Chebyshev(Mean, Sd) UCL | 25225 |
| 1274 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 30259 |
| 1275 | Assuming Gamma Distribution | | | | | | | | | | 99% Chebyshev(Mean, Sd) UCL | 40148 |
| 1276 | | | | | 95% Approximate Gamma UCL | 18532 | | | | | | |
| 1277 | | | | | 95% Adjusted Gamma UCL | 19157 | | | | | | |
| 1278 | | | | | | | | | | | | |
| 1279 | Potential UCL to Use | | | | | | | | | | Use 95% Approximate Gamma UCL | 18532 |
| 1280 | | | | | | | | | | | | |
| 1281 | | | | | | | | | | | | |
| 1282 | Lead | | | | | | | | | | | |
| 1283 | | | | | | | | | | | | |
| 1284 | | | | | | General Statistics | | | | | | |
| 1285 | | | | | Number of Valid Observations | 17 | | | | | Number of Distinct Observations | 17 |
| 1286 | | | | | | | | | | | | |
| 1287 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 1288 | | | | | Minimum | 3 | | | | | Minimum of Log Data | 1.099 |
| 1289 | | | | | Maximum | 1760 | | | | | Maximum of Log Data | 7.473 |
| 1290 | | | | | Mean | 260.4 | | | | | Mean of log Data | 4.415 |
| 1291 | | | | | Median | 95 | | | | | SD of log Data | 1.588 |
| 1292 | | | | | SD | 488.2 | | | | | | |
| 1293 | | | | | Coefficient of Variation | 1.875 | | | | | | |
| 1294 | | | | | Skewness | 2.651 | | | | | | |
| 1295 | | | | | | | | | | | | |
| 1296 | | | | | | Relevant UCL Statistics | | | | | | |
| 1297 | | | | Normal Distribution Test | | | | | | Lognormal Distribution Test | | |
| 1298 | | | | | Shapiro Wilk Test Statistic | 0.531 | | | | | Shapiro Wilk Test Statistic | 0.972 |
| 1299 | | | | | Shapiro Wilk Critical Value | 0.892 | | | | | Shapiro Wilk Critical Value | 0.892 |
| 1300 | | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 1301 | | | | | | | | | | | | |
| 1302 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 1303 | | | | | 95% Student's-t UCL | 467.2 | | | | | 95% H-UCL | 1237 |
| 1304 | | | | 95% UCLs (Adjusted for Skewness) | | | | | | | 95% Chebyshev (MVUE) UCL | 751.2 |
| 1305 | | | | | 95% Adjusted-CLT UCL | 536.6 | | | | | 97.5% Chebyshev (MVUE) UCL | 966.8 |
| 1306 | | | | | 95% Modified-t UCL | 479.9 | | | | | 99% Chebyshev (MVUE) UCL | 1390 |
| 1307 | | | | | | | | | | | | |
| 1308 | | | | Gamma Distribution Test | | | | | | Data Distribution | | |
| 1309 | | | | | k star (bias corrected) | 0.489 | | | | Data appear Lognormal at 5% Significance Level | | |
| 1310 | | | | | Theta Star | 532.7 | | | | | | |
| 1311 | | | | | MLE of Mean | 260.4 | | | | | | |
| 1312 | | | | | MLE of Standard Deviation | 372.5 | | | | | | |
| 1313 | | | | | nu star | 16.62 | | | | | | |
| 1314 | | | | | Approximate Chi Square Value (.05) | 8.404 | | | | Nonparametric Statistics | | |
| 1315 | | | | | Adjusted Level of Significance | 0.0346 | | | | | 95% CLT UCL | 455.2 |
| 1316 | | | | | Adjusted Chi Square Value | 7.797 | | | | | 95% Jackknife UCL | 467.2 |
| 1317 | | | | | | | | | | | 95% Standard Bootstrap UCL | 447.4 |
| 1318 | | | | | Anderson-Darling Test Statistic | 0.94 | | | | | 95% Bootstrap-t UCL | 1461 |
| 1319 | | | | | Anderson-Darling 5% Critical Value | 0.794 | | | | | 95% Hall's Bootstrap UCL | 1594 |
| 1320 | | | | | Kolmogorov-Smirnov Test Statistic | 0.228 | | | | | 95% Percentile Bootstrap UCL | 480.2 |
| 1321 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.22 | | | | | 95% BCA Bootstrap UCL | 545.3 |
| 1322 | | | | Data not Gamma Distributed at 5% Significance Level | | | | | | | 95% Chebyshev(Mean, Sd) UCL | 776.6 |
| 1323 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 999.9 |
| 1324 | | | | Assuming Gamma Distribution | | | | | | | 99% Chebyshev(Mean, Sd) UCL | 1439 |
| 1325 | | | | | 95% Approximate Gamma UCL | 515.2 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1326 | | | | | 95% Adjusted Gamma UCL | 555.3 | | | | | | |
| 1327 | | | | | | | | | | | | |
| 1328 | | | | **Potential UCL to Use** | | | | | | Use 99% Chebyshev (Mean, Sd) UCL | | 1439 |
| 1329 | | | | | | | | | | | | |
| 1330 | | | | | | | | | | | | |
| 1331 | **Manganese** | | | | | | | | | | | |
| 1332 | | | | | | | | | | | | |
| 1333 | | | | | **General Statistics** | | | | | | | |
| 1334 | | | | | Number of Valid Observations | 17 | | | | Number of Distinct Observations | | 16 |
| 1335 | | | | | | | | | | | | |
| 1336 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1337 | | | | | Minimum | 63.3 | | | | Minimum of Log Data | | 4.148 |
| 1338 | | | | | Maximum | 450 | | | | Maximum of Log Data | | 6.109 |
| 1339 | | | | | Mean | 187.4 | | | | Mean of log Data | | 5.05 |
| 1340 | | | | | Median | 150 | | | | SD of log Data | | 0.638 |
| 1341 | | | | | SD | 113.4 | | | | | | |
| 1342 | | | | | Coefficient of Variation | 0.605 | | | | | | |
| 1343 | | | | | Skewness | 0.744 | | | | | | |
| 1344 | | | | | | | | | | | | |
| 1345 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 1346 | | | | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | |
| 1347 | | | | | Shapiro Wilk Test Statistic | 0.901 | | | | Shapiro Wilk Test Statistic | | 0.921 |
| 1348 | | | | | Shapiro Wilk Critical Value | 0.892 | | | | Shapiro Wilk Critical Value | | 0.892 |
| 1349 | | | | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1350 | | | | | | | | | | | | |
| 1351 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1352 | | | | | 95% Student's-t UCL | 235.4 | | | | 95% H-UCL | | 271.1 |
| 1353 | | | | **95% UCLs (Adjusted for Skewness)** | | | | | | 95% Chebyshev (MVUE) UCL | | 322.4 |
| 1354 | | | | | 95% Adjusted-CLT UCL | 237.9 | | | | 97.5% Chebyshev (MVUE) UCL | | 380.3 |
| 1355 | | | | | 95% Modified-t UCL | 236.2 | | | | 99% Chebyshev (MVUE) UCL | | 494.1 |
| 1356 | | | | | | | | | | | | |
| 1357 | | | | **Gamma Distribution Test** | | | | | | **Data Distribution** | | |
| 1358 | | | | | k star (bias corrected) | 2.414 | | | | **Data appear Normal at 5% Significance Level** | | |
| 1359 | | | | | Theta Star | 77.62 | | | | | | |
| 1360 | | | | | MLE of Mean | 187.4 | | | | | | |
| 1361 | | | | | MLE of Standard Deviation | 120.6 | | | | | | |
| 1362 | | | | | nu star | 82.08 | | | | | | |
| 1363 | | | | | Approximate Chi Square Value (.05) | 62.2 | | | | **Nonparametric Statistics** | | |
| 1364 | | | | | Adjusted Level of Significance | 0.0346 | | | | 95% CLT UCL | | 232.6 |
| 1365 | | | | | Adjusted Chi Square Value | 60.39 | | | | 95% Jackknife UCL | | 235.4 |
| 1366 | | | | | | | | | | 95% Standard Bootstrap UCL | | 231.1 |
| 1367 | | | | | Anderson-Darling Test Statistic | 0.527 | | | | 95% Bootstrap-t UCL | | 241.5 |
| 1368 | | | | | Anderson-Darling 5% Critical Value | 0.746 | | | | 95% Hall's Bootstrap UCL | | 240.8 |
| 1369 | | | | | Kolmogorov-Smirnov Test Statistic | 0.164 | | | | 95% Percentile Bootstrap UCL | | 233.1 |
| 1370 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.211 | | | | 95% BCA Bootstrap UCL | | 239.8 |
| 1371 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | 95% Chebyshev(Mean, Sd) UCL | | 307.3 |
| 1372 | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 359.2 |
| 1373 | | | | **Assuming Gamma Distribution** | | | | | | 99% Chebyshev(Mean, Sd) UCL | | 461.1 |
| 1374 | | | | | 95% Approximate Gamma UCL | 247.3 | | | | | | |
| 1375 | | | | | 95% Adjusted Gamma UCL | 254.7 | | | | | | |
| 1376 | | | | | | | | | | | | |
| 1377 | | | | **Potential UCL to Use** | | | | | | Use 95% Student's-t UCL | | 235.4 |
| 1378 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1379 | | | | | | | | | | | | |
| 1380 | Mercury | | | | | | | | | | | |
| 1381 | | | | | | | | | | | | |
| 1382 | | | | | | General Statistics | | | | | | |
| 1383 | | | | | Number of Valid Data | 17 | | | | Number of Detected Data | | 15 |
| 1384 | | | | | Number of Distinct Detected Data | 14 | | | | Number of Non-Detect Data | | 2 |
| 1385 | | | | | | | | | | Percent Non-Detects | | 11.76% |
| 1386 | | | | | | | | | | | | |
| 1387 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 1388 | | | | | Minimum Detected | 0.064 | | | | Minimum Detected | | -2.749 |
| 1389 | | | | | Maximum Detected | 1.1 | | | | Maximum Detected | | 0.0953 |
| 1390 | | | | | Mean of Detected | 0.445 | | | | Mean of Detected | | -1.094 |
| 1391 | | | | | SD of Detected | 0.294 | | | | SD of Detected | | 0.877 |
| 1392 | | | | | Minimum Non-Detect | 0.045 | | | | Minimum Non-Detect | | -3.101 |
| 1393 | | | | | Maximum Non-Detect | 0.048 | | | | Maximum Non-Detect | | -3.037 |
| 1394 | | | | | | | | | | | | |
| 1395 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 2 |
| 1396 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 15 |
| 1397 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 11.76% |
| 1398 | | | | | | | | | | | | |
| 1399 | | | | | | UCL Statistics | | | | | | |
| 1400 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 1401 | | | | | Shapiro Wilk Test Statistic | 0.941 | | | | Shapiro Wilk Test Statistic | | 0.899 |
| 1402 | | | | | 5% Shapiro Wilk Critical Value | 0.881 | | | | 5% Shapiro Wilk Critical Value | | 0.881 |
| 1403 | | | | Data appear Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 1404 | | | | | | | | | | | | |
| 1405 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 1406 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 1407 | | | | | Mean | 0.395 | | | | Mean | | -1.408 |
| 1408 | | | | | SD | 0.309 | | | | SD | | 1.208 |
| 1409 | | | | | 95% DL/2 (t) UCL | 0.526 | | | | 95% H-Stat (DL/2) UCL | | 0.846 |
| 1410 | | | | | | | | | | | | |
| 1411 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | Log ROS Method | | |
| 1412 | | | | | Mean | 0.378 | | | | Mean in Log Scale | | -1.324 |
| 1413 | | | | | SD | 0.327 | | | | SD in Log Scale | | 1.045 |
| 1414 | | | | | 95% MLE (t) UCL | 0.517 | | | | Mean in Original Scale | | 0.398 |
| 1415 | | | | | 95% MLE (Tiku) UCL | 0.516 | | | | SD in Original Scale | | 0.305 |
| 1416 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.523 |
| 1417 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.526 |
| 1418 | | | | | | | | | | | | |
| 1419 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 1420 | | | | | k star (bias corrected) | 1.57 | | | | Data appear Normal at 5% Significance Level | | |
| 1421 | | | | | Theta Star | 0.283 | | | | | | |
| 1422 | | | | | nu star | 47.1 | | | | | | |
| 1423 | | | | | | | | | | | | |
| 1424 | | | | | A-D Test Statistic | 0.436 | | | | Nonparametric Statistics | | |
| 1425 | | | | | 5% A-D Critical Value | 0.748 | | | | Kaplan-Meier (KM) Method | | |
| 1426 | | | | | K-S Test Statistic | 0.748 | | | | Mean | | 0.4 |
| 1427 | | | | | 5% K-S Critical Value | 0.225 | | | | SD | | 0.294 |
| 1428 | | | | Data appear Gamma Distributed at 5% Significance Level | | | | | | SE of Mean | | 0.0737 |
| 1429 | | | | | | | | | | 95% KM (t) UCL | | 0.529 |
| 1430 | | | | Assuming Gamma Distribution | | | | | | 95% KM (z) UCL | | 0.521 |
| 1431 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | | 0.528 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1432 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 0.539 |
| 1433 | | | | | Maximum | 1.1 | | | | | 95% KM (BCA) UCL | 0.525 |
| 1434 | | | | | Mean | 0.393 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.525 |
| 1435 | | | | | Median | 0.31 | | | | | 95% KM (Chebyshev) UCL | 0.721 |
| 1436 | | | | | SD | 0.312 | | | | | 97.5% KM (Chebyshev) UCL | 0.86 |
| 1437 | | | | | k star | 0.272 | | | | | 99% KM (Chebyshev) UCL | 1.134 |
| 1438 | | | | | Theta star | 1.446 | | | | | | |
| 1439 | | | | | Nu star | 9.233 | | | | | **Potential UCLs to Use** | |
| 1440 | | | | | AppChi2 | 3.468 | | | | | 95% KM (t) UCL | 0.529 |
| 1441 | | | | | 95% Gamma Approximate UCL | 1.045 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.525 |
| 1442 | | | | | 95% Adjusted Gamma UCL | 1.167 | | | | | | |
| 1443 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1444 | | | | | | | | | | | | |
| 1445 | | | | | | | | | | | | |
| 1446 | **Phenanthrene** | | | | | | | | | | | |
| 1447 | | | | | | | | | | | | |
| 1448 | | | | | **General Statistics** | | | | | | | |
| 1449 | | | | | Number of Valid Data | 17 | | | | | Number of Detected Data | 16 |
| 1450 | | | | | Number of Distinct Detected Data | 15 | | | | | Number of Non-Detect Data | 1 |
| 1451 | | | | | | | | | | | Percent Non-Detects | 5.88% |
| 1452 | | | | | | | | | | | | |
| 1453 | | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | |
| 1454 | | | | | Minimum Detected | 0.093 | | | | | Minimum Detected | -2.375 |
| 1455 | | | | | Maximum Detected | 2.775 | | | | | Maximum Detected | 1.021 |
| 1456 | | | | | Mean of Detected | 1.098 | | | | | Mean of Detected | -0.209 |
| 1457 | | | | | SD of Detected | 0.789 | | | | | SD of Detected | 0.895 |
| 1458 | | | | | Minimum Non-Detect | 0.0037 | | | | | Minimum Non-Detect | -5.599 |
| 1459 | | | | | Maximum Non-Detect | 0.0037 | | | | | Maximum Non-Detect | -5.599 |
| 1460 | | | | | | | | | | | | |
| 1461 | | | | | | | | | | | | |
| 1462 | | | | | **UCL Statistics** | | | | | | | |
| 1463 | | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | |
| 1464 | | | | | Shapiro Wilk Test Statistic | 0.921 | | | | | Shapiro Wilk Test Statistic | 0.949 |
| 1465 | | | | | 5% Shapiro Wilk Critical Value | 0.887 | | | | | 5% Shapiro Wilk Critical Value | 0.887 |
| 1466 | | | | | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | |
| 1467 | | | | | | | | | | | | |
| 1468 | | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | |
| 1469 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1470 | | | | | Mean | 1.034 | | | | | Mean | -0.567 |
| 1471 | | | | | SD | 0.809 | | | | | SD | 1.711 |
| 1472 | | | | | 95% DL/2 (t) UCL | 1.376 | | | | | 95% H-Stat (DL/2) UCL | 7.571 |
| 1473 | | | | | | | | | | | | |
| 1474 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 1475 | | | | | Mean | 1.01 | | | | | Mean in Log Scale | -0.335 |
| 1476 | | | | | SD | 0.824 | | | | | SD in Log Scale | 1.01 |
| 1477 | | | | | 95% MLE (t) UCL | 1.359 | | | | | Mean in Original Scale | 1.039 |
| 1478 | | | | | 95% MLE (Tiku) UCL | 1.353 | | | | | SD in Original Scale | 0.802 |
| 1479 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 1.374 |
| 1480 | | | | | | | | | | | 95% BCA Bootstrap UCL | 1.403 |
| 1481 | | | | | | | | | | | | |
| 1482 | | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | |
| 1483 | | | | | k star (bias corrected) | 1.506 | | | | | **Data appear Normal at 5% Significance Level** | |
| 1484 | | | | | Theta Star | 0.729 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
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| 1485 | | | | | nu star | 48.2 | | | | | | |
| 1486 | | | | | | | | | | | | |
| 1487 | | | | | A-D Test Statistic | 0.143 | **Nonparametric Statistics** | | | | | |
| 1488 | | | | | 5% A-D Critical Value | 0.752 | | | | | Kaplan-Meier (KM) Method | |
| 1489 | | | | | K-S Test Statistic | 0.752 | | | | | Mean | 1.039 |
| 1490 | | | | | 5% K-S Critical Value | 0.218 | | | | | SD | 0.778 |
| 1491 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.195 |
| 1492 | | | | | | | | | | | 95% KM (t) UCL | 1.379 |
| 1493 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 1.359 |
| 1494 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 1.374 |
| 1495 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 1.459 |
| 1496 | | | | | Maximum | 2.775 | | | | | 95% KM (BCA) UCL | 1.366 |
| 1497 | | | | | Mean | 1.033 | | | | | 95% KM (Percentile Bootstrap) UCL | 1.351 |
| 1498 | | | | | Median | 0.92 | | | | | 95% KM (Chebyshev) UCL | 1.888 |
| 1499 | | | | | SD | 0.809 | | | | | 97.5% KM (Chebyshev) UCL | 2.256 |
| 1500 | | | | | k star | 0.407 | | | | | 99% KM (Chebyshev) UCL | 2.978 |
| 1501 | | | | | Theta star | 2.54 | | | | | | |
| 1502 | | | | | Nu star | 13.83 | **Potential UCLs to Use** | | | | | |
| 1503 | | | | | AppChi2 | 6.457 | | | | | 95% KM (t) UCL | 1.379 |
| 1504 | | | | | 95% Gamma Approximate UCL | 2.214 | | | | | 95% KM (Percentile Bootstrap) UCL | 1.351 |
| 1505 | | | | | 95% Adjusted Gamma UCL | 2.409 | | | | | | |
| 1506 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1507 | | | | | | | | | | | | |
| 1508 | | | | | | | | | | | | |
| 1509 | **Thallium** | | | | | | | | | | | |
| 1510 | | | | | | | | | | | | |
| 1511 | | | | | **General Statistics** | | | | | | | |
| 1512 | | | | | Number of Valid Data | 17 | | | | | Number of Detected Data | 5 |
| 1513 | | | | | Number of Distinct Detected Data | 5 | | | | | Number of Non-Detect Data | 12 |
| 1514 | | | | | | | | | | | Percent Non-Detects | 70.59% |
| 1515 | | | | | | | | | | | | |
| 1516 | | | | **Raw Statistics** | | | **Log-transformed Statistics** | | | | | |
| 1517 | | | | | Minimum Detected | 0.094 | | | | | Minimum Detected | -2.364 |
| 1518 | | | | | Maximum Detected | 0.96 | | | | | Maximum Detected | -0.0408 |
| 1519 | | | | | Mean of Detected | 0.381 | | | | | Mean of Detected | -1.297 |
| 1520 | | | | | SD of Detected | 0.351 | | | | | SD of Detected | 0.913 |
| 1521 | | | | | Minimum Non-Detect | 0.36 | | | | | Minimum Non-Detect | -1.022 |
| 1522 | | | | | Maximum Non-Detect | 0.57 | | | | | Maximum Non-Detect | -0.562 |
| 1523 | | | | | | | | | | | | |
| 1524 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 16 |
| 1525 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 1 |
| 1526 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 94.12% |
| 1527 | | | | | | | | | | | | |
| 1528 | | | | | **Warning: There are only 5 Detected Values in this data** | | | | | | | |
| 1529 | | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | |
| 1530 | | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | |
| 1531 | | | | | | | | | | | | |
| 1532 | | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | |
| 1533 | | | | | | | | | | | | |
| 1534 | | | | | | | | | | | | |
| 1535 | | | | | **UCL Statistics** | | | | | | | |
| 1536 | | | | **Normal Distribution Test with Detected Values Only** | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 1537 | | | | | Shapiro Wilk Test Statistic | 0.852 | | | | | Shapiro Wilk Test Statistic | 0.982 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1538 | | | | | 5% Shapiro Wilk Critical Value | 0.762 | | | | | 5% Shapiro Wilk Critical Value | 0.762 |
| 1539 | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 1540 | | | | | | | | | | | | |
| 1541 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 1542 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1543 | | | | | Mean | 0.276 | | | | | Mean | -1.42 |
| 1544 | | | | | SD | 0.191 | | | | | SD | 0.483 |
| 1545 | | | | | 95% DL/2 (t) UCL | 0.357 | | | | | 95% H-Stat (DL/2) UCL | 0.402 |
| 1546 | | | | | | | | | | | | |
| 1547 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 1548 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | -1.675 |
| 1549 | | | | | | | | | | | SD in Log Scale | 0.559 |
| 1550 | | | | | | | | | | | Mean in Original Scale | 0.228 |
| 1551 | | | | | | | | | | | SD in Original Scale | 0.205 |
| 1552 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.313 |
| 1553 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.362 |
| 1554 | | | | | | | | | | | | |
| 1555 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 1556 | | | | | k star (bias corrected) | 0.795 | **Data appear Normal at 5% Significance Level** | | | | | |
| 1557 | | | | | Theta Star | 0.479 | | | | | | |
| 1558 | | | | | nu star | 7.946 | | | | | | |
| 1559 | | | | | | | | | | | | |
| 1560 | | | | | A-D Test Statistic | 0.243 | **Nonparametric Statistics** | | | | | |
| 1561 | | | | | 5% A-D Critical Value | 0.686 | | | | | Kaplan-Meier (KM) Method | |
| 1562 | | | | | K-S Test Statistic | 0.686 | | | | | Mean | 0.238 |
| 1563 | | | | | 5% K-S Critical Value | 0.361 | | | | | SD | 0.207 |
| 1564 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.0667 |
| 1565 | | | | | | | | | | | 95% KM (t) UCL | 0.355 |
| 1566 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 0.348 |
| 1567 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.36 |
| 1568 | | | | | Minimum | 0.094 | | | | | 95% KM (bootstrap t) UCL | 0.402 |
| 1569 | | | | | Maximum | 0.96 | | | | | 95% KM (BCA) UCL | 0.431 |
| 1570 | | | | | Mean | 0.364 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.394 |
| 1571 | | | | | Median | 0.347 | | | | | 95% KM (Chebyshev) UCL | 0.529 |
| 1572 | | | | | SD | 0.182 | | | | | 97.5% KM (Chebyshev) UCL | 0.655 |
| 1573 | | | | | k star | 4.063 | | | | | 99% KM (Chebyshev) UCL | 0.902 |
| 1574 | | | | | Theta star | 0.0896 | | | | | | |
| 1575 | | | | | Nu star | 138.2 | **Potential UCLs to Use** | | | | | |
| 1576 | | | | | AppChi2 | 112 | | | | | 95% KM (t) UCL | 0.355 |
| 1577 | | | | | 95% Gamma Approximate UCL | 0.449 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.394 |
| 1578 | | | | | 95% Adjusted Gamma UCL | 0.459 | | | | | | |
| 1579 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1580 | | | | | | | | | | | | |
| 1581 | | | | | | | | | | | | |
| 1582 | **Vanadium** | | | | | | | | | | | |
| 1583 | | | | | | | | | | | | |
| 1584 | | | | | **General Statistics** | | | | | | | |
| 1585 | | | | | Number of Valid Data | 17 | | | | | Number of Detected Data | 12 |
| 1586 | | | | | Number of Distinct Detected Data | 12 | | | | | Number of Non-Detect Data | 5 |
| 1587 | | | | | | | | | | | Percent Non-Detects | 29.41% |
| 1588 | | | | | | | | | | | | |
| 1589 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 1590 | | | | | Minimum Detected | 5.8 | | | | | Minimum Detected | 1.758 |

| | A–E | F | G–K | L |
|---|---|---|---|---|
| 1591 | Maximum Detected | 34.3 | Maximum Detected | 3.535 |
| 1592 | Mean of Detected | 18.28 | Mean of Detected | 2.76 |
| 1593 | SD of Detected | 9.381 | SD of Detected | 0.597 |
| 1594 | Minimum Non-Detect | 8.9 | Minimum Non-Detect | 2.186 |
| 1595 | Maximum Non-Detect | 13 | Maximum Non-Detect | 2.565 |
| 1596 | | | | |
| 1597 | Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 9 |
| 1598 | For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 8 |
| 1599 | Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 52.94% |
| 1600 | | | | |
| 1601 | **UCL Statistics** | | | |
| 1602 | **Normal Distribution Test with Detected Values Only** | | **Lognormal Distribution Test with Detected Values Only** | |
| 1603 | Shapiro Wilk Test Statistic | 0.949 | Shapiro Wilk Test Statistic | 0.924 |
| 1604 | 5% Shapiro Wilk Critical Value | 0.859 | 5% Shapiro Wilk Critical Value | 0.859 |
| 1605 | **Data appear Normal at 5% Significance Level** | | **Data appear Lognormal at 5% Significance Level** | |
| 1606 | | | | |
| 1607 | **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
| 1608 | DL/2 Substitution Method | | DL/2 Substitution Method | |
| 1609 | Mean | 14.55 | Mean | 2.452 |
| 1610 | SD | 9.807 | SD | 0.702 |
| 1611 | 95% DL/2 (t) UCL | 18.7 | 95% H-Stat (DL/2) UCL | 18.53 |
| 1612 | | | | |
| 1613 | Maximum Likelihood Estimate(MLE) Method | | Log ROS Method | |
| 1614 | Mean | 12.58 | Mean in Log Scale | 2.529 |
| 1615 | SD | 12.36 | SD in Log Scale | 0.623 |
| 1616 | 95% MLE (t) UCL | 17.81 | Mean in Original Scale | 15.04 |
| 1617 | 95% MLE (Tiku) UCL | 19.23 | SD in Original Scale | 9.358 |
| 1618 | | | 95% Percentile Bootstrap UCL | 18.67 |
| 1619 | | | 95% BCA Bootstrap UCL | 19.33 |
| 1620 | | | | |
| 1621 | **Gamma Distribution Test with Detected Values Only** | | **Data Distribution Test with Detected Values Only** | |
| 1622 | k star (bias corrected) | 2.75 | **Data appear Normal at 5% Significance Level** | |
| 1623 | Theta Star | 6.649 | | |
| 1624 | nu star | 66 | | |
| 1625 | | | | |
| 1626 | A-D Test Statistic | 0.3 | **Nonparametric Statistics** | |
| 1627 | 5% A-D Critical Value | 0.737 | Kaplan-Meier (KM) Method | |
| 1628 | K-S Test Statistic | 0.737 | Mean | 14.93 |
| 1629 | 5% K-S Critical Value | 0.247 | SD | 9.211 |
| 1630 | **Data appear Gamma Distributed at 5% Significance Level** | | SE of Mean | 2.353 |
| 1631 | | | 95% KM (t) UCL | 19.04 |
| 1632 | **Assuming Gamma Distribution** | | 95% KM (z) UCL | 18.8 |
| 1633 | Gamma ROS Statistics using Extrapolated Data | | 95% KM (jackknife) UCL | 19 |
| 1634 | Minimum | 5.8 | 95% KM (bootstrap t) UCL | 19.55 |
| 1635 | Maximum | 34.3 | 95% KM (BCA) UCL | 19.24 |
| 1636 | Mean | 16.91 | 95% KM (Percentile Bootstrap) UCL | 18.86 |
| 1637 | Median | 15.45 | 95% KM (Chebyshev) UCL | 25.18 |
| 1638 | SD | 8.259 | 97.5% KM (Chebyshev) UCL | 29.62 |
| 1639 | k star | 3.618 | 99% KM (Chebyshev) UCL | 38.34 |
| 1640 | Theta star | 4.672 | | |
| 1641 | Nu star | 123 | **Potential UCLs to Use** | |
| 1642 | AppChi2 | 98.41 | 95% KM (t) UCL | 19.04 |
| 1643 | 95% Gamma Approximate UCL | 21.13 | 95% KM (Percentile Bootstrap) UCL | 18.86 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1644 | | | | 95% Adjusted Gamma UCL | | 21.64 | | | | | | |
| 1645 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 1646 | | | | | | | | | | | | |

# Soil to Outdoor Air

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | General UCL Statistics for Data Sets with Non-Detects | | | | | | | | |
| 2 | | User Selected Options | | | | | | | | | | |
| 3 | | | From File | C:\aa_Projects\Peterson\Unnamed Island\UCLs\soil to air conc_Crosstab.xls.wst | | | | | | | | |
| 4 | | | Full Precision | OFF | | | | | | | | |
| 5 | | | Confidence Coefficient | 95% | | | | | | | | |
| 6 | | | Number of Bootstrap Operations | 2000 | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | 1,1'-Biphenyl | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | General Statistics | | | | | | |
| 12 | | | | | | Number of Valid Data | 53 | | | Number of Detected Data | | 10 |
| 13 | | | | | | Number of Distinct Detected Data | 10 | | | Number of Non-Detect Data | | 43 |
| 14 | | | | | | | | | | Percent Non-Detects | | 81.13% |
| 15 | | | | | | | | | | | | |
| 16 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 17 | | | | | | Minimum Detected | 0.027 | | | Minimum Detected | | -3.612 |
| 18 | | | | | | Maximum Detected | 0.34 | | | Maximum Detected | | -1.079 |
| 19 | | | | | | Mean of Detected | 0.142 | | | Mean of Detected | | -2.3 |
| 20 | | | | | | SD of Detected | 0.119 | | | SD of Detected | | 0.909 |
| 21 | | | | | | Minimum Non-Detect | 0.138 | | | Minimum Non-Detect | | -1.981 |
| 22 | | | | | | Maximum Non-Detect | 2.49 | | | Maximum Non-Detect | | 0.912 |
| 23 | | | | | | | | | | | | |
| 24 | | | | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | Number treated as Non-Detect | | 53 |
| 25 | | | | For all methods (except KM, DL/2, and ROS Methods), | | | | | | Number treated as Detected | | 0 |
| 26 | | | | Observations < Largest ND are treated as NDs | | | | | | Single DL Non-Detect Percentage | | 100.00% |
| 27 | | | | | | | | | | | | |
| 28 | | | | | | UCL Statistics | | | | | | |
| 29 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 30 | | | | | | Shapiro Wilk Test Statistic | 0.842 | | | Shapiro Wilk Test Statistic | | 0.943 |
| 31 | | | | | | 5% Shapiro Wilk Critical Value | 0.842 | | | 5% Shapiro Wilk Critical Value | | 0.842 |
| 32 | | | | Data appear Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 33 | | | | | | | | | | | | |
| 34 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 35 | | | | | | DL/2 Substitution Method | | | | DL/2 Substitution Method | | |
| 36 | | | | | | Mean | 0.175 | | | Mean | | -2.033 |
| 37 | | | | | | SD | 0.193 | | | SD | | 0.699 |
| 38 | | | | | | 95% DL/2 (t) UCL | 0.219 | | | 95% H-Stat (DL/2) UCL | | 0.222 |
| 39 | | | | | | | | | | | | |
| 40 | | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | Log ROS Method | | |
| 41 | | | | MLE method failed to converge properly | | | | | | Mean in Log Scale | | -2.642 |
| 42 | | | | | | | | | | SD in Log Scale | | 0.49 |
| 43 | | | | | | | | | | Mean in Original Scale | | 0.0826 |
| 44 | | | | | | | | | | SD in Original Scale | | 0.0608 |
| 45 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.0977 |
| 46 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.103 |
| 47 | | | | | | | | | | | | |
| 48 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 49 | | | | | | k star (bias corrected) | 1.177 | | | Data appear Normal at 5% Significance Level | | |
| 50 | | | | | | Theta Star | 0.121 | | | | | |
| 51 | | | | | | nu star | 23.54 | | | | | |
| 52 | | | | | | | | | | | | |
| 53 | | | | | | A-D Test Statistic | 0.316 | | | Nonparametric Statistics | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 54 | | | | | 5% A-D Critical Value | 0.739 | | | | | Kaplan-Meier (KM) Method | |
| 55 | | | | | K-S Test Statistic | 0.739 | | | | | Mean | 0.0937 |
| 56 | | | | | 5% K-S Critical Value | 0.271 | | | | | SD | 0.0785 |
| 57 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 0.0188 |
| 58 | | | | | | | | | | | 95% KM (t) UCL | 0.125 |
| 59 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 0.125 |
| 60 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.126 |
| 61 | | | | | Minimum | 0.027 | | | | | 95% KM (bootstrap t) UCL | 0.13 |
| 62 | | | | | Maximum | 0.34 | | | | | 95% KM (BCA) UCL | 0.126 |
| 63 | | | | | Mean | 0.149 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.126 |
| 64 | | | | | Median | 0.144 | | | | | 95% KM (Chebyshev) UCL | 0.175 |
| 65 | | | | | SD | 0.0626 | | | | | 97.5% KM (Chebyshev) UCL | 0.211 |
| 66 | | | | | k star | 4.826 | | | | | 99% KM (Chebyshev) UCL | 0.28 |
| 67 | | | | | Theta star | 0.0309 | | | | | | |
| 68 | | | | | Nu star | 511.5 | | | | | **Potential UCLs to Use** | |
| 69 | | | | | AppChi2 | 460.1 | | | | | 95% KM (t) UCL | 0.125 |
| 70 | | | | | 95% Gamma Approximate UCL | 0.166 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.126 |
| 71 | | | | | 95% Adjusted Gamma UCL | 0.166 | | | | | | |
| 72 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 73 | | | | | | | | | | | | |
| 74 | | | | | | | | | | | | |
| 75 | **1,1-Dichloroethene** | | | | | | | | | | | |
| 76 | | | | | | | | | | | | |
| 77 | | | | | **General Statistics** | | | | | | | |
| 78 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 1 |
| 79 | | | | | Number of Distinct Detected Data | 1 | | | | | Number of Non-Detect Data | 52 |
| 80 | | | | | | | | | | | Percent Non-Detects | 98.11% |
| 81 | | | | | | | | | | | | |
| 82 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 83 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 84 | | | | | | | | | | | | |
| 85 | **The data set for variable 1,1-Dichloroethene was not processed!** | | | | | | | | | | | |
| 86 | | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 88 | | | | | | | | | | | | |
| 89 | **1,4-Dichlorobenzene** | | | | | | | | | | | |
| 90 | | | | | | | | | | | | |
| 91 | | | | | **General Statistics** | | | | | | | |
| 92 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 5 |
| 93 | | | | | Number of Distinct Detected Data | 5 | | | | | Number of Non-Detect Data | 48 |
| 94 | | | | | | | | | | | Percent Non-Detects | 90.57% |
| 95 | | | | | | | | | | | | |
| 96 | | | | **Raw Statistics** | | | | | | | **Log-transformed Statistics** | |
| 97 | | | | | Minimum Detected | 0.00125 | | | | | Minimum Detected | -6.685 |
| 98 | | | | | Maximum Detected | 1.25 | | | | | Maximum Detected | 0.223 |
| 99 | | | | | Mean of Detected | 0.268 | | | | | Mean of Detected | -3.893 |
| 100 | | | | | SD of Detected | 0.55 | | | | | SD of Detected | 2.766 |
| 101 | | | | | Minimum Non-Detect | 0.00154 | | | | | Minimum Non-Detect | -6.476 |
| 102 | | | | | Maximum Non-Detect | 0.29 | | | | | Maximum Non-Detect | -1.238 |
| 103 | | | | | | | | | | | | |
| 104 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 52 |
| 105 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 1 |
| 106 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 98.11% |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 107 | | | | | | | | | | | | |
| 108 | Warning: There are only 5 Detected Values in this data | | | | | | | | | | | |
| 109 | Note: It should be noted that even though bootstrap may be performed on this data set | | | | | | | | | | | |
| 110 | the resulting calculations may not be reliable enough to draw conclusions | | | | | | | | | | | |
| 111 | | | | | | | | | | | | |
| 112 | It is recommended to have 10-15 or more distinct observations for accurate and meaningful results. | | | | | | | | | | | |
| 113 | | | | | | | | | | | | |
| 114 | | | | | | | | | | | | |
| 115 | UCL Statistics | | | | | | | | | | | |
| 116 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 117 | | | | | Shapiro Wilk Test Statistic | 0.594 | | | | Shapiro Wilk Test Statistic | | 0.941 |
| 118 | | | | | 5% Shapiro Wilk Critical Value | 0.762 | | | | 5% Shapiro Wilk Critical Value | | 0.762 |
| 119 | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | | | | |
| 120 | | | | | | | | | | | | |
| 121 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 122 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 123 | | | | | Mean | 0.0329 | | | | Mean | | -5.682 |
| 124 | | | | | SD | 0.172 | | | | SD | | 1.417 |
| 125 | | | | | 95% DL/2 (t) UCL | 0.0726 | | | | 95% H-Stat (DL/2) UCL | | 0.0165 |
| 126 | | | | | | | | | | | | |
| 127 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 128 | MLE method failed to converge properly | | | | | | | | | Mean in Log Scale | | -7.269 |
| 129 | | | | | | | | | | SD in Log Scale | | 1.592 |
| 130 | | | | | | | | | | Mean in Original Scale | | 0.0259 |
| 131 | | | | | | | | | | SD in Original Scale | | 0.172 |
| 132 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.0723 |
| 133 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.0982 |
| 134 | | | | | | | | | | | | |
| 135 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 136 | | | | | k star (bias corrected) | 0.242 | Data appear Gamma Distributed at 5% Significance Level | | | | | |
| 137 | | | | | Theta Star | 1.106 | | | | | | |
| 138 | | | | | nu star | 2.421 | | | | | | |
| 139 | | | | | | | | | | | | |
| 140 | | | | | A-D Test Statistic | 0.495 | Nonparametric Statistics | | | | | |
| 141 | | | | | 5% A-D Critical Value | 0.749 | | | | Kaplan-Meier (KM) Method | | |
| 142 | | | | | K-S Test Statistic | 0.749 | | | | Mean | | 0.0265 |
| 143 | | | | | 5% K-S Critical Value | 0.382 | | | | SD | | 0.17 |
| 144 | Data appear Gamma Distributed at 5% Significance Level | | | | | | | | | SE of Mean | | 0.0261 |
| 145 | | | | | | | | | | 95% KM (t) UCL | | 0.0703 |
| 146 | Assuming Gamma Distribution | | | | | | | | | 95% KM (z) UCL | | 0.0695 |
| 147 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | | 0.0646 |
| 148 | | | | | Minimum | 1E-09 | | | | 95% KM (bootstrap t) UCL | | 1.777 |
| 149 | | | | | Maximum | 1.25 | | | | 95% KM (BCA) UCL | | 0.164 |
| 150 | | | | | Mean | 0.24 | | | | 95% KM (Percentile Bootstrap) UCL | | 0.0814 |
| 151 | | | | | Median | 0.268 | | | | 95% KM (Chebyshev) UCL | | 0.14 |
| 152 | | | | | SD | 0.22 | | | | 97.5% KM (Chebyshev) UCL | | 0.19 |
| 153 | | | | | k star | 0.184 | | | | 99% KM (Chebyshev) UCL | | 0.286 |
| 154 | | | | | Theta star | 1.304 | | | | | | |
| 155 | | | | | Nu star | 19.5 | Potential UCLs to Use | | | | | |
| 156 | | | | | AppChi2 | 10.48 | | | | 95% KM (t) UCL | | 0.0703 |
| 157 | | | | | 95% Gamma Approximate UCL | 0.446 | | | | | | |
| 158 | | | | | 95% Adjusted Gamma UCL | 0.454 | | | | | | |
| 159 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 160 | | | | | | | | | | | | |
| 161 | | | | | | | | | | | | |
| 162 | 2-Methylnaphthalene | | | | | | | | | | | |
| 163 | | | | | | | | | | | | |
| 164 | | | | | | General Statistics | | | | | | |
| 165 | | | | | Number of Valid Data | 53 | | | | Number of Detected Data | | 36 |
| 166 | | | | | Number of Distinct Detected Data | 33 | | | | Number of Non-Detect Data | | 17 |
| 167 | | | | | | | | | | Percent Non-Detects | | 32.08% |
| 168 | | | | | | | | | | | | |
| 169 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 170 | | | | | Minimum Detected | 0.00308 | | | | Minimum Detected | | -5.783 |
| 171 | | | | | Maximum Detected | 2.78 | | | | Maximum Detected | | 1.022 |
| 172 | | | | | Mean of Detected | 0.257 | | | | Mean of Detected | | -2.325 |
| 173 | | | | | SD of Detected | 0.49 | | | | SD of Detected | | 1.485 |
| 174 | | | | | Minimum Non-Detect | 0.00788 | | | | Minimum Non-Detect | | -4.843 |
| 175 | | | | | Maximum Non-Detect | 0.4 | | | | Maximum Non-Detect | | -0.916 |
| 176 | | | | | | | | | | | | |
| 177 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 47 |
| 178 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 6 |
| 179 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 88.68% |
| 180 | | | | | | | | | | | | |
| 181 | | | | | | UCL Statistics | | | | | | |
| 182 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 183 | | | | | Shapiro Wilk Test Statistic | 0.495 | | | | Shapiro Wilk Test Statistic | | 0.968 |
| 184 | | | | | 5% Shapiro Wilk Critical Value | 0.935 | | | | 5% Shapiro Wilk Critical Value | | 0.935 |
| 185 | | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 186 | | | | | | | | | | | | |
| 187 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 188 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 189 | | | | | Mean | 0.227 | | | | Mean | | -2.266 |
| 190 | | | | | SD | 0.406 | | | | SD | | 1.407 |
| 191 | | | | | 95% DL/2 (t) UCL | 0.32 | | | | 95% H-Stat (DL/2) UCL | | 0.77 |
| 192 | | | | | | | | | | | | |
| 193 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 194 | | | | MLE yields a negative mean | | | | | | Mean in Log Scale | | -2.572 |
| 195 | | | | | | | | | | SD in Log Scale | | 1.366 |
| 196 | | | | | | | | | | Mean in Original Scale | | 0.195 |
| 197 | | | | | | | | | | SD in Original Scale | | 0.413 |
| 198 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.299 |
| 199 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.357 |
| 200 | | | | | | | | | | | | |
| 201 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 202 | | | | | k star (bias corrected) | 0.6 | | | | Data appear Lognormal at 5% Significance Level | | |
| 203 | | | | | Theta Star | 0.428 | | | | | | |
| 204 | | | | | nu star | 43.19 | | | | | | |
| 205 | | | | | | | | | | | | |
| 206 | | | | | A-D Test Statistic | 1.044 | | | | Nonparametric Statistics | | |
| 207 | | | | | 5% A-D Critical Value | 0.799 | | | | Kaplan-Meier (KM) Method | | |
| 208 | | | | | K-S Test Statistic | 0.799 | | | | Mean | | 0.2 |
| 209 | | | | | 5% K-S Critical Value | 0.154 | | | | SD | | 0.409 |
| 210 | | | | Data not Gamma Distributed at 5% Significance Level | | | | | | SE of Mean | | 0.0573 |
| 211 | | | | | | | | | | 95% KM (t) UCL | | 0.296 |
| 212 | | | | Assuming Gamma Distribution | | | | | | 95% KM (z) UCL | | 0.294 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 213 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.296 |
| 214 | | | | | Minimum | 0.00308 | | | | | 95% KM (bootstrap t) UCL | 0.409 |
| 215 | | | | | Maximum | 2.78 | | | | | 95% KM (BCA) UCL | 0.299 |
| 216 | | | | | Mean | 0.256 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.304 |
| 217 | | | | | Median | 0.18 | | | | | 95% KM (Chebyshev) UCL | 0.45 |
| 218 | | | | | SD | 0.402 | | | | | 97.5% KM (Chebyshev) UCL | 0.558 |
| 219 | | | | | k star | 0.853 | | | | | 99% KM (Chebyshev) UCL | 0.77 |
| 220 | | | | | Theta star | 0.3 | | | | | | |
| 221 | | | | | Nu star | 90.45 | **Potential UCLs to Use** | | | | | |
| 222 | | | | | AppChi2 | 69.52 | | | | | 95% KM (Chebyshev) UCL | 0.45 |
| 223 | | | | | 95% Gamma Approximate UCL | 0.333 | | | | | | |
| 224 | | | | | 95% Adjusted Gamma UCL | 0.335 | | | | | | |
| 225 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 226 | | | | | | | | | | | | |
| 227 | | | | | | | | | | | | |
| 228 | **Acenaphthene** | | | | | | | | | | | |
| 229 | | | | | | | | | | | | |
| 230 | | | | | **General Statistics** | | | | | | | |
| 231 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 35 |
| 232 | | | | | Number of Distinct Detected Data | 35 | | | | | Number of Non-Detect Data | 18 |
| 233 | | | | | | | | | | | Percent Non-Detects | 33.96% |
| 234 | | | | | | | | | | | | |
| 235 | | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | |
| 236 | | | | | Minimum Detected | 0.00715 | | | | | Minimum Detected | -4.941 |
| 237 | | | | | Maximum Detected | 2.01 | | | | | Maximum Detected | 0.698 |
| 238 | | | | | Mean of Detected | 0.265 | | | | | Mean of Detected | -2.183 |
| 239 | | | | | SD of Detected | 0.413 | | | | | SD of Detected | 1.371 |
| 240 | | | | | Minimum Non-Detect | 0.00387 | | | | | Minimum Non-Detect | -5.555 |
| 241 | | | | | Maximum Non-Detect | 0.41 | | | | | Maximum Non-Detect | -0.892 |
| 242 | | | | | | | | | | | | |
| 243 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 48 |
| 244 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 5 |
| 245 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 90.57% |
| 246 | | | | | | | | | | | | |
| 247 | | | | | **UCL Statistics** | | | | | | | |
| 248 | | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | |
| 249 | | | | | Shapiro Wilk Test Statistic | 0.615 | | | | | Shapiro Wilk Test Statistic | 0.978 |
| 250 | | | | | 5% Shapiro Wilk Critical Value | 0.934 | | | | | 5% Shapiro Wilk Critical Value | 0.934 |
| 251 | | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | |
| 252 | | | | | | | | | | | | |
| 253 | | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | |
| 254 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 255 | | | | | Mean | 0.227 | | | | | Mean | -2.245 |
| 256 | | | | | SD | 0.34 | | | | | SD | 1.427 |
| 257 | | | | | 95% DL/2 (t) UCL | 0.306 | | | | | 95% H-Stat (DL/2) UCL | 0.691 |
| 258 | | | | | | | | | | | | |
| 259 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 260 | | | | | Mean | 1.26 | | | | | Mean in Log Scale | -2.518 |
| 261 | | | | | SD | 0.511 | | | | | SD in Log Scale | 1.352 |
| 262 | | | | | 95% MLE (t) UCL | 1.378 | | | | | Mean in Original Scale | 0.196 |
| 263 | | | | | 95% MLE (Tiku) UCL | 1.635 | | | | | SD in Original Scale | 0.349 |
| 264 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.284 |
| 265 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.316 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 266 | | | | | | | | | | | | |
| 267 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 268 | | | | | k star (bias corrected) | 0.665 | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 269 | | | | | Theta Star | 0.398 | | | | | | |
| 270 | | | | | nu star | 46.58 | | | | | | |
| 271 | | | | | | | | | | | | |
| 272 | | | | | A-D Test Statistic | 0.872 | **Nonparametric Statistics** | | | | | |
| 273 | | | | | 5% A-D Critical Value | 0.792 | | | | | Kaplan-Meier (KM) Method | |
| 274 | | | | | K-S Test Statistic | 0.792 | | | | | Mean | 0.205 |
| 275 | | | | | 5% K-S Critical Value | 0.155 | | | | | SD | 0.345 |
| 276 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.0489 |
| 277 | | | | | | | | | | | 95% KM (t) UCL | 0.287 |
| 278 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 0.285 |
| 279 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.286 |
| 280 | | | | | Minimum | 0.00715 | | | | | 95% KM (bootstrap t) UCL | 0.337 |
| 281 | | | | | Maximum | 2.01 | | | | | 95% KM (BCA) UCL | 0.287 |
| 282 | | | | | Mean | 0.255 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.293 |
| 283 | | | | | Median | 0.171 | | | | | 95% KM (Chebyshev) UCL | 0.418 |
| 284 | | | | | SD | 0.337 | | | | | 97.5% KM (Chebyshev) UCL | 0.51 |
| 285 | | | | | k star | 0.948 | | | | | 99% KM (Chebyshev) UCL | 0.691 |
| 286 | | | | | Theta star | 0.269 | | | | | | |
| 287 | | | | | Nu star | 100.5 | **Potential UCLs to Use** | | | | | |
| 288 | | | | | AppChi2 | 78.34 | | | | | 95% KM (Chebyshev) UCL | 0.418 |
| 289 | | | | | 95% Gamma Approximate UCL | 0.327 | | | | | | |
| 290 | | | | | 95% Adjusted Gamma UCL | 0.33 | | | | | | |
| 291 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 292 | | | | | | | | | | | | |
| 293 | | | | | | | | | | | | |
| 294 | **Acenaphthylene** | | | | | | | | | | | |
| 295 | | | | | | | | | | | | |
| 296 | | | | | **General Statistics** | | | | | | | |
| 297 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 41 |
| 298 | | | | | Number of Distinct Detected Data | 39 | | | | | Number of Non-Detect Data | 12 |
| 299 | | | | | | | | | | | Percent Non-Detects | 22.64% |
| 300 | | | | | | | | | | | | |
| 301 | | | **Raw Statistics** | | | | **Log-transformed Statistics** | | | | | |
| 302 | | | | | Minimum Detected | 0.00208 | | | | | Minimum Detected | -6.175 |
| 303 | | | | | Maximum Detected | 1.14 | | | | | Maximum Detected | 0.131 |
| 304 | | | | | Mean of Detected | 0.209 | | | | | Mean of Detected | -2.26 |
| 305 | | | | | SD of Detected | 0.253 | | | | | SD of Detected | 1.355 |
| 306 | | | | | Minimum Non-Detect | 0.00428 | | | | | Minimum Non-Detect | -5.454 |
| 307 | | | | | Maximum Non-Detect | 0.4 | | | | | Maximum Non-Detect | -0.916 |
| 308 | | | | | | | | | | | | |
| 309 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 47 |
| 310 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 6 |
| 311 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 88.68% |
| 312 | | | | | | | | | | | | |
| 313 | | | | | **UCL Statistics** | | | | | | | |
| 314 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 315 | | | | | Shapiro Wilk Test Statistic | 0.732 | | | | | Shapiro Wilk Test Statistic | 0.939 |
| 316 | | | | | 5% Shapiro Wilk Critical Value | 0.941 | | | | | 5% Shapiro Wilk Critical Value | 0.941 |
| 317 | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | | | | | |
| 318 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 319 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 320 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 321 | | | | | Mean | 0.193 | | | | | Mean | -2.36 |
| 322 | | | | | SD | 0.227 | | | | | SD | 1.466 |
| 323 | | | | | 95% DL/2 (t) UCL | 0.245 | | | | | 95% H-Stat (DL/2) UCL | 0.61 |
| 324 | | | | | | | | | | | | |
| 325 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 326 | | | **MLE yields a negative mean** | | | | | | | | Mean in Log Scale | -2.486 |
| 327 | | | | | | | | | | | SD in Log Scale | 1.334 |
| 328 | | | | | | | | | | | Mean in Original Scale | 0.173 |
| 329 | | | | | | | | | | | SD in Original Scale | 0.232 |
| 330 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.228 |
| 331 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.237 |
| 332 | | | | | | | | | | | | |
| 333 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 334 | | | | | k star (bias corrected) | 0.803 | **Data do not follow a Discernable Distribution (0.05)** | | | | | |
| 335 | | | | | Theta Star | 0.26 | | | | | | |
| 336 | | | | | nu star | 65.83 | | | | | | |
| 337 | | | | | | | | | | | | |
| 338 | | | | | A-D Test Statistic | 0.788 | | | **Nonparametric Statistics** | | | |
| 339 | | | | | 5% A-D Critical Value | 0.785 | | | | | Kaplan-Meier (KM) Method | |
| 340 | | | | | K-S Test Statistic | 0.785 | | | | | Mean | 0.179 |
| 341 | | | | | 5% K-S Critical Value | 0.143 | | | | | SD | 0.231 |
| 342 | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | SE of Mean | 0.0326 |
| 343 | | | | | | | | | | | 95% KM (t) UCL | 0.233 |
| 344 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 0.232 |
| 345 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.233 |
| 346 | | | | | Minimum | 0.00208 | | | | | 95% KM (bootstrap t) UCL | 0.251 |
| 347 | | | | | Maximum | 1.14 | | | | | 95% KM (BCA) UCL | 0.236 |
| 348 | | | | | Mean | 0.201 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.233 |
| 349 | | | | | Median | 0.11 | | | | | 95% KM (Chebyshev) UCL | 0.321 |
| 350 | | | | | SD | 0.225 | | | | | 97.5% KM (Chebyshev) UCL | 0.382 |
| 351 | | | | | k star | 0.978 | | | | | 99% KM (Chebyshev) UCL | 0.503 |
| 352 | | | | | Theta star | 0.205 | | | | | | |
| 353 | | | | | Nu star | 103.6 | | | **Potential UCLs to Use** | | | |
| 354 | | | | | AppChi2 | 81.13 | | | | | 95% KM (Chebyshev) UCL | 0.321 |
| 355 | | | | | 95% Gamma Approximate UCL | 0.256 | | | | | | |
| 356 | | | | | 95% Adjusted Gamma UCL | 0.258 | | | | | | |
| 357 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 358 | | | | | | | | | | | | |
| 359 | | | | | | | | | | | | |
| 360 | **Acetophenone** | | | | | | | | | | | |
| 361 | | | | | | | | | | | | |
| 362 | | | | | **General Statistics** | | | | | | | |
| 363 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 6 |
| 364 | | | | | Number of Distinct Detected Data | 6 | | | | | Number of Non-Detect Data | 47 |
| 365 | | | | | | | | | | | Percent Non-Detects | 88.68% |
| 366 | | | | | | | | | | | | |
| 367 | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | |
| 368 | | | | | Minimum Detected | 0.053 | | | | | Minimum Detected | -2.937 |
| 369 | | | | | Maximum Detected | 0.86 | | | | | Maximum Detected | -0.151 |
| 370 | | | | | Mean of Detected | 0.229 | | | | | Mean of Detected | -1.993 |
| 371 | | | | | SD of Detected | 0.312 | | | | | SD of Detected | 0.991 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 372 | | | | | Minimum Non-Detect | 0.138 | | | | | Minimum Non-Detect | -1.981 |
| 373 | | | | | Maximum Non-Detect | 2.49 | | | | | Maximum Non-Detect | 0.912 |
| 374 | | | | | | | | | | | | |
| 375 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 53 |
| 376 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 377 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 378 | | | | | | | | | | | | |
| 379 | **Warning: There are only 6 Detected Values in this data** | | | | | | | | | | | |
| 380 | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | | | | | |
| 381 | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | | | | | |
| 382 | | | | | | | | | | | | |
| 383 | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | | | | | |
| 384 | | | | | | | | | | | | |
| 385 | | | | | | | | | | | | |
| 386 | **UCL Statistics** | | | | | | | | | | | |
| 387 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 388 | | | | | Shapiro Wilk Test Statistic | 0.62 | | | | | Shapiro Wilk Test Statistic | 0.846 |
| 389 | | | | | 5% Shapiro Wilk Critical Value | 0.788 | | | | | 5% Shapiro Wilk Critical Value | 0.788 |
| 390 | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 391 | | | | | | | | | | | | |
| 392 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 393 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 394 | | | | | Mean | 0.189 | | | | | Mean | -1.942 |
| 395 | | | | | SD | 0.21 | | | | | SD | 0.652 |
| 396 | | | | | 95% DL/2 (t) UCL | 0.238 | | | | | 95% H-Stat (DL/2) UCL | 0.247 |
| 397 | | | | | | | | | | | | |
| 398 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 399 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | -2.424 |
| 400 | | | | | | | | | | | SD in Log Scale | 0.43 |
| 401 | | | | | | | | | | | Mean in Original Scale | 0.103 |
| 402 | | | | | | | | | | | SD in Original Scale | 0.11 |
| 403 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.131 |
| 404 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.152 |
| 405 | | | | | | | | | | | | |
| 406 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 407 | | | | | k star (bias corrected) | 0.661 | **Data Follow Appr. Gamma Distribution at 5% Significance Level** | | | | | |
| 408 | | | | | Theta Star | 0.347 | | | | | | |
| 409 | | | | | nu star | 7.931 | | | | | | |
| 410 | | | | | | | | | | | | |
| 411 | | | | | A-D Test Statistic | 0.791 | **Nonparametric Statistics** | | | | | |
| 412 | | | | | 5% A-D Critical Value | 0.714 | | | | | Kaplan-Meier (KM) Method | |
| 413 | | | | | K-S Test Statistic | 0.714 | | | | | Mean | 0.102 |
| 414 | | | | | 5% K-S Critical Value | 0.34 | | | | | SD | 0.112 |
| 415 | **Data follow Appr. Gamma Distribution at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.0199 |
| 416 | | | | | | | | | | | 95% KM (t) UCL | 0.135 |
| 417 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 0.135 |
| 418 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.135 |
| 419 | | | | | Minimum | 0.053 | | | | | 95% KM (bootstrap t) UCL | 0.161 |
| 420 | | | | | Maximum | 0.86 | | | | | 95% KM (BCA) UCL | 0.139 |
| 421 | | | | | Mean | 0.229 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.139 |
| 422 | | | | | Median | 0.229 | | | | | 95% KM (Chebyshev) UCL | 0.189 |
| 423 | | | | | SD | 0.0969 | | | | | 97.5% KM (Chebyshev) UCL | 0.226 |
| 424 | | | | | k star | 8.19 | | | | | 99% KM (Chebyshev) UCL | 0.3 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 425 | | | | | Theta star | 0.028 | | | | | | |
| 426 | | | | | Nu star | 868.2 | **Potential UCLs to Use** | | | | | |
| 427 | | | | | AppChi2 | 800.8 | | | | | 95% KM (t) UCL | 0.135 |
| 428 | | | | 95% Gamma Approximate UCL | | 0.248 | | | | | | |
| 429 | | | | 95% Adjusted Gamma UCL | | 0.249 | | | | | | |
| 430 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 431 | | | | | | | | | | | | |
| 432 | | | | | | | | | | | | |
| 433 | **Benzaldehyde** | | | | | | | | | | | |
| 434 | | | | | | | | | | | | |
| 435 | | | | | **General Statistics** | | | | | | | |
| 436 | | | | | Number of Valid Data | 47 | | | | | Number of Detected Data | 25 |
| 437 | | | | | Number of Distinct Detected Data | 22 | | | | | Number of Non-Detect Data | 22 |
| 438 | | | | | | | | | | | Percent Non-Detects | 46.81% |
| 439 | | | | | | | | | | | | |
| 440 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 441 | | | | | Minimum Detected | 0.021 | | | | | Minimum Detected | -3.863 |
| 442 | | | | | Maximum Detected | 0.33 | | | | | Maximum Detected | -1.109 |
| 443 | | | | | Mean of Detected | 0.159 | | | | | Mean of Detected | -1.949 |
| 444 | | | | | SD of Detected | 0.0632 | | | | | SD of Detected | 0.559 |
| 445 | | | | | Minimum Non-Detect | 0.138 | | | | | Minimum Non-Detect | -1.981 |
| 446 | | | | | Maximum Non-Detect | 2.49 | | | | | Maximum Non-Detect | 0.912 |
| 447 | | | | | | | | | | | | |
| 448 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 47 |
| 449 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 450 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 451 | | | | | | | | | | | | |
| 452 | | | | | **UCL Statistics** | | | | | | | |
| 453 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 454 | | | | | Shapiro Wilk Test Statistic | 0.948 | | | | | Shapiro Wilk Test Statistic | 0.804 |
| 455 | | | | | 5% Shapiro Wilk Critical Value | 0.918 | | | | | 5% Shapiro Wilk Critical Value | 0.918 |
| 456 | | | | **Data appear Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | | |
| 457 | | | | | | | | | | | | |
| 458 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 459 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 460 | | | | | Mean | 0.203 | | | | | Mean | -1.828 |
| 461 | | | | | SD | 0.194 | | | | | SD | 0.651 |
| 462 | | | | | 95% DL/2 (t) UCL | 0.25 | | | | | 95% H-Stat (DL/2) UCL | 0.306 |
| 463 | | | | | | | | | | | | |
| 464 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 465 | | | | **MLE method failed to converge properly** | | | | | | | Mean in Log Scale | -2.036 |
| 466 | | | | | | | | | | | SD in Log Scale | 0.441 |
| 467 | | | | | | | | | | | Mean in Original Scale | 0.141 |
| 468 | | | | | | | | | | | SD in Original Scale | 0.0529 |
| 469 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.155 |
| 470 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.156 |
| 471 | | | | | | | | | | | | |
| 472 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 473 | | | | | k star (bias corrected) | 4.104 | | | | **Data appear Normal at 5% Significance Level** | | |
| 474 | | | | | Theta Star | 0.0388 | | | | | | |
| 475 | | | | | nu star | 205.2 | | | | | | |
| 476 | | | | | | | | | | | | |
| 477 | | | | | A-D Test Statistic | 1.249 | | | | **Nonparametric Statistics** | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 478 | | | | | 5% A-D Critical Value | 0.748 | | | | | Kaplan-Meier (KM) Method | |
| 479 | | | | | K-S Test Statistic | 0.748 | | | | | Mean | 0.149 |
| 480 | | | | | 5% K-S Critical Value | 0.175 | | | | | SD | 0.0631 |
| 481 | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | SE of Mean | 0.0123 |
| 482 | | | | | | | | | | | 95% KM (t) UCL | 0.169 |
| 483 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 0.169 |
| 484 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.17 |
| 485 | | | | | Minimum | 0.021 | | | | | 95% KM (bootstrap t) UCL | 0.169 |
| 486 | | | | | Maximum | 0.33 | | | | | 95% KM (BCA) UCL | 0.168 |
| 487 | | | | | Mean | 0.166 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.168 |
| 488 | | | | | Median | 0.17 | | | | | 95% KM (Chebyshev) UCL | 0.202 |
| 489 | | | | | SD | 0.0513 | | | | | 97.5% KM (Chebyshev) UCL | 0.226 |
| 490 | | | | | k star | 6.922 | | | | | 99% KM (Chebyshev) UCL | 0.271 |
| 491 | | | | | Theta star | 0.0239 | | | | | | |
| 492 | | | | | Nu star | 650.7 | | | **Potential UCLs to Use** | | | |
| 493 | | | | | AppChi2 | 592.5 | | | | | 95% KM (t) UCL | 0.169 |
| 494 | | | | | 95% Gamma Approximate UCL | 0.182 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.168 |
| 495 | | | | | 95% Adjusted Gamma UCL | 0.182 | | | | | | |
| 496 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 497 | | | | | | | | | | | | |
| 498 | | | | | | | | | | | | |
| 499 | **Benzene** | | | | | | | | | | | |
| 500 | | | | | | | | | | | | |
| 501 | | | | | **General Statistics** | | | | | | | |
| 502 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 3 |
| 503 | | | | | Number of Distinct Detected Data | 3 | | | | | Number of Non-Detect Data | 50 |
| 504 | | | | | | | | | | | Percent Non-Detects | 94.34% |
| 505 | | | | | | | | | | | | |
| 506 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 507 | | | | | Minimum Detected | 0.002 | | | | | Minimum Detected | -6.215 |
| 508 | | | | | Maximum Detected | 0.0135 | | | | | Maximum Detected | -4.305 |
| 509 | | | | | Mean of Detected | 0.0095 | | | | | Mean of Detected | -4.954 |
| 510 | | | | | SD of Detected | 0.0065 | | | | | SD of Detected | 1.092 |
| 511 | | | | | Minimum Non-Detect | 0.00154 | | | | | Minimum Non-Detect | -6.476 |
| 512 | | | | | Maximum Non-Detect | 0.29 | | | | | Maximum Non-Detect | -1.238 |
| 513 | | | | | | | | | | | | |
| 514 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 53 |
| 515 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 516 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 517 | | | | | | | | | | | | |
| 518 | | | | **Warning: There are only 3 Distinct Detected Values in this data set** | | | | | | | | |
| 519 | | | | **The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.** | | | | | | | | |
| 520 | | | | **Those methods will return a 'N/A' value on your output display!** | | | | | | | | |
| 521 | | | | | | | | | | | | |
| 522 | | | | **It is necessary to have 4 or more Distinct Values for bootstrap methods.** | | | | | | | | |
| 523 | | | | **However, results obtained using 4 to 9 distinct values may not be reliable.** | | | | | | | | |
| 524 | | | | **It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.** | | | | | | | | |
| 525 | | | | | | | | | | | | |
| 526 | | | | | | | | | | | | |
| 527 | | | | | **UCL Statistics** | | | | | | | |
| 528 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 529 | | | | | Shapiro Wilk Test Statistic | 0.783 | | | | | Shapiro Wilk Test Statistic | 0.765 |
| 530 | | | | | 5% Shapiro Wilk Critical Value | 0.767 | | | | | 5% Shapiro Wilk Critical Value | 0.767 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 531 | **Data appear Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | | | | | |
| 532 | | | | | | | | | | | | |
| 533 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 534 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 535 | | | | | Mean | 0.00829 | | | | | Mean | -5.822 |
| 536 | | | | | SD | 0.0248 | | | | | SD | 1.094 |
| 537 | | | | | 95% DL/2 (t) UCL | 0.014 | | | | | 95% H-Stat (DL/2) UCL | 0.00848 |
| 538 | | | | | | | | | | | | |
| 539 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | | Log ROS Method | |
| 540 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | -8.377 |
| 541 | | | | | | | | | | | SD in Log Scale | 1.129 |
| 542 | | | | | | | | | | | Mean in Original Scale | 0.0007712 |
| 543 | | | | | | | | | | | SD in Original Scale | 0.00252 |
| 544 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.00146 |
| 545 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.00175 |
| 546 | | | | | | | | | | | | |
| 547 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 548 | | | | | k star (bias corrected) | N/A | **Data appear Normal at 5% Significance Level** | | | | | |
| 549 | | | | | Theta Star | N/A | | | | | | |
| 550 | | | | | nu star | N/A | | | | | | |
| 551 | | | | | | | | | | | | |
| 552 | | | | | A-D Test Statistic | N/A | **Nonparametric Statistics** | | | | | |
| 553 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 554 | | | | | K-S Test Statistic | N/A | | | | | Mean | 0.00246 |
| 555 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 0.00223 |
| 556 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.0003896 |
| 557 | | | | | | | | | | | 95% KM (t) UCL | 0.00311 |
| 558 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 0.0031 |
| 559 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.00946 |
| 560 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | 0.0028 |
| 561 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | N/A |
| 562 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | N/A |
| 563 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 0.00416 |
| 564 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 0.00489 |
| 565 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 0.00634 |
| 566 | | | | | Theta star | N/A | | | | | | |
| 567 | | | | | Nu star | N/A | **Potential UCLs to Use** | | | | | |
| 568 | | | | | AppChi2 | N/A | | | | | 95% KM (t) UCL | 0.00311 |
| 569 | | | | | 95% Gamma Approximate UCL | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | N/A |
| 570 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 571 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 572 | | | | | | | | | | | | |
| 573 | | | | | | | | | | | | |
| 574 | **Carbon disulfide** | | | | | | | | | | | |
| 575 | | | | | | | | | | | | |
| 576 | **General Statistics** | | | | | | | | | | | |
| 577 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 6 |
| 578 | | | | | Number of Distinct Detected Data | 6 | | | | | Number of Non-Detect Data | 47 |
| 579 | | | | | | | | | | | Percent Non-Detects | 88.68% |
| 580 | | | | | | | | | | | | |
| 581 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 582 | | | | | Minimum Detected | 0.00124 | | | | | Minimum Detected | -6.693 |
| 583 | | | | | Maximum Detected | 0.05 | | | | | Maximum Detected | -2.996 |

| | A–E | F | G–K | L |
|---|---|---|---|---|
| 584 | Mean of Detected | 0.0161 | Mean of Detected | -4.89 |
| 585 | SD of Detected | 0.0191 | SD of Detected | 1.475 |
| 586 | Minimum Non-Detect | 0.00156 | Minimum Non-Detect | -6.463 |
| 587 | Maximum Non-Detect | 0.29 | Maximum Non-Detect | -1.238 |
| 588 | | | | |
| 589 | Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 53 |
| 590 | For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 0 |
| 591 | Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 100.00% |
| 592 | | | | |
| 593 | **Warning: There are only 6 Detected Values in this data** | | | |
| 594 | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | |
| 595 | **the resulting calculations may not be reliable enough to draw conclusions** | | | |
| 596 | | | | |
| 597 | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | |
| 598 | | | | |
| 599 | | | | |
| 600 | **UCL Statistics** | | | |
| 601 | **Normal Distribution Test with Detected Values Only** | | **Lognormal Distribution Test with Detected Values Only** | |
| 602 | Shapiro Wilk Test Statistic | 0.833 | Shapiro Wilk Test Statistic | 0.947 |
| 603 | 5% Shapiro Wilk Critical Value | 0.788 | 5% Shapiro Wilk Critical Value | 0.788 |
| 604 | **Data appear Normal at 5% Significance Level** | | **Data appear Lognormal at 5% Significance Level** | |
| 605 | | | | |
| 606 | **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
| 607 | DL/2 Substitution Method | | DL/2 Substitution Method | |
| 608 | Mean | 0.00951 | Mean | -5.715 |
| 609 | SD | 0.0256 | SD | 1.163 |
| 610 | 95% DL/2 (t) UCL | 0.0154 | 95% H-Stat (DL/2) UCL | 0.00954 |
| 611 | | | | |
| 612 | Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| 613 | **MLE method failed to converge properly** | | Mean in Log Scale | -6.617 |
| 614 | | | SD in Log Scale | 0.932 |
| 615 | | | Mean in Original Scale | 0.00293 |
| 616 | | | SD in Original Scale | 0.00762 |
| 617 | | | 95% Percentile Bootstrap UCL | 0.00481 |
| 618 | | | 95% BCA Bootstrap UCL | 0.00579 |
| 619 | | | | |
| 620 | **Gamma Distribution Test with Detected Values Only** | | **Data Distribution Test with Detected Values Only** | |
| 621 | k star (bias corrected) | 0.502 | **Data appear Normal at 5% Significance Level** | |
| 622 | Theta Star | 0.0321 | | |
| 623 | nu star | 6.019 | | |
| 624 | | | | |
| 625 | A-D Test Statistic | 0.253 | **Nonparametric Statistics** | |
| 626 | 5% A-D Critical Value | 0.72 | Kaplan-Meier (KM) Method | |
| 627 | K-S Test Statistic | 0.72 | Mean | 0.0032 |
| 628 | 5% K-S Critical Value | 0.343 | SD | 0.00764 |
| 629 | **Data appear Gamma Distributed at 5% Significance Level** | | SE of Mean | 0.00119 |
| 630 | | | 95% KM (t) UCL | 0.00519 |
| 631 | **Assuming Gamma Distribution** | | 95% KM (z) UCL | 0.00515 |
| 632 | Gamma ROS Statistics using Extrapolated Data | | 95% KM (jackknife) UCL | 0.00483 |
| 633 | Minimum | 0.00124 | 95% KM (bootstrap t) UCL | 0.00706 |
| 634 | Maximum | 0.05 | 95% KM (BCA) UCL | 0.0268 |
| 635 | Mean | 0.0161 | 95% KM (Percentile Bootstrap) UCL | 0.0088 |
| 636 | Median | 0.0159 | 95% KM (Chebyshev) UCL | 0.00837 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 637 | | | | | SD | 0.00607 | | | | | 97.5% KM (Chebyshev) UCL | 0.0106 |
| 638 | | | | | k star | 5.425 | | | | | 99% KM (Chebyshev) UCL | 0.015 |
| 639 | | | | | Theta star | 0.00298 | | | | | | |
| 640 | | | | | Nu star | 575.1 | **Potential UCLs to Use** | | | | | |
| 641 | | | | | AppChi2 | 520.4 | | | | | 95% KM (t) UCL | 0.00519 |
| 642 | | | | 95% Gamma Approximate UCL | | 0.0178 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0088 |
| 643 | | | | 95% Adjusted Gamma UCL | | 0.0179 | | | | | | |
| 644 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 645 | | | | | | | | | | | | |
| 646 | | | | | | | | | | | | |
| 647 | **Carbon tetrachloride** | | | | | | | | | | | |
| 648 | | | | | | | | | | | | |
| 649 | | | | | **General Statistics** | | | | | | | |
| 650 | | | | Number of Valid Data | | 53 | | | | | Number of Detected Data | 3 |
| 651 | | | | Number of Distinct Detected Data | | 3 | | | | | Number of Non-Detect Data | 50 |
| 652 | | | | | | | | | | | Percent Non-Detects | 94.34% |
| 653 | | | | | | | | | | | | |
| 654 | | | | **Raw Statistics** | | | **Log-transformed Statistics** | | | | | |
| 655 | | | | Minimum Detected | | 0.00144 | | | | | Minimum Detected | -6.543 |
| 656 | | | | Maximum Detected | | 0.00602 | | | | | Maximum Detected | -5.113 |
| 657 | | | | Mean of Detected | | 0.00382 | | | | | Mean of Detected | -5.726 |
| 658 | | | | SD of Detected | | 0.0023 | | | | | SD of Detected | 0.737 |
| 659 | | | | Minimum Non-Detect | | 0.00154 | | | | | Minimum Non-Detect | -6.476 |
| 660 | | | | Maximum Non-Detect | | 0.29 | | | | | Maximum Non-Detect | -1.238 |
| 661 | | | | | | | | | | | | |
| 662 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 53 |
| 663 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 664 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 665 | | | | | | | | | | | | |
| 666 | **Warning: There are only 3 Distinct Detected Values in this data set** | | | | | | | | | | | |
| 667 | **The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.** | | | | | | | | | | | |
| 668 | **Those methods will return a 'N/A' value on your output display!** | | | | | | | | | | | |
| 669 | | | | | | | | | | | | |
| 670 | **It is necessary to have 4 or more Distinct Values for bootstrap methods.** | | | | | | | | | | | |
| 671 | **However, results obtained using 4 to 9 distinct values may not be reliable.** | | | | | | | | | | | |
| 672 | **It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.** | | | | | | | | | | | |
| 673 | | | | | | | | | | | | |
| 674 | | | | | | | | | | | | |
| 675 | | | | | **UCL Statistics** | | | | | | | |
| 676 | | | | **Normal Distribution Test with Detected Values Only** | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 677 | | | | Shapiro Wilk Test Statistic | | 0.995 | | | | | Shapiro Wilk Test Statistic | 0.942 |
| 678 | | | | 5% Shapiro Wilk Critical Value | | 0.767 | | | | | 5% Shapiro Wilk Critical Value | 0.767 |
| 679 | | | | **Data appear Normal at 5% Significance Level** | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 680 | | | | | | | | | | | | |
| 681 | | | | **Assuming Normal Distribution** | | | **Assuming Lognormal Distribution** | | | | | |
| 682 | | | | DL/2 Substitution Method | | | | | | | DL/2 Substitution Method | |
| 683 | | | | Mean | | 0.00798 | | | | | Mean | -5.86 |
| 684 | | | | SD | | 0.0248 | | | | | SD | 1.058 |
| 685 | | | | 95% DL/2 (t) UCL | | 0.0137 | | | | | 95% H-Stat (DL/2) UCL | 0.00797 |
| 686 | | | | | | | | | | | | |
| 687 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | | Log ROS Method | |
| 688 | | | | **MLE method failed to converge properly** | | | | | | | Mean in Log Scale | -6.48 |
| 689 | | | | | | | | | | | SD in Log Scale | 0.34 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 690 | | | | | | | | | | | Mean in Original Scale | 0.00164 |
| 691 | | | | | | | | | | | SD in Original Scale | 0.0008055 |
| 692 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.00185 |
| 693 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.00189 |
| 694 | | | | | | | | | | | | |
| 695 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | **Data Distribution Test with Detected Values Only** | | | |
| 696 | | | | | k star (bias corrected) | N/A | | | **Data appear Normal at 5% Significance Level** | | | |
| 697 | | | | | Theta Star | N/A | | | | | | |
| 698 | | | | | nu star | N/A | | | | | | |
| 699 | | | | | | | | | | | | |
| 700 | | | | | A-D Test Statistic | N/A | | | **Nonparametric Statistics** | | | |
| 701 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 702 | | | | | K-S Test Statistic | N/A | | | | | Mean | 0.0017 |
| 703 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 0.0009542 |
| 704 | | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 0.0002205 |
| 705 | | | | | | | | | | | 95% KM (t) UCL | 0.00207 |
| 706 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 0.00206 |
| 707 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.00329 |
| 708 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | 0.00186 |
| 709 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | N/A |
| 710 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 0.00602 |
| 711 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 0.00266 |
| 712 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 0.00307 |
| 713 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 0.00389 |
| 714 | | | | | Theta star | N/A | | | | | | |
| 715 | | | | | Nu star | N/A | | | **Potential UCLs to Use** | | | |
| 716 | | | | | AppChi2 | N/A | | | | | 95% KM (t) UCL | 0.00207 |
| 717 | | | | | 95% Gamma Approximate UCL | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 0.00602 |
| 718 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 719 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 720 | | | | | | | | | | | | |
| 721 | | | | | | | | | | | | |
| 722 | **Chlorobenzene** | | | | | | | | | | | |
| 723 | | | | | | | | | | | | |
| 724 | | | | | | **General Statistics** | | | | | | |
| 725 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 5 |
| 726 | | | | | Number of Distinct Detected Data | 5 | | | | | Number of Non-Detect Data | 48 |
| 727 | | | | | | | | | | | Percent Non-Detects | 90.57% |
| 728 | | | | | | | | | | | | |
| 729 | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | | | |
| 730 | | | | | Minimum Detected | 0.003 | | | | | Minimum Detected | -5.809 |
| 731 | | | | | Maximum Detected | 0.127 | | | | | Maximum Detected | -2.064 |
| 732 | | | | | Mean of Detected | 0.0301 | | | | | Mean of Detected | -4.586 |
| 733 | | | | | SD of Detected | 0.0542 | | | | | SD of Detected | 1.464 |
| 734 | | | | | Minimum Non-Detect | 0.00154 | | | | | Minimum Non-Detect | -6.476 |
| 735 | | | | | Maximum Non-Detect | 0.29 | | | | | Maximum Non-Detect | -1.238 |
| 736 | | | | | | | | | | | | |
| 737 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 53 |
| 738 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 739 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 740 | | | | | | | | | | | | |
| 741 | | | | | | **Warning: There are only 5 Detected Values in this data** | | | | | | |
| 742 | | | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 743 | the resulting calculations may not be reliable enough to draw conclusions | | | | | | | | | | | |
| 744 | | | | | | | | | | | | |
| 745 | It is recommended to have 10-15 or more distinct observations for accurate and meaningful results. | | | | | | | | | | | |
| 746 | | | | | | | | | | | | |
| 747 | | | | | | | | | | | | |
| 748 | UCL Statistics | | | | | | | | | | | |
| 749 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 750 | | | | | Shapiro Wilk Test Statistic | 0.59 | | | Shapiro Wilk Test Statistic | | | 0.803 |
| 751 | | | | | 5% Shapiro Wilk Critical Value | 0.762 | | | 5% Shapiro Wilk Critical Value | | | 0.762 |
| 752 | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | | | | |
| 753 | | | | | | | | | | | | |
| 754 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 755 | | | | | DL/2 Substitution Method | | | | DL/2 Substitution Method | | | |
| 756 | | | | | Mean | 0.0105 | | | Mean | | | -5.748 |
| 757 | | | | | SD | 0.0297 | | | SD | | | 1.178 |
| 758 | | | | | 95% DL/2 (t) UCL | 0.0173 | | | 95% H-Stat (DL/2) UCL | | | 0.0101 |
| 759 | | | | | | | | | | | | |
| 760 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | Log ROS Method | | | |
| 761 | MLE method failed to converge properly | | | | | | | | Mean in Log Scale | | | -8.904 |
| 762 | | | | | | | | | SD in Log Scale | | | 1.788 |
| 763 | | | | | | | | | Mean in Original Scale | | | 0.00299 |
| 764 | | | | | | | | | SD in Original Scale | | | 0.0174 |
| 765 | | | | | | | | | 95% Percentile Bootstrap UCL | | | 0.00771 |
| 766 | | | | | | | | | 95% BCA Bootstrap UCL | | | 0.0105 |
| 767 | | | | | | | | | | | | |
| 768 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 769 | | | | | k star (bias corrected) | 0.363 | Data appear Lognormal at 5% Significance Level | | | | | |
| 770 | | | | | Theta Star | 0.0828 | | | | | | |
| 771 | | | | | nu star | 3.632 | | | | | | |
| 772 | | | | | | | | | | | | |
| 773 | | | | | A-D Test Statistic | 0.862 | Nonparametric Statistics | | | | | |
| 774 | | | | | 5% A-D Critical Value | 0.707 | | | Kaplan-Meier (KM) Method | | | |
| 775 | | | | | K-S Test Statistic | 0.707 | | | Mean | | | 0.0058 |
| 776 | | | | | 5% K-S Critical Value | 0.37 | | | SD | | | 0.0172 |
| 777 | Data not Gamma Distributed at 5% Significance Level | | | | | | | | SE of Mean | | | 0.00269 |
| 778 | | | | | | | | | 95% KM (t) UCL | | | 0.0103 |
| 779 | Assuming Gamma Distribution | | | | | | | | 95% KM (z) UCL | | | 0.0102 |
| 780 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | 95% KM (jackknife) UCL | | | 0.00913 |
| 781 | | | | | Minimum | 0.003 | | | 95% KM (bootstrap t) UCL | | | 0.0365 |
| 782 | | | | | Maximum | 0.127 | | | 95% KM (BCA) UCL | | | 0.0169 |
| 783 | | | | | Mean | 0.0301 | | | 95% KM (Percentile Bootstrap) UCL | | | 0.012 |
| 784 | | | | | Median | 0.0301 | | | 95% KM (Chebyshev) UCL | | | 0.0175 |
| 785 | | | | | SD | 0.015 | | | 97.5% KM (Chebyshev) UCL | | | 0.0226 |
| 786 | | | | | k star | 4.785 | | | 99% KM (Chebyshev) UCL | | | 0.0326 |
| 787 | | | | | Theta star | 0.00628 | | | | | | |
| 788 | | | | | Nu star | 507.2 | Potential UCLs to Use | | | | | |
| 789 | | | | | AppChi2 | 456 | | | 95% KM (BCA) UCL | | | 0.0169 |
| 790 | | | | | 95% Gamma Approximate UCL | 0.0334 | | | | | | |
| 791 | | | | | 95% Adjusted Gamma UCL | 0.0335 | | | | | | |
| 792 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 793 | | | | | | | | | | | | |
| 794 | | | | | | | | | | | | |
| 795 | Cyclohexane, methyl- | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 796 | | | | | | | | | | | | |
| 797 | | | | | | **General Statistics** | | | | | | |
| 798 | | | | | | Number of Valid Data | 53 | | | | Number of Detected Data | 3 |
| 799 | | | | | | Number of Distinct Detected Data | 3 | | | | Number of Non-Detect Data | 50 |
| 800 | | | | | | | | | | | Percent Non-Detects | 94.34% |
| 801 | | | | | | | | | | | | |
| 802 | | | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | |
| 803 | | | | | | Minimum Detected | 0.004 | | | | Minimum Detected | -5.521 |
| 804 | | | | | | Maximum Detected | 0.229 | | | | Maximum Detected | -1.474 |
| 805 | | | | | | Mean of Detected | 0.106 | | | | Mean of Detected | -3.155 |
| 806 | | | | | | SD of Detected | 0.114 | | | | SD of Detected | 2.109 |
| 807 | | | | | | Minimum Non-Detect | 0.00154 | | | | Minimum Non-Detect | -6.476 |
| 808 | | | | | | Maximum Non-Detect | 0.29 | | | | Maximum Non-Detect | -1.238 |
| 809 | | | | | | | | | | | | |
| 810 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 53 |
| 811 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 812 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 813 | | | | | | | | | | | | |
| 814 | | | | | | **Warning: There are only 3 Distinct Detected Values in this data set** | | | | | | |
| 815 | | | | | | **The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.** | | | | | | |
| 816 | | | | | | **Those methods will return a 'N/A' value on your output display!** | | | | | | |
| 817 | | | | | | | | | | | | |
| 818 | | | | | | **It is necessary to have 4 or more Distinct Values for bootstrap methods.** | | | | | | |
| 819 | | | | | | **However, results obtained using 4 to 9 distinct values may not be reliable.** | | | | | | |
| 820 | | | | | | **It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.** | | | | | | |
| 821 | | | | | | | | | | | | |
| 822 | | | | | | | | | | | | |
| 823 | | | | | | **UCL Statistics** | | | | | | |
| 824 | | | | | | **Normal Distribution Test with Detected Values Only** | | | | | **Lognormal Distribution Test with Detected Values Only** | |
| 825 | | | | | | Shapiro Wilk Test Statistic | 0.974 | | | | Shapiro Wilk Test Statistic | 0.921 |
| 826 | | | | | | 5% Shapiro Wilk Critical Value | 0.767 | | | | 5% Shapiro Wilk Critical Value | 0.767 |
| 827 | | | | | | **Data appear Normal at 5% Significance Level** | | | | | **Data appear Lognormal at 5% Significance Level** | |
| 828 | | | | | | | | | | | | |
| 829 | | | | | | **Assuming Normal Distribution** | | | | | **Assuming Lognormal Distribution** | |
| 830 | | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | |
| 831 | | | | | | Mean | 0.0137 | | | | Mean | -5.729 |
| 832 | | | | | | SD | 0.0404 | | | | SD | 1.303 |
| 833 | | | | | | 95% DL/2 (t) UCL | 0.023 | | | | 95% H-Stat (DL/2) UCL | 0.012 |
| 834 | | | | | | | | | | | | |
| 835 | | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | |
| 836 | | | | | | **MLE method failed to converge properly** | | | | | Mean in Log Scale | -14.91 |
| 837 | | | | | | | | | | | SD in Log Scale | 3.744 |
| 838 | | | | | | | | | | | Mean in Original Scale | 0.006 |
| 839 | | | | | | | | | | | SD in Original Scale | 0.0333 |
| 840 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.0146 |
| 841 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.0206 |
| 842 | | | | | | | | | | | | |
| 843 | | | | | | **Gamma Distribution Test with Detected Values Only** | | | | | **Data Distribution Test with Detected Values Only** | |
| 844 | | | | | | k star (bias corrected) | N/A | | | | **Data appear Normal at 5% Significance Level** | |
| 845 | | | | | | Theta Star | N/A | | | | | |
| 846 | | | | | | nu star | N/A | | | | | |
| 847 | | | | | | | | | | | | |
| 848 | | | | | | A-D Test Statistic | N/A | | | | **Nonparametric Statistics** | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 849 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 850 | | | | | K-S Test Statistic | N/A | | | | | Mean | 0.00999 |
| 851 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 0.0329 |
| 852 | | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 0.00565 |
| 853 | | | | | | | | | | | 95% KM (t) UCL | 0.0195 |
| 854 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 0.0193 |
| 855 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.0617 |
| 856 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | 0.0166 |
| 857 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | 0.229 |
| 858 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | N/A |
| 859 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 0.0346 |
| 860 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 0.0453 |
| 861 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 0.0662 |
| 862 | | | | | Theta star | N/A | | | | | | |
| 863 | | | | | Nu star | N/A | | | | | **Potential UCLs to Use** | |
| 864 | | | | | AppChi2 | N/A | | | | | 95% KM (t) UCL | 0.0195 |
| 865 | | | | | 95% Gamma Approximate UCL | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | N/A |
| 866 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 867 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 868 | | | | | | | | | | | | |
| 869 | | | | | | | | | | | | |
| 870 | **Dichlorodifluoromethane** | | | | | | | | | | | |
| 871 | | | | | | | | | | | | |
| 872 | | | | | **General Statistics** | | | | | | | |
| 873 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 3 |
| 874 | | | | | Number of Distinct Detected Data | 3 | | | | | Number of Non-Detect Data | 50 |
| 875 | | | | | | | | | | | Percent Non-Detects | 94.34% |
| 876 | | | | | | | | | | | | |
| 877 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 878 | | | | | Minimum Detected | 0.00154 | | | | | Minimum Detected | -6.476 |
| 879 | | | | | Maximum Detected | 0.0209 | | | | | Maximum Detected | -3.868 |
| 880 | | | | | Mean of Detected | 0.00862 | | | | | Mean of Detected | -5.34 |
| 881 | | | | | SD of Detected | 0.0107 | | | | | SD of Detected | 1.336 |
| 882 | | | | | Minimum Non-Detect | 0.00154 | | | | | Minimum Non-Detect | -6.476 |
| 883 | | | | | Maximum Non-Detect | 0.29 | | | | | Maximum Non-Detect | -1.238 |
| 884 | | | | | | | | | | | | |
| 885 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 53 |
| 886 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 887 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 888 | | | | | | | | | | | | |
| 889 | | | | | **Warning: There are only 3 Distinct Detected Values in this data set** | | | | | | | |
| 890 | | | | | **The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.** | | | | | | | |
| 891 | | | | | **Those methods will return a 'N/A' value on your output display!** | | | | | | | |
| 892 | | | | | | | | | | | | |
| 893 | | | | | **It is necessary to have 4 or more Distinct Values for bootstrap methods.** | | | | | | | |
| 894 | | | | | **However, results obtained using 4 to 9 distinct values may not be reliable.** | | | | | | | |
| 895 | | | | | **It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.** | | | | | | | |
| 896 | | | | | | | | | | | | |
| 897 | | | | | | | | | | | | |
| 898 | | | | | **UCL Statistics** | | | | | | | |
| 899 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 900 | | | | | Shapiro Wilk Test Statistic | 0.822 | | | | | Shapiro Wilk Test Statistic | 0.953 |
| 901 | | | | | 5% Shapiro Wilk Critical Value | 0.767 | | | | | 5% Shapiro Wilk Critical Value | 0.767 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 902 | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 903 | | | | | | | | | | | | |
| 904 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 905 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 906 | | | | | Mean | 0.00834 | | | | | Mean | -5.81 |
| 907 | | | | | SD | 0.0249 | | | | | SD | 1.087 |
| 908 | | | | | 95% DL/2 (t) UCL | 0.0141 | | | | | 95% H-Stat (DL/2) UCL | 0.00806 |
| 909 | | | | | | | | | | | | |
| 910 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | | Log ROS Method | |
| 911 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | -7.346 |
| 912 | | | | | | | | | | | SD in Log Scale | 0.774 |
| 913 | | | | | | | | | | | Mean in Original Scale | 0.00112 |
| 914 | | | | | | | | | | | SD in Original Scale | 0.00283 |
| 915 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.00185 |
| 916 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.00234 |
| 917 | | | | | | | | | | | | |
| 918 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 919 | | | | | k star (bias corrected) | N/A | **Data appear Normal at 5% Significance Level** | | | | | |
| 920 | | | | | Theta Star | N/A | | | | | | |
| 921 | | | | | nu star | N/A | | | | | | |
| 922 | | | | | | | | | | | | |
| 923 | | | | | A-D Test Statistic | N/A | **Nonparametric Statistics** | | | | | |
| 924 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 925 | | | | | K-S Test Statistic | N/A | | | | | Mean | 0.002 |
| 926 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 0.0027 |
| 927 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.0004693 |
| 928 | | | | | | | | | | | 95% KM (t) UCL | 0.00279 |
| 929 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 0.00278 |
| 930 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.00326 |
| 931 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | 0.00353 |
| 932 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | 0.0209 |
| 933 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0209 |
| 934 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 0.00405 |
| 935 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 0.00493 |
| 936 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 0.00667 |
| 937 | | | | | Theta star | N/A | | | | | | |
| 938 | | | | | Nu star | N/A | **Potential UCLs to Use** | | | | | |
| 939 | | | | | AppChi2 | N/A | | | | | 95% KM (t) UCL | 0.00279 |
| 940 | | | | | 95% Gamma Approximate UCL | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0209 |
| 941 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 942 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 943 | | | | | | | | | | | | |
| 944 | | | | | | | | | | | | |
| 945 | **Methyl acetate** | | | | | | | | | | | |
| 946 | | | | | | | | | | | | |
| 947 | **General Statistics** | | | | | | | | | | | |
| 948 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 8 |
| 949 | | | | | Number of Distinct Detected Data | 8 | | | | | Number of Non-Detect Data | 45 |
| 950 | | | | | | | | | | | Percent Non-Detects | 84.91% |
| 951 | | | | | | | | | | | | |
| 952 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 953 | | | | | Minimum Detected | 0.00158 | | | | | Minimum Detected | -6.45 |
| 954 | | | | | Maximum Detected | 1.11 | | | | | Maximum Detected | 0.104 |

| | A–E | F | G–K | L |
|---|---|---|---|---|
| 955 | Mean of Detected | 0.247 | Mean of Detected | -3.456 |
| 956 | SD of Detected | 0.397 | SD of Detected | 2.607 |
| 957 | Minimum Non-Detect | 0.00156 | Minimum Non-Detect | -6.463 |
| 958 | Maximum Non-Detect | 0.234 | Maximum Non-Detect | -1.452 |
| 959 | | | | |
| 960 | Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 50 |
| 961 | For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 3 |
| 962 | Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 94.34% |
| 963 | | | | |
| 964 | **Warning: There are only 8 Detected Values in this data** | | | |
| 965 | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | |
| 966 | **the resulting calculations may not be reliable enough to draw conclusions** | | | |
| 967 | | | | |
| 968 | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | |
| 969 | | | | |
| 970 | | | | |
| 971 | **UCL Statistics** | | | |
| 972 | **Normal Distribution Test with Detected Values Only** | | **Lognormal Distribution Test with Detected Values Only** | |
| 973 | Shapiro Wilk Test Statistic | 0.714 | Shapiro Wilk Test Statistic | 0.897 |
| 974 | 5% Shapiro Wilk Critical Value | 0.818 | 5% Shapiro Wilk Critical Value | 0.818 |
| 975 | **Data not Normal at 5% Significance Level** | | **Data appear Lognormal at 5% Significance Level** | |
| 976 | | | | |
| 977 | **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
| 978 | DL/2 Substitution Method | | DL/2 Substitution Method | |
| 979 | Mean | 0.0424 | Mean | -5.482 |
| 980 | SD | 0.171 | SD | 1.544 |
| 981 | 95% DL/2 (t) UCL | 0.0816 | 95% H-Stat (DL/2) UCL | 0.0219 |
| 982 | | | | |
| 983 | Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| 984 | **MLE yields a negative mean** | | Mean in Log Scale | -8.571 |
| 985 | | | SD in Log Scale | 2.796 |
| 986 | | | Mean in Original Scale | 0.0376 |
| 987 | | | SD in Original Scale | 0.171 |
| 988 | | | 95% Percentile Bootstrap UCL | 0.0786 |
| 989 | | | 95% BCA Bootstrap UCL | 0.1 |
| 990 | | | | |
| 991 | **Gamma Distribution Test with Detected Values Only** | | **Data Distribution Test with Detected Values Only** | |
| 992 | k star (bias corrected) | 0.289 | **Data appear Gamma Distributed at 5% Significance Level** | |
| 993 | Theta Star | 0.854 | | |
| 994 | nu star | 4.632 | | |
| 995 | | | | |
| 996 | A-D Test Statistic | 0.464 | **Nonparametric Statistics** | |
| 997 | 5% A-D Critical Value | 0.792 | Kaplan-Meier (KM) Method | |
| 998 | K-S Test Statistic | 0.792 | Mean | 0.0389 |
| 999 | 5% K-S Critical Value | 0.316 | SD | 0.169 |
| 1000 | **Data appear Gamma Distributed at 5% Significance Level** | | SE of Mean | 0.0248 |
| 1001 | | | 95% KM (t) UCL | 0.0804 |
| 1002 | **Assuming Gamma Distribution** | | 95% KM (z) UCL | 0.0797 |
| 1003 | Gamma ROS Statistics using Extrapolated Data | | 95% KM (jackknife) UCL | 0.0776 |
| 1004 | Minimum | 1E-09 | 95% KM (bootstrap t) UCL | 0.187 |
| 1005 | Maximum | 1.11 | 95% KM (BCA) UCL | 0.0908 |
| 1006 | Mean | 0.217 | 95% KM (Percentile Bootstrap) UCL | 0.0883 |
| 1007 | Median | 0.245 | 95% KM (Chebyshev) UCL | 0.147 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1008 | | | | | SD | 0.174 | | | | | 97.5% KM (Chebyshev) UCL | 0.194 |
| 1009 | | | | | k star | 0.32 | | | | | 99% KM (Chebyshev) UCL | 0.286 |
| 1010 | | | | | Theta star | 0.68 | | | | | | |
| 1011 | | | | | Nu star | 33.88 | **Potential UCLs to Use** | | | | | |
| 1012 | | | | | AppChi2 | 21.57 | | | | | 95% KM (t) UCL | 0.0804 |
| 1013 | | | | | 95% Gamma Approximate UCL | 0.341 | | | | | | |
| 1014 | | | | | 95% Adjusted Gamma UCL | 0.346 | | | | | | |
| 1015 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1016 | | | | | | | | | | | | |
| 1017 | | | | | | | | | | | | |
| 1018 | **Methylene chloride** | | | | | | | | | | | |
| 1019 | | | | | | | | | | | | |
| 1020 | | | | | **General Statistics** | | | | | | | |
| 1021 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 2 |
| 1022 | | | | | Number of Distinct Detected Data | 2 | | | | | Number of Non-Detect Data | 51 |
| 1023 | | | | | | | | | | | Percent Non-Detects | 96.23% |
| 1024 | | | | | | | | | | | | |
| 1025 | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | | | |
| 1026 | | | | | Minimum Detected | 0.00373 | | | | | Minimum Detected | -5.591 |
| 1027 | | | | | Maximum Detected | 0.004 | | | | | Maximum Detected | -5.521 |
| 1028 | | | | | Mean of Detected | 0.00387 | | | | | Mean of Detected | -5.556 |
| 1029 | | | | | SD of Detected | 0.0001909 | | | | | SD of Detected | 0.0494 |
| 1030 | | | | | Minimum Non-Detect | 0.00385 | | | | | Minimum Non-Detect | -5.56 |
| 1031 | | | | | Maximum Non-Detect | 0.724 | | | | | Maximum Non-Detect | -0.323 |
| 1032 | | | | | | | | | | | | |
| 1033 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 53 |
| 1034 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 1035 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 1036 | | | | | | | | | | | | |
| 1037 | **Warning: Data set has only 2 Distinct Detected Values.** | | | | | | | | | | | |
| 1038 | **This may not be adequate enough to compute meaningful and reliable test statistics and estimates.** | | | | | | | | | | | |
| 1039 | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 1040 | | | | | | | | | | | | |
| 1041 | **Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.** | | | | | | | | | | | |
| 1042 | | | | | | | | | | | | |
| 1043 | **The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.** | | | | | | | | | | | |
| 1044 | **Those methods will return a 'N/A' value on your output display!** | | | | | | | | | | | |
| 1045 | | | | | | | | | | | | |
| 1046 | **It is necessary to have 4 or more Distinct Values for bootstrap methods.** | | | | | | | | | | | |
| 1047 | **However, results obtained using 4 to 9 distinct values may not be reliable.** | | | | | | | | | | | |
| 1048 | **It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.** | | | | | | | | | | | |
| 1049 | | | | | | | | | | | | |
| 1050 | | | | | | | | | | | | |
| 1051 | | | | | **UCL Statistics** | | | | | | | |
| 1052 | | | | **Normal Distribution Test with Detected Values Only** | | | | | **Lognormal Distribution Test with Detected Values Only** | | | |
| 1053 | | | | | Shapiro Wilk Test Statistic | N/A | | | | | Shapiro Wilk Test Statistic | N/A |
| 1054 | | | | | 5% Shapiro Wilk Critical Value | N/A | | | | | 5% Shapiro Wilk Critical Value | N/A |
| 1055 | | | | **Data not Normal at 5% Significance Level** | | | | | **Data not Lognormal at 5% Significance Level** | | | |
| 1056 | | | | | | | | | | | | |
| 1057 | | | | **Assuming Normal Distribution** | | | | | **Assuming Lognormal Distribution** | | | |
| 1058 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1059 | | | | | Mean | 0.0168 | | | | | Mean | -5.312 |
| 1060 | | | | | SD | 0.0624 | | | | | SD | 0.939 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1061 | | | | | 95% DL/2 (t) UCL | 0.0311 | | | | | 95% H-Stat (DL/2) UCL | 0.0106 |
| 1062 | | | | | | | | | | | | |
| 1063 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | | Log ROS Method | |
| 1064 | | | **MLE method failed to converge properly** | | | | | | | | Mean in Log Scale | N/A |
| 1065 | | | | | | | | | | | SD in Log Scale | N/A |
| 1066 | | | | | | | | | | | Mean in Original Scale | N/A |
| 1067 | | | | | | | | | | | SD in Original Scale | N/A |
| 1068 | | | | | | | | | | | 95% Percentile Bootstrap UCL | N/A |
| 1069 | | | | | | | | | | | 95% BCA Bootstrap UCL | N/A |
| 1070 | | | | | | | | | | | | |
| 1071 | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | |
| 1072 | | | | | k star (bias corrected) | N/A | | | **Data do not follow a Discernable Distribution (0.05)** | | | |
| 1073 | | | | | Theta Star | N/A | | | | | | |
| 1074 | | | | | nu star | N/A | | | | | | |
| 1075 | | | | | | | | | | | | |
| 1076 | | | | | A-D Test Statistic | N/A | | | **Nonparametric Statistics** | | | |
| 1077 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 1078 | | | | | K-S Test Statistic | N/A | | | | | Mean | 0.00378 |
| 1079 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 0.000108 |
| 1080 | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | SE of Mean | 6.831E-05 |
| 1081 | | | | | | | | | | | 95% KM (t) UCL | 0.0039 |
| 1082 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 0.0039 |
| 1083 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.00395 |
| 1084 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | N/A |
| 1085 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | 0.004 |
| 1086 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 0.004 |
| 1087 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 0.00408 |
| 1088 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 0.00421 |
| 1089 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 0.00446 |
| 1090 | | | | | Theta star | N/A | | | | | | |
| 1091 | | | | | Nu star | N/A | | | **Potential UCLs to Use** | | | |
| 1092 | | | | | AppChi2 | N/A | | | | | 95% KM (t) UCL | 0.0039 |
| 1093 | | | | | 95% Gamma Approximate UCL | N/A | | | | | 95% KM (% Bootstrap) UCL | 0.004 |
| 1094 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 1095 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1096 | | | | | | | | | | | | |
| 1097 | | | | | | | | | | | | |
| 1098 | **Naphthalene** | | | | | | | | | | | |
| 1099 | | | | | | | | | | | | |
| 1100 | | | | | **General Statistics** | | | | | | | |
| 1101 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 34 |
| 1102 | | | | | Number of Distinct Detected Data | 32 | | | | | Number of Non-Detect Data | 19 |
| 1103 | | | | | | | | | | | Percent Non-Detects | 35.85% |
| 1104 | | | | | | | | | | | | |
| 1105 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1106 | | | | | Minimum Detected | 0.04 | | | | | Minimum Detected | -3.219 |
| 1107 | | | | | Maximum Detected | 4.75 | | | | | Maximum Detected | 1.558 |
| 1108 | | | | | Mean of Detected | 0.459 | | | | | Mean of Detected | -1.5 |
| 1109 | | | | | SD of Detected | 0.839 | | | | | SD of Detected | 1.1 |
| 1110 | | | | | Minimum Non-Detect | 0.00418 | | | | | Minimum Non-Detect | -5.477 |
| 1111 | | | | | Maximum Non-Detect | 0.4 | | | | | Maximum Non-Detect | -0.916 |
| 1112 | | | | | | | | | | | | |
| 1113 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 45 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1114 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 8 |
| 1115 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 84.91% |
| 1116 | | | | | | | | | | | | |
| 1117 | | | | | | **UCL Statistics** | | | | | | |
| 1118 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 1119 | | | | | Shapiro Wilk Test Statistic | 0.481 | | | | | Shapiro Wilk Test Statistic | 0.944 |
| 1120 | | | | | 5% Shapiro Wilk Critical Value | 0.933 | | | | | 5% Shapiro Wilk Critical Value | 0.933 |
| 1121 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1122 | | | | | | | | | | | | |
| 1123 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1124 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1125 | | | | | Mean | 0.331 | | | | | Mean | -2.228 |
| 1126 | | | | | SD | 0.693 | | | | | SD | 1.815 |
| 1127 | | | | | 95% DL/2 (t) UCL | 0.49 | | | | | 95% H-Stat (DL/2) UCL | 1.085 |
| 1128 | | | | | | | | | | | | |
| 1129 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 1130 | | | | | Mean | 2.047 | | | | | Mean in Log Scale | -2.053 |
| 1131 | | | | | SD | 1.277 | | | | | SD in Log Scale | 1.251 |
| 1132 | | | | | 95% MLE (t) UCL | 2.34 | | | | | Mean in Original Scale | 0.318 |
| 1133 | | | | | 95% MLE (Tiku) UCL | 2.771 | | | | | SD in Original Scale | 0.696 |
| 1134 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.495 |
| 1135 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.566 |
| 1136 | | | | | | | | | | | | |
| 1137 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 1138 | | | | | k star (bias corrected) | 0.767 | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1139 | | | | | Theta Star | 0.599 | | | | | | |
| 1140 | | | | | nu star | 52.14 | | | | | | |
| 1141 | | | | | | | | | | | | |
| 1142 | | | | | A-D Test Statistic | 1.967 | | | | **Nonparametric Statistics** | | |
| 1143 | | | | | 5% A-D Critical Value | 0.784 | | | | | Kaplan-Meier (KM) Method | |
| 1144 | | | | | K-S Test Statistic | 0.784 | | | | | Mean | 0.326 |
| 1145 | | | | | 5% K-S Critical Value | 0.156 | | | | | SD | 0.687 |
| 1146 | | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 0.096 |
| 1147 | | | | | | | | | | | 95% KM (t) UCL | 0.487 |
| 1148 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 0.484 |
| 1149 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.485 |
| 1150 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 0.684 |
| 1151 | | | | | Maximum | 4.75 | | | | | 95% KM (BCA) UCL | 0.529 |
| 1152 | | | | | Mean | 0.381 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.503 |
| 1153 | | | | | Median | 0.18 | | | | | 95% KM (Chebyshev) UCL | 0.745 |
| 1154 | | | | | SD | 0.702 | | | | | 97.5% KM (Chebyshev) UCL | 0.926 |
| 1155 | | | | | k star | 0.2 | | | | | 99% KM (Chebyshev) UCL | 1.281 |
| 1156 | | | | | Theta star | 1.91 | | | | | | |
| 1157 | | | | | Nu star | 21.17 | | | | **Potential UCLs to Use** | | |
| 1158 | | | | | AppChi2 | 11.72 | | | | | 95% KM (Chebyshev) UCL | 0.745 |
| 1159 | | | | | 95% Gamma Approximate UCL | 0.689 | | | | | | |
| 1160 | | | | | 95% Adjusted Gamma UCL | 0.701 | | | | | | |
| 1161 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1162 | | | | | | | | | | | | |
| 1163 | | | | | | | | | | | | |
| 1164 | **Nitrobenzene** | | | | | | | | | | | |
| 1165 | | | | | | | | | | | | |
| 1166 | | | | | | **General Statistics** | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1167 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 1 |
| 1168 | | | | | Number of Distinct Detected Data | 1 | | | | | Number of Non-Detect Data | 52 |
| 1169 | | | | | | | | | | | Percent Non-Detects | 98.11% |
| 1170 | | | | | | | | | | | | |
| 1171 | Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set! | | | | | | | | | | | |
| 1172 | It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 1173 | | | | | | | | | | | | |
| 1174 | The data set for variable Nitrobenzene was not processed! | | | | | | | | | | | |
| 1175 | | | | | | | | | | | | |
| 1176 | | | | | | | | | | | | |
| 1177 | | | | | | | | | | | | |
| 1178 | Phenanthrene | | | | | | | | | | | |
| 1179 | | | | | | | | | | | | |
| 1180 | General Statistics | | | | | | | | | | | |
| 1181 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 51 |
| 1182 | | | | | Number of Distinct Detected Data | 46 | | | | | Number of Non-Detect Data | 2 |
| 1183 | | | | | | | | | | | Percent Non-Detects | 3.77% |
| 1184 | | | | | | | | | | | | |
| 1185 | Raw Statistics | | | | | | Log-transformed Statistics | | | | | |
| 1186 | | | | | Minimum Detected | 0.00687 | | | | | Minimum Detected | -4.981 |
| 1187 | | | | | Maximum Detected | 26.7 | | | | | Maximum Detected | 3.285 |
| 1188 | | | | | Mean of Detected | 2.243 | | | | | Mean of Detected | -0.229 |
| 1189 | | | | | SD of Detected | 4.177 | | | | | SD of Detected | 1.629 |
| 1190 | | | | | Minimum Non-Detect | 0.00788 | | | | | Minimum Non-Detect | -4.843 |
| 1191 | | | | | Maximum Non-Detect | 0.00864 | | | | | Maximum Non-Detect | -4.751 |
| 1192 | | | | | | | | | | | | |
| 1193 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 3 |
| 1194 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 50 |
| 1195 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 5.66% |
| 1196 | | | | | | | | | | | | |
| 1197 | UCL Statistics | | | | | | | | | | | |
| 1198 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 1199 | | | | | Lilliefors Test Statistic | 0.296 | | | | | Lilliefors Test Statistic | 0.108 |
| 1200 | | | | | 5% Lilliefors Critical Value | 0.124 | | | | | 5% Lilliefors Critical Value | 0.124 |
| 1201 | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | | | | |
| 1202 | | | | | | | | | | | | |
| 1203 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 1204 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1205 | | | | | Mean | 2.159 | | | | | Mean | -0.427 |
| 1206 | | | | | SD | 4.119 | | | | | SD | 1.891 |
| 1207 | | | | | 95% DL/2 (t) UCL | 3.106 | | | | | 95% H-Stat (DL/2) UCL | 7.749 |
| 1208 | | | | | | | | | | | | |
| 1209 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 1210 | | | | | Mean | 2.003 | | | | | Mean in Log Scale | -0.362 |
| 1211 | | | | | SD | 4.242 | | | | | SD in Log Scale | 1.737 |
| 1212 | | | | | 95% MLE (t) UCL | 2.979 | | | | | Mean in Original Scale | 2.159 |
| 1213 | | | | | 95% MLE (Tiku) UCL | 2.895 | | | | | SD in Original Scale | 4.118 |
| 1214 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 3.17 |
| 1215 | | | | | | | | | | | 95% BCA Bootstrap UCL | 3.586 |
| 1216 | | | | | | | | | | | | |
| 1217 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 1218 | | | | | k star (bias corrected) | 0.575 | Data appear Gamma Distributed at 5% Significance Level | | | | | |
| 1219 | | | | | Theta Star | 3.904 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1220 | | | | | nu star | 58.6 | | | | | | |
| 1221 | | | | | | | | | | | | |
| 1222 | | | | | A-D Test Statistic | 0.628 | **Nonparametric Statistics** | | | | | |
| 1223 | | | | | 5% A-D Critical Value | 0.806 | | | | Kaplan-Meier (KM) Method | | |
| 1224 | | | | | K-S Test Statistic | 0.806 | | | | | Mean | 2.159 |
| 1225 | | | | | 5% K-S Critical Value | 0.131 | | | | | SD | 4.08 |
| 1226 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.566 |
| 1227 | | | | | | | | | | | 95% KM (t) UCL | 3.106 |
| 1228 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 3.09 |
| 1229 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 3.106 |
| 1230 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 4.165 |
| 1231 | | | | | Maximum | 26.7 | | | | | 95% KM (BCA) UCL | 3.335 |
| 1232 | | | | | Mean | 2.158 | | | | | 95% KM (Percentile Bootstrap) UCL | 3.101 |
| 1233 | | | | | Median | 0.814 | | | | | 95% KM (Chebyshev) UCL | 4.626 |
| 1234 | | | | | SD | 4.119 | | | | | 97.5% KM (Chebyshev) UCL | 5.693 |
| 1235 | | | | | k star | 0.367 | | | | | 99% KM (Chebyshev) UCL | 7.79 |
| 1236 | | | | | Theta star | 5.887 | | | | | | |
| 1237 | | | | | Nu star | 38.86 | **Potential UCLs to Use** | | | | | |
| 1238 | | | | | AppChi2 | 25.58 | | | | | 95% KM (Chebyshev) UCL | 4.626 |
| 1239 | | | | | 95% Gamma Approximate UCL | 3.279 | | | | | | |
| 1240 | | | | | 95% Adjusted Gamma UCL | 3.318 | | | | | | |
| 1241 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1242 | | | | | | | | | | | | |
| 1243 | | | | | | | | | | | | |
| 1244 | **Tetrachloroethene** | | | | | | | | | | | |
| 1245 | | | | | | | | | | | | |
| 1246 | | | | | **General Statistics** | | | | | | | |
| 1247 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 6 |
| 1248 | | | | | Number of Distinct Detected Data | 6 | | | | | Number of Non-Detect Data | 47 |
| 1249 | | | | | | | | | | | Percent Non-Detects | 88.68% |
| 1250 | | | | | | | | | | | | |
| 1251 | | | | **Raw Statistics** | | | **Log-transformed Statistics** | | | | | |
| 1252 | | | | | Minimum Detected | 0.00212 | | | | | Minimum Detected | -6.156 |
| 1253 | | | | | Maximum Detected | 0.025 | | | | | Maximum Detected | -3.689 |
| 1254 | | | | | Mean of Detected | 0.00784 | | | | | Mean of Detected | -5.22 |
| 1255 | | | | | SD of Detected | 0.00865 | | | | | SD of Detected | 0.875 |
| 1256 | | | | | Minimum Non-Detect | 0.00154 | | | | | Minimum Non-Detect | -6.476 |
| 1257 | | | | | Maximum Non-Detect | 0.29 | | | | | Maximum Non-Detect | -1.238 |
| 1258 | | | | | | | | | | | | |
| 1259 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 53 |
| 1260 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 1261 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 1262 | | | | | | | | | | | | |
| 1263 | | | | | **Warning: There are only 6 Detected Values in this data** | | | | | | | |
| 1264 | | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | |
| 1265 | | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | |
| 1266 | | | | | | | | | | | | |
| 1267 | | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | |
| 1268 | | | | | | | | | | | | |
| 1269 | | | | | | | | | | | | |
| 1270 | | | | | **UCL Statistics** | | | | | | | |
| 1271 | | | | **Normal Distribution Test with Detected Values Only** | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 1272 | | | | | Shapiro Wilk Test Statistic | 0.702 | | | | | Shapiro Wilk Test Statistic | 0.926 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1273 | | | | | 5% Shapiro Wilk Critical Value | 0.788 | | | | | 5% Shapiro Wilk Critical Value | 0.788 |
| 1274 | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 1275 | | | | | | | | | | | | |
| 1276 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 1277 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1278 | | | | | Mean | 0.00847 | | | | | Mean | -5.783 |
| 1279 | | | | | SD | 0.0249 | | | | | SD | 1.085 |
| 1280 | | | | | 95% DL/2 (t) UCL | 0.0142 | | | | | 95% H-Stat (DL/2) UCL | 0.00963 |
| 1281 | | | | | | | | | | | | |
| 1282 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 1283 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | -7.379 |
| 1284 | | | | | | | | | | | SD in Log Scale | 1.006 |
| 1285 | | | | | | | | | | | Mean in Original Scale | 0.00141 |
| 1286 | | | | | | | | | | | SD in Original Scale | 0.00357 |
| 1287 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.0023 |
| 1288 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.00287 |
| 1289 | | | | | | | | | | | | |
| 1290 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 1291 | | | | | k star (bias corrected) | 0.856 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | |
| 1292 | | | | | Theta Star | 0.00915 | | | | | | |
| 1293 | | | | | nu star | 10.28 | | | | | | |
| 1294 | | | | | | | | | | | | |
| 1295 | | | | | A-D Test Statistic | 0.497 | **Nonparametric Statistics** | | | | | |
| 1296 | | | | | 5% A-D Critical Value | 0.708 | | | | | Kaplan-Meier (KM) Method | |
| 1297 | | | | | K-S Test Statistic | 0.708 | | | | | Mean | 0.00297 |
| 1298 | | | | | 5% K-S Critical Value | 0.338 | | | | | SD | 0.00333 |
| 1299 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.000535 |
| 1300 | | | | | | | | | | | 95% KM (t) UCL | 0.00387 |
| 1301 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 0.00385 |
| 1302 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.00375 |
| 1303 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 0.00468 |
| 1304 | | | | | Maximum | 0.025 | | | | | 95% KM (BCA) UCL | 0.00794 |
| 1305 | | | | | Mean | 0.0008874 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.00516 |
| 1306 | | | | | Median | 1E-09 | | | | | 95% KM (Chebyshev) UCL | 0.00531 |
| 1307 | | | | | SD | 0.00367 | | | | | 97.5% KM (Chebyshev) UCL | 0.00632 |
| 1308 | | | | | k star | 0.0794 | | | | | 99% KM (Chebyshev) UCL | 0.0083 |
| 1309 | | | | | Theta star | 0.0112 | | | | | | |
| 1310 | | | | | Nu star | 8.414 | **Potential UCLs to Use** | | | | | |
| 1311 | | | | | AppChi2 | 2.977 | | | | | 95% KM (t) UCL | 0.00387 |
| 1312 | | | | | 95% Gamma Approximate UCL | 0.00251 | | | | | | |
| 1313 | | | | | 95% Adjusted Gamma UCL | 0.00259 | | | | | | |
| 1314 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1315 | | | | | | | | | | | | |
| 1316 | | | | | | | | | | | | |
| 1317 | **Trichloroethene** | | | | | | | | | | | |
| 1318 | | | | | | | | | | | | |
| 1319 | | | | | **General Statistics** | | | | | | | |
| 1320 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 2 |
| 1321 | | | | | Number of Distinct Detected Data | 2 | | | | | Number of Non-Detect Data | 51 |
| 1322 | | | | | | | | | | | Percent Non-Detects | 96.23% |
| 1323 | | | | | | | | | | | | |
| 1324 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 1325 | | | | | Minimum Detected | 0.00281 | | | | | Minimum Detected | -5.875 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1326 | | | | | Maximum Detected | 0.00504 | | | | | Maximum Detected | -5.29 |
| 1327 | | | | | Mean of Detected | 0.00393 | | | | | Mean of Detected | -5.582 |
| 1328 | | | | | SD of Detected | 0.00158 | | | | | SD of Detected | 0.413 |
| 1329 | | | | | Minimum Non-Detect | 0.00154 | | | | | Minimum Non-Detect | -6.476 |
| 1330 | | | | | Maximum Non-Detect | 0.29 | | | | | Maximum Non-Detect | -1.238 |
| 1331 | | | | | | | | | | | | |
| 1332 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 53 |
| 1333 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 1334 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 1335 | | | | | | | | | | | | |
| 1336 | **Warning: Data set has only 2 Distinct Detected Values.** | | | | | | | | | | | |
| 1337 | **This may not be adequate enough to compute meaningful and reliable test statistics and estimates.** | | | | | | | | | | | |
| 1338 | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 1339 | | | | | | | | | | | | |
| 1340 | **Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.** | | | | | | | | | | | |
| 1341 | | | | | | | | | | | | |
| 1342 | **The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.** | | | | | | | | | | | |
| 1343 | **Those methods will return a 'N/A' value on your output display!** | | | | | | | | | | | |
| 1344 | | | | | | | | | | | | |
| 1345 | **It is necessary to have 4 or more Distinct Values for bootstrap methods.** | | | | | | | | | | | |
| 1346 | **However, results obtained using 4 to 9 distinct values may not be reliable.** | | | | | | | | | | | |
| 1347 | **It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.** | | | | | | | | | | | |
| 1348 | | | | | | | | | | | | |
| 1349 | | | | | | | | | | | | |
| 1350 | **UCL Statistics** | | | | | | | | | | | |
| 1351 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 1352 | | | | | Shapiro Wilk Test Statistic | N/A | | | | | Shapiro Wilk Test Statistic | N/A |
| 1353 | | | | | 5% Shapiro Wilk Critical Value | N/A | | | | | 5% Shapiro Wilk Critical Value | N/A |
| 1354 | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | | | | | |
| 1355 | | | | | | | | | | | | |
| 1356 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 1357 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1358 | | | | | Mean | 0.00802 | | | | | Mean | -5.847 |
| 1359 | | | | | SD | 0.0248 | | | | | SD | 1.061 |
| 1360 | | | | | 95% DL/2 (t) UCL | 0.0137 | | | | | 95% H-Stat (DL/2) UCL | 0.00735 |
| 1361 | | | | | | | | | | | | |
| 1362 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 1363 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | N/A |
| 1364 | | | | | | | | | | | SD in Log Scale | N/A |
| 1365 | | | | | | | | | | | Mean in Original Scale | N/A |
| 1366 | | | | | | | | | | | SD in Original Scale | N/A |
| 1367 | | | | | | | | | | | 95% Percentile Bootstrap UCL | N/A |
| 1368 | | | | | | | | | | | 95% BCA Bootstrap UCL | N/A |
| 1369 | | | | | | | | | | | | |
| 1370 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 1371 | | | | | k star (bias corrected) | N/A | **Data do not follow a Discernable Distribution (0.05)** | | | | | |
| 1372 | | | | | Theta Star | N/A | | | | | | |
| 1373 | | | | | nu star | N/A | | | | | | |
| 1374 | | | | | | | | | | | | |
| 1375 | | | | | A-D Test Statistic | N/A | **Nonparametric Statistics** | | | | | |
| 1376 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 1377 | | | | | K-S Test Statistic | N/A | | | | | Mean | 0.0029 |
| 1378 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 0.0004289 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1379 | Data not Gamma Distributed at 5% Significance Level | | | | | | | | | | SE of Mean | 0.0001189 |
| 1380 | | | | | | | | | | | 95% KM (t) UCL | 0.00309 |
| 1381 | Assuming Gamma Distribution | | | | | | | | | | 95% KM (z) UCL | 0.00309 |
| 1382 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.00432 |
| 1383 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | N/A |
| 1384 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | N/A |
| 1385 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 0.00504 |
| 1386 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 0.00341 |
| 1387 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 0.00364 |
| 1388 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 0.00408 |
| 1389 | | | | | Theta star | N/A | | | | | | |
| 1390 | | | | | Nu star | N/A | Potential UCLs to Use | | | | | |
| 1391 | | | | | AppChi2 | N/A | | | | | 95% KM (t) UCL | 0.00309 |
| 1392 | | | | | 95% Gamma Approximate UCL | N/A | | | | | 95% KM (% Bootstrap) UCL | 0.00504 |
| 1393 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 1394 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 1395 | | | | | | | | | | | | |
| 1396 | | | | | | | | | | | | |
| 1397 | Xylene (Total) | | | | | | | | | | | |
| 1398 | | | | | | | | | | | | |
| 1399 | | | | | General Statistics | | | | | | | |
| 1400 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 4 |
| 1401 | | | | | Number of Distinct Detected Data | 4 | | | | | Number of Non-Detect Data | 49 |
| 1402 | | | | | | | | | | | Percent Non-Detects | 92.45% |
| 1403 | | | | | | | | | | | | |
| 1404 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 1405 | | | | | Minimum Detected | 0.0085 | | | | | Minimum Detected | -4.768 |
| 1406 | | | | | Maximum Detected | 0.0423 | | | | | Maximum Detected | -3.163 |
| 1407 | | | | | Mean of Detected | 0.0193 | | | | | Mean of Detected | -4.154 |
| 1408 | | | | | SD of Detected | 0.0156 | | | | | SD of Detected | 0.7 |
| 1409 | | | | | Minimum Non-Detect | 0.00462 | | | | | Minimum Non-Detect | -5.377 |
| 1410 | | | | | Maximum Non-Detect | 0.87 | | | | | Maximum Non-Detect | -0.139 |
| 1411 | | | | | | | | | | | | |
| 1412 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 53 |
| 1413 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 1414 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 1415 | | | | | | | | | | | | |
| 1416 | Warning: There are only 4 Distinct Detected Values in this data | | | | | | | | | | | |
| 1417 | Note: It should be noted that even though bootstrap may be performed on this data set | | | | | | | | | | | |
| 1418 | the resulting calculations may not be reliable enough to draw conclusions | | | | | | | | | | | |
| 1419 | | | | | | | | | | | | |
| 1420 | It is recommended to have 10-15 or more distinct observations for accurate and meaningful results. | | | | | | | | | | | |
| 1421 | | | | | | | | | | | | |
| 1422 | | | | | | | | | | | | |
| 1423 | | | | | UCL Statistics | | | | | | | |
| 1424 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 1425 | | | | | Shapiro Wilk Test Statistic | 0.781 | | | | | Shapiro Wilk Test Statistic | 0.9 |
| 1426 | | | | | 5% Shapiro Wilk Critical Value | 0.748 | | | | | 5% Shapiro Wilk Critical Value | 0.748 |
| 1427 | Data appear Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | | | | |
| 1428 | | | | | | | | | | | | |
| 1429 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 1430 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1431 | | | | | Mean | 0.0201 | | | | | Mean | -5.217 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1432 | | | | | SD | 0.0752 | | | | | SD | 0.98 |
| 1433 | | | | | 95% DL/2 (t) UCL | 0.0374 | | | | | 95% H-Stat (DL/2) UCL | 0.0126 |
| 1434 | | | | | | | | | | | | |
| 1435 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | | Log ROS Method | |
| 1436 | | | | **MLE method failed to converge properly** | | | | | | | Mean in Log Scale | -7.422 |
| 1437 | | | | | | | | | | | SD in Log Scale | 1.169 |
| 1438 | | | | | | | | | | | Mean in Original Scale | 0.00199 |
| 1439 | | | | | | | | | | | SD in Original Scale | 0.00625 |
| 1440 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.00347 |
| 1441 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.00452 |
| 1442 | | | | | | | | | | | | |
| 1443 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 1444 | | | | | k star (bias corrected) | 0.816 | | | | **Data appear Normal at 5% Significance Level** | | |
| 1445 | | | | | Theta Star | 0.0236 | | | | | | |
| 1446 | | | | | nu star | 6.526 | | | | | | |
| 1447 | | | | | | | | | | | | |
| 1448 | | | | | A-D Test Statistic | 0.451 | | | | **Nonparametric Statistics** | | |
| 1449 | | | | | 5% A-D Critical Value | 0.66 | | | | | Kaplan-Meier (KM) Method | |
| 1450 | | | | | K-S Test Statistic | 0.66 | | | | | Mean | 0.00935 |
| 1451 | | | | | 5% K-S Critical Value | 0.397 | | | | | SD | 0.00476 |
| 1452 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 0.0007704 |
| 1453 | | | | | | | | | | | 95% KM (t) UCL | 0.0106 |
| 1454 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 0.0106 |
| 1455 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.0112 |
| 1456 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 0.0126 |
| 1457 | | | | | Maximum | 0.0423 | | | | | 95% KM (BCA) UCL | 0.0171 |
| 1458 | | | | | Mean | 0.00145 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0167 |
| 1459 | | | | | Median | 1E-09 | | | | | 95% KM (Chebyshev) UCL | 0.0127 |
| 1460 | | | | | SD | 0.00636 | | | | | 97.5% KM (Chebyshev) UCL | 0.0142 |
| 1461 | | | | | k star | 0.0747 | | | | | 99% KM (Chebyshev) UCL | 0.017 |
| 1462 | | | | | Theta star | 0.0195 | | | | | | |
| 1463 | | | | | Nu star | 7.918 | | | | **Potential UCLs to Use** | | |
| 1464 | | | | | AppChi2 | 2.688 | | | | | 95% KM (t) UCL | 0.0106 |
| 1465 | | | | | 95% Gamma Approximate UCL | 0.00428 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0167 |
| 1466 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 1467 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1468 | | | | | | | | | | | | |

# Soil (Surface + Subsurface)

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | **General UCL Statistics for Data Sets with Non-Detects** | | | | | | | | |
| 2 | | **User Selected Options** | | | | | | | | | | |
| 3 | | | From File | C:\aa_Projects\Peterson\Unnamed Island\UCLs\soil conc_Crosstab.xls.wst | | | | | | | | |
| 4 | | | Full Precision | OFF | | | | | | | | |
| 5 | | | Confidence Coefficient | 95% | | | | | | | | |
| 6 | | | Number of Bootstrap Operations | 2000 | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | **Aluminum** | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | **General Statistics** | | | | | | |
| 12 | | | | | | Number of Valid Observations | 53 | | | | Number of Distinct Observations | 50 |
| 13 | | | | | | | | | | | | |
| 14 | | | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | |
| 15 | | | | | | Minimum | 2420 | | | | Minimum of Log Data | 7.792 |
| 16 | | | | | | Maximum | 11800 | | | | Maximum of Log Data | 9.376 |
| 17 | | | | | | Mean | 6245 | | | | Mean of log Data | 8.667 |
| 18 | | | | | | Median | 5610 | | | | SD of log Data | 0.38 |
| 19 | | | | | | SD | 2482 | | | | | |
| 20 | | | | | | Coefficient of Variation | 0.398 | | | | | |
| 21 | | | | | | Skewness | 0.914 | | | | | |
| 22 | | | | | | | | | | | | |
| 23 | | | | | | **Relevant UCL Statistics** | | | | | | |
| 24 | | | | | | **Normal Distribution Test** | | | | | **Lognormal Distribution Test** | |
| 25 | | | | | | Lilliefors Test Statistic | 0.158 | | | | Lilliefors Test Statistic | 0.0917 |
| 26 | | | | | | Lilliefors Critical Value | 0.122 | | | | Lilliefors Critical Value | 0.122 |
| 27 | | | | | | **Data not Normal at 5% Significance Level** | | | | | **Data appear Lognormal at 5% Significance Level** | |
| 28 | | | | | | | | | | | | |
| 29 | | | | | | **Assuming Normal Distribution** | | | | | **Assuming Lognormal Distribution** | |
| 30 | | | | | | 95% Student's-t UCL | 6816 | | | | 95% H-UCL | 6860 |
| 31 | | | | | | **95% UCLs (Adjusted for Skewness)** | | | | | 95% Chebyshev (MVUE) UCL | 7696 |
| 32 | | | | | | 95% Adjusted-CLT UCL | 6851 | | | | 97.5% Chebyshev (MVUE) UCL | 8328 |
| 33 | | | | | | 95% Modified-t UCL | 6823 | | | | 99% Chebyshev (MVUE) UCL | 9569 |
| 34 | | | | | | | | | | | | |
| 35 | | | | | | **Gamma Distribution Test** | | | | | **Data Distribution** | |
| 36 | | | | | | k star (bias corrected) | 6.707 | | | | **Data Follow Appr. Gamma Distribution at 5% Significance Level** | |
| 37 | | | | | | Theta Star | 931 | | | | | |
| 38 | | | | | | MLE of Mean | 6245 | | | | | |
| 39 | | | | | | MLE of Standard Deviation | 2411 | | | | | |
| 40 | | | | | | nu star | 711 | | | | | |
| 41 | | | | | | Approximate Chi Square Value (.05) | 650.1 | | | | **Nonparametric Statistics** | |
| 42 | | | | | | Adjusted Level of Significance | 0.0455 | | | | 95% CLT UCL | 6805 |
| 43 | | | | | | Adjusted Chi Square Value | 648.5 | | | | 95% Jackknife UCL | 6816 |
| 44 | | | | | | | | | | | 95% Standard Bootstrap UCL | 6806 |
| 45 | | | | | | Anderson-Darling Test Statistic | 1.081 | | | | 95% Bootstrap-t UCL | 6856 |
| 46 | | | | | | Anderson-Darling 5% Critical Value | 0.752 | | | | 95% Hall's Bootstrap UCL | 6846 |
| 47 | | | | | | Kolmogorov-Smirnov Test Statistic | 0.109 | | | | 95% Percentile Bootstrap UCL | 6818 |
| 48 | | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.122 | | | | 95% BCA Bootstrap UCL | 6822 |
| 49 | | | | | | **Data follow Appr. Gamma Distribution at 5% Significance Level** | | | | | 95% Chebyshev(Mean, Sd) UCL | 7731 |
| 50 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 8374 |
| 51 | | | | | | **Assuming Gamma Distribution** | | | | | 99% Chebyshev(Mean, Sd) UCL | 9637 |
| 52 | | | | | | 95% Approximate Gamma UCL | 6829 | | | | | |
| 53 | | | | | | 95% Adjusted Gamma UCL | 6846 | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 54 | | | | | | | | | | | | |
| 55 | **Potential UCL to Use** | | | | | | Use 95% Approximate Gamma UCL | | | | | 6829 |
| 56 | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | |
| 58 | **Antimony** | | | | | | | | | | | |
| 59 | | | | | | | | | | | | |
| 60 | **General Statistics** | | | | | | | | | | | |
| 61 | Number of Valid Data | | | | | 53 | Number of Detected Data | | | | | 33 |
| 62 | Number of Distinct Detected Data | | | | | 33 | Number of Non-Detect Data | | | | | 20 |
| 63 | | | | | | | Percent Non-Detects | | | | | 37.74% |
| 64 | | | | | | | | | | | | |
| 65 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 66 | Minimum Detected | | | | | 0.0272 | Minimum Detected | | | | | -3.605 |
| 67 | Maximum Detected | | | | | 159 | Maximum Detected | | | | | 5.069 |
| 68 | Mean of Detected | | | | | 12.18 | Mean of Detected | | | | | 0.528 |
| 69 | SD of Detected | | | | | 31.12 | SD of Detected | | | | | 2.024 |
| 70 | Minimum Non-Detect | | | | | 0.95 | Minimum Non-Detect | | | | | -0.0513 |
| 71 | Maximum Non-Detect | | | | | 15 | Maximum Non-Detect | | | | | 2.708 |
| 72 | | | | | | | | | | | | |
| 73 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | Number treated as Non-Detect | | | | | 48 |
| 74 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | Number treated as Detected | | | | | 5 |
| 75 | Observations < Largest ND are treated as NDs | | | | | | Single DL Non-Detect Percentage | | | | | 90.57% |
| 76 | | | | | | | | | | | | |
| 77 | **UCL Statistics** | | | | | | | | | | | |
| 78 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 79 | Shapiro Wilk Test Statistic | | | | | 0.442 | Shapiro Wilk Test Statistic | | | | | 0.974 |
| 80 | 5% Shapiro Wilk Critical Value | | | | | 0.931 | 5% Shapiro Wilk Critical Value | | | | | 0.931 |
| 81 | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 82 | | | | | | | | | | | | |
| 83 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 84 | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | | | | | |
| 85 | Mean | | | | | 8.865 | Mean | | | | | 0.61 |
| 86 | SD | | | | | 24.85 | SD | | | | | 1.716 |
| 87 | 95% DL/2 (t) UCL | | | | | 14.58 | 95% H-Stat (DL/2) UCL | | | | | 40.55 |
| 88 | | | | | | | | | | | | |
| 89 | Maximum Likelihood Estimate(MLE) Method | | | | | N/A | Log ROS Method | | | | | |
| 90 | **MLE yields a negative mean** | | | | | | Mean in Log Scale | | | | | 0.0996 |
| 91 | | | | | | | SD in Log Scale | | | | | 1.766 |
| 92 | | | | | | | Mean in Original Scale | | | | | 7.899 |
| 93 | | | | | | | SD in Original Scale | | | | | 25.04 |
| 94 | | | | | | | 95% Percentile Bootstrap UCL | | | | | 14.15 |
| 95 | | | | | | | 95% BCA Bootstrap UCL | | | | | 16.62 |
| 96 | | | | | | | | | | | | |
| 97 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 98 | k star (bias corrected) | | | | | 0.331 | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 99 | Theta Star | | | | | 36.78 | | | | | | |
| 100 | nu star | | | | | 21.86 | | | | | | |
| 101 | | | | | | | | | | | | |
| 102 | A-D Test Statistic | | | | | 2.354 | **Nonparametric Statistics** | | | | | |
| 103 | 5% A-D Critical Value | | | | | 0.846 | Kaplan-Meier (KM) Method | | | | | |
| 104 | K-S Test Statistic | | | | | 0.846 | Mean | | | | | 7.983 |
| 105 | 5% K-S Critical Value | | | | | 0.165 | SD | | | | | 24.79 |
| 106 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | SE of Mean | | | | | 3.461 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 107 | | | | | | | | | | | 95% KM (t) UCL | 13.78 |
| 108 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 13.68 |
| 109 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 13.75 |
| 110 | | | | | Minimum | 0.0272 | | | | | 95% KM (bootstrap t) UCL | 20.96 |
| 111 | | | | | Maximum | 159 | | | | | 95% KM (BCA) UCL | 14.83 |
| 112 | | | | | Mean | 11.95 | | | | | 95% KM (Percentile Bootstrap) UCL | 13.98 |
| 113 | | | | | Median | 6.4 | | | | | 95% KM (Chebyshev) UCL | 23.07 |
| 114 | | | | | SD | 24.57 | | | | | 97.5% KM (Chebyshev) UCL | 29.6 |
| 115 | | | | | k star | 0.491 | | | | | 99% KM (Chebyshev) UCL | 42.42 |
| 116 | | | | | Theta star | 24.34 | | | | | | |
| 117 | | | | | Nu star | 52.03 | | | | | **Potential UCLs to Use** | |
| 118 | | | | | AppChi2 | 36.46 | | | | | 99% KM (Chebyshev) UCL | 42.42 |
| 119 | | | | | 95% Gamma Approximate UCL | 17.05 | | | | | | |
| 120 | | | | | 95% Adjusted Gamma UCL | 17.22 | | | | | | |
| 121 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 122 | | | | | | | | | | | | |
| 123 | | | | | | | | | | | | |
| 124 | **Aroclor-1242** | | | | | | | | | | | |
| 125 | | | | | | | | | | | | |
| 126 | | | | | **General Statistics** | | | | | | | |
| 127 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 5 |
| 128 | | | | | Number of Distinct Detected Data | 5 | | | | | Number of Non-Detect Data | 48 |
| 129 | | | | | | | | | | | Percent Non-Detects | 90.57% |
| 130 | | | | | | | | | | | | |
| 131 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 132 | | | | | Minimum Detected | 0.0306 | | | | | Minimum Detected | -3.487 |
| 133 | | | | | Maximum Detected | 2.44 | | | | | Maximum Detected | 0.892 |
| 134 | | | | | Mean of Detected | 0.577 | | | | | Mean of Detected | -1.851 |
| 135 | | | | | SD of Detected | 1.045 | | | | | SD of Detected | 1.758 |
| 136 | | | | | Minimum Non-Detect | 0.0127 | | | | | Minimum Non-Detect | -4.366 |
| 137 | | | | | Maximum Non-Detect | 0.0767 | | | | | Maximum Non-Detect | -2.568 |
| 138 | | | | | | | | | | | | |
| 139 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 50 |
| 140 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 3 |
| 141 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 94.34% |
| 142 | | | | | | | | | | | | |
| 143 | | | | **Warning: There are only 5 Detected Values in this data** | | | | | | | | |
| 144 | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | | |
| 145 | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | | |
| 146 | | | | | | | | | | | | |
| 147 | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | | |
| 148 | | | | | | | | | | | | |
| 149 | | | | | | | | | | | | |
| 150 | | | | | **UCL Statistics** | | | | | | | |
| 151 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 152 | | | | | Shapiro Wilk Test Statistic | 0.624 | | | | | Shapiro Wilk Test Statistic | 0.908 |
| 153 | | | | | 5% Shapiro Wilk Critical Value | 0.762 | | | | | 5% Shapiro Wilk Critical Value | 0.762 |
| 154 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 155 | | | | | | | | | | | | |
| 156 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 157 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 158 | | | | | Mean | 0.0701 | | | | | Mean | -3.937 |
| 159 | | | | | SD | 0.334 | | | | | SD | 0.941 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 160 | | | | | 95% DL/2 (t) UCL | 0.147 | | | | 95% H-Stat (DL/2) UCL | | 0.0361 |
| 161 | | | | | | | | | | | | |
| 162 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | Log ROS Method | | |
| 163 | | | | **MLE yields a negative mean** | | | | | | Mean in Log Scale | | -9.374 |
| 164 | | | | | | | | | | SD in Log Scale | | 2.917 |
| 165 | | | | | | | | | | Mean in Original Scale | | 0.0546 |
| 166 | | | | | | | | | | SD in Original Scale | | 0.336 |
| 167 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.144 |
| 168 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.198 |
| 169 | | | | | | | | | | | | |
| 170 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 171 | | | | | k star (bias corrected) | 0.329 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 172 | | | | | Theta Star | 1.755 | | | | | | |
| 173 | | | | | nu star | 3.291 | | | | | | |
| 174 | | | | | | | | | | | | |
| 175 | | | | | A-D Test Statistic | 0.547 | | | | **Nonparametric Statistics** | | |
| 176 | | | | | 5% A-D Critical Value | 0.712 | | | | Kaplan-Meier (KM) Method | | |
| 177 | | | | | K-S Test Statistic | 0.712 | | | | Mean | | 0.0822 |
| 178 | | | | | 5% K-S Critical Value | 0.372 | | | | SD | | 0.328 |
| 179 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | SE of Mean | | 0.0504 |
| 180 | | | | | | | | | | 95% KM (t) UCL | | 0.167 |
| 181 | | | | **Assuming Gamma Distribution** | | | | | | 95% KM (z) UCL | | 0.165 |
| 182 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | | 0.153 |
| 183 | | | | | Minimum | 1E-09 | | | | 95% KM (bootstrap t) UCL | | 0.818 |
| 184 | | | | | Maximum | 2.44 | | | | 95% KM (BCA) UCL | | N/A |
| 185 | | | | | Mean | 0.0545 | | | | 95% KM (Percentile Bootstrap) UCL | | 0.24 |
| 186 | | | | | Median | 1E-09 | | | | 95% KM (Chebyshev) UCL | | 0.302 |
| 187 | | | | | SD | 0.336 | | | | 97.5% KM (Chebyshev) UCL | | 0.397 |
| 188 | | | | | k star | 0.0637 | | | | 99% KM (Chebyshev) UCL | | 0.584 |
| 189 | | | | | Theta star | 0.855 | | | | | | |
| 190 | | | | | Nu star | 6.751 | | | | **Potential UCLs to Use** | | |
| 191 | | | | | AppChi2 | 2.035 | | | | 95% KM (t) UCL | | 0.167 |
| 192 | | | | | 95% Gamma Approximate UCL | 0.181 | | | | | | |
| 193 | | | | | 95% Adjusted Gamma UCL | 0.187 | | | | | | |
| 194 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 195 | | | | | | | | | | | | |
| 196 | | | | | | | | | | | | |
| 197 | **Aroclor-1248** | | | | | | | | | | | |
| 198 | | | | | | | | | | | | |
| 199 | | | | | | **General Statistics** | | | | | | |
| 200 | | | | | Number of Valid Data | 53 | | | | Number of Detected Data | | 0 |
| 201 | | | | | Number of Distinct Detected Data | 0 | | | | Number of Non-Detect Data | | 53 |
| 202 | | | | | | | | | | Percent Non-Detects | | 100.00% |
| 203 | | | | | | | | | | | | |
| 204 | | | | **Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!** | | | | | | | | |
| 205 | | | | **Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!** | | | | | | | | |
| 206 | | | | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | |
| 207 | | | | | | | | | | | | |
| 208 | | | | **The data set for variable Aroclor-1248 was not processed!** | | | | | | | | |
| 209 | | | | | | | | | | | | |
| 210 | | | | | | | | | | | | |
| 211 | | | | | | | | | | | | |
| 212 | **Aroclor-1254** | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 213 | | | | | | | | | | | | |
| 214 | | | | | | **General Statistics** | | | | | | |
| 215 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 20 |
| 216 | | | | | Number of Distinct Detected Data | 20 | | | | | Number of Non-Detect Data | 33 |
| 217 | | | | | | | | | | | Percent Non-Detects | 62.26% |
| 218 | | | | | | | | | | | | |
| 219 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 220 | | | | | Minimum Detected | 0.0165 | | | | | Minimum Detected | -4.104 |
| 221 | | | | | Maximum Detected | 5.33 | | | | | Maximum Detected | 1.673 |
| 222 | | | | | Mean of Detected | 0.783 | | | | | Mean of Detected | -1.063 |
| 223 | | | | | SD of Detected | 1.214 | | | | | SD of Detected | 1.359 |
| 224 | | | | | Minimum Non-Detect | 0.0128 | | | | | Minimum Non-Detect | -4.358 |
| 225 | | | | | Maximum Non-Detect | 0.0673 | | | | | Maximum Non-Detect | -2.699 |
| 226 | | | | | | | | | | | | |
| 227 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 34 |
| 228 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 19 |
| 229 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 64.15% |
| 230 | | | | | | | | | | | | |
| 231 | | | | | | **UCL Statistics** | | | | | | |
| 232 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 233 | | | | | Shapiro Wilk Test Statistic | 0.607 | | | | | Shapiro Wilk Test Statistic | 0.987 |
| 234 | | | | | 5% Shapiro Wilk Critical Value | 0.905 | | | | | 5% Shapiro Wilk Critical Value | 0.905 |
| 235 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 236 | | | | | | | | | | | | |
| 237 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 238 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 239 | | | | | Mean | 0.307 | | | | | Mean | -2.954 |
| 240 | | | | | SD | 0.824 | | | | | SD | 1.726 |
| 241 | | | | | 95% DL/2 (t) UCL | 0.496 | | | | | 95% H-Stat (DL/2) UCL | 0.298 |
| 242 | | | | | | | | | | | | |
| 243 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 244 | | | | **MLE yields a negative mean** | | | | | | | Mean in Log Scale | -3.486 |
| 245 | | | | | | | | | | | SD in Log Scale | 2.141 |
| 246 | | | | | | | | | | | Mean in Original Scale | 0.301 |
| 247 | | | | | | | | | | | SD in Original Scale | 0.826 |
| 248 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.514 |
| 249 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.601 |
| 250 | | | | | | | | | | | | |
| 251 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 252 | | | | | k star (bias corrected) | 0.656 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 253 | | | | | Theta Star | 1.193 | | | | | | |
| 254 | | | | | nu star | 26.26 | | | | | | |
| 255 | | | | | | | | | | | | |
| 256 | | | | | A-D Test Statistic | 0.548 | | | | **Nonparametric Statistics** | | |
| 257 | | | | | 5% A-D Critical Value | 0.781 | | | | | Kaplan-Meier (KM) Method | |
| 258 | | | | | K-S Test Statistic | 0.781 | | | | | Mean | 0.306 |
| 259 | | | | | 5% K-S Critical Value | 0.202 | | | | | SD | 0.816 |
| 260 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 0.115 |
| 261 | | | | | | | | | | | 95% KM (t) UCL | 0.499 |
| 262 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 0.495 |
| 263 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.472 |
| 264 | | | | | Minimum | 0.0165 | | | | | 95% KM (bootstrap t) UCL | 0.701 |
| 265 | | | | | Maximum | 5.33 | | | | | 95% KM (BCA) UCL | 0.559 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 266 | | | | | Mean | 0.775 | | | 95% KM (Percentile Bootstrap) UCL | | | 0.526 |
| 267 | | | | | Median | 0.767 | | | 95% KM (Chebyshev) UCL | | | 0.807 |
| 268 | | | | | SD | 0.755 | | | 97.5% KM (Chebyshev) UCL | | | 1.024 |
| 269 | | | | | k star | 1.48 | | | 99% KM (Chebyshev) UCL | | | 1.451 |
| 270 | | | | | Theta star | 0.524 | | | | | | |
| 271 | | | | | Nu star | 156.9 | **Potential UCLs to Use** | | | | | |
| 272 | | | | | AppChi2 | 129 | | | 95% KM (t) UCL | | | 0.499 |
| 273 | | | | | 95% Gamma Approximate UCL | 0.943 | | | | | | |
| 274 | | | | | 95% Adjusted Gamma UCL | 0.949 | | | | | | |
| 275 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 276 | | | | | | | | | | | | |
| 277 | | | | | | | | | | | | |
| 278 | **Aroclor-1260** | | | | | | | | | | | |
| 279 | | | | | | | | | | | | |
| 280 | | | | | **General Statistics** | | | | | | | |
| 281 | | | | | Number of Valid Data | 53 | | | Number of Detected Data | | | 37 |
| 282 | | | | | Number of Distinct Detected Data | 36 | | | Number of Non-Detect Data | | | 16 |
| 283 | | | | | | | | | Percent Non-Detects | | | 30.19% |
| 284 | | | | | | | | | | | | |
| 285 | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | | | |
| 286 | | | | | Minimum Detected | 0.0418 | | | Minimum Detected | | | -3.175 |
| 287 | | | | | Maximum Detected | 4.57 | | | Maximum Detected | | | 1.52 |
| 288 | | | | | Mean of Detected | 0.42 | | | Mean of Detected | | | -1.535 |
| 289 | | | | | SD of Detected | 0.773 | | | SD of Detected | | | 1.051 |
| 290 | | | | | Minimum Non-Detect | 0.0111 | | | Minimum Non-Detect | | | -4.501 |
| 291 | | | | | Maximum Non-Detect | 0.0568 | | | Maximum Non-Detect | | | -2.868 |
| 292 | | | | | | | | | | | | |
| 293 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | Number treated as Non-Detect | | | 21 |
| 294 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | Number treated as Detected | | | 32 |
| 295 | Observations < Largest ND are treated as NDs | | | | | | | | Single DL Non-Detect Percentage | | | 39.62% |
| 296 | | | | | | | | | | | | |
| 297 | | | | | **UCL Statistics** | | | | | | | |
| 298 | | | | **Normal Distribution Test with Detected Values Only** | | | | | **Lognormal Distribution Test with Detected Values Only** | | | |
| 299 | | | | | Shapiro Wilk Test Statistic | 0.464 | | | Shapiro Wilk Test Statistic | | | 0.956 |
| 300 | | | | | 5% Shapiro Wilk Critical Value | 0.936 | | | 5% Shapiro Wilk Critical Value | | | 0.936 |
| 301 | | | | **Data not Normal at 5% Significance Level** | | | | | **Data appear Lognormal at 5% Significance Level** | | | |
| 302 | | | | | | | | | | | | |
| 303 | | | | **Assuming Normal Distribution** | | | | | **Assuming Lognormal Distribution** | | | |
| 304 | | | | | DL/2 Substitution Method | | | | DL/2 Substitution Method | | | |
| 305 | | | | | Mean | 0.298 | | | Mean | | | -2.378 |
| 306 | | | | | SD | 0.67 | | | SD | | | 1.586 |
| 307 | | | | | 95% DL/2 (t) UCL | 0.452 | | | 95% H-Stat (DL/2) UCL | | | 0.389 |
| 308 | | | | | | | | | | | | |
| 309 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | Log ROS Method | | | |
| 310 | | | | | Mean | 0.0154 | | | Mean in Log Scale | | | -2.254 |
| 311 | | | | | SD | 0.918 | | | SD in Log Scale | | | 1.414 |
| 312 | | | | | 95% MLE (t) UCL | 0.226 | | | Mean in Original Scale | | | 0.3 |
| 313 | | | | | 95% MLE (Tiku) UCL | 0.252 | | | SD in Original Scale | | | 0.669 |
| 314 | | | | | | | | | 95% Percentile Bootstrap UCL | | | 0.46 |
| 315 | | | | | | | | | 95% BCA Bootstrap UCL | | | 0.543 |
| 316 | | | | | | | | | | | | |
| 317 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | **Data Distribution Test with Detected Values Only** | | | |
| 318 | | | | | k star (bias corrected) | 0.825 | | | **Data appear Lognormal at 5% Significance Level** | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 319 | | | | | Theta Star | 0.51 | | | | | | |
| 320 | | | | | nu star | 61.02 | | | | | | |
| 321 | | | | | | | | | | | | |
| 322 | | | | | A-D Test Statistic | 1.816 | Nonparametric Statistics | | | | | |
| 323 | | | | | 5% A-D Critical Value | 0.782 | | | | | Kaplan-Meier (KM) Method | |
| 324 | | | | | K-S Test Statistic | 0.782 | | | | | Mean | 0.306 |
| 325 | | | | | 5% K-S Critical Value | 0.15 | | | | | SD | 0.66 |
| 326 | Data not Gamma Distributed at 5% Significance Level | | | | | | | | | | SE of Mean | 0.0919 |
| 327 | | | | | | | | | | | 95% KM (t) UCL | 0.46 |
| 328 | Assuming Gamma Distribution | | | | | | | | | | 95% KM (z) UCL | 0.457 |
| 329 | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | | 95% KM (jackknife) UCL | 0.458 |
| 330 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 0.677 |
| 331 | | | | | Maximum | 4.57 | | | | | 95% KM (BCA) UCL | 0.473 |
| 332 | | | | | Mean | 0.297 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.466 |
| 333 | | | | | Median | 0.13 | | | | | 95% KM (Chebyshev) UCL | 0.707 |
| 334 | | | | | SD | 0.67 | | | | | 97.5% KM (Chebyshev) UCL | 0.88 |
| 335 | | | | | k star | 0.163 | | | | | 99% KM (Chebyshev) UCL | 1.221 |
| 336 | | | | | Theta star | 1.829 | | | | | | |
| 337 | | | | | Nu star | 17.23 | Potential UCLs to Use | | | | | |
| 338 | | | | | AppChi2 | 8.838 | | | | | 95% KM (Chebyshev) UCL | 0.707 |
| 339 | | | | | 95% Gamma Approximate UCL | 0.58 | | | | | | |
| 340 | | | | | 95% Adjusted Gamma UCL | 0.591 | | | | | | |
| 341 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 342 | | | | | | | | | | | | |
| 343 | | | | | | | | | | | | |
| 344 | Arsenic | | | | | | | | | | | |
| 345 | | | | | | | | | | | | |
| 346 | | | | | General Statistics | | | | | | | |
| 347 | | | | | Number of Valid Observations | 53 | | | | | Number of Distinct Observations | 48 |
| 348 | | | | | | | | | | | | |
| 349 | | | | | Raw Statistics | | Log-transformed Statistics | | | | | |
| 350 | | | | | Minimum | 1.44 | | | | | Minimum of Log Data | 0.365 |
| 351 | | | | | Maximum | 57.4 | | | | | Maximum of Log Data | 4.05 |
| 352 | | | | | Mean | 11.35 | | | | | Mean of log Data | 2.066 |
| 353 | | | | | Median | 7.5 | | | | | SD of log Data | 0.845 |
| 354 | | | | | SD | 11.31 | | | | | | |
| 355 | | | | | Coefficient of Variation | 0.996 | | | | | | |
| 356 | | | | | Skewness | 2.371 | | | | | | |
| 357 | | | | | | | | | | | | |
| 358 | | | | | Relevant UCL Statistics | | | | | | | |
| 359 | | | | | Normal Distribution Test | | Lognormal Distribution Test | | | | | |
| 360 | | | | | Lilliefors Test Statistic | 0.208 | | | | | Lilliefors Test Statistic | 0.0659 |
| 361 | | | | | Lilliefors Critical Value | 0.122 | | | | | Lilliefors Critical Value | 0.122 |
| 362 | | | | | Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | | | | | |
| 363 | | | | | | | | | | | | |
| 364 | | | | | Assuming Normal Distribution | | Assuming Lognormal Distribution | | | | | |
| 365 | | | | | 95% Student's-t UCL | 13.95 | | | | | 95% H-UCL | 14.53 |
| 366 | | | | | 95% UCLs (Adjusted for Skewness) | | | | | | 95% Chebyshev (MVUE) UCL | 17.59 |
| 367 | | | | | 95% Adjusted-CLT UCL | 14.45 | | | | | 97.5% Chebyshev (MVUE) UCL | 20.36 |
| 368 | | | | | 95% Modified-t UCL | 14.04 | | | | | 99% Chebyshev (MVUE) UCL | 25.81 |
| 369 | | | | | | | | | | | | |
| 370 | | | | | Gamma Distribution Test | | Data Distribution | | | | | |
| 371 | | | | | k star (bias corrected) | 1.448 | Data Follow Appr. Gamma Distribution at 5% Significance Level | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 372 | | | | | Theta Star | 7.842 | | | | | | |
| 373 | | | | | MLE of Mean | 11.35 | | | | | | |
| 374 | | | | | MLE of Standard Deviation | 9.436 | | | | | | |
| 375 | | | | | nu star | 153.5 | | | | | | |
| 376 | | | | | Approximate Chi Square Value (.05) | 125.8 | | | **Nonparametric Statistics** | | | |
| 377 | | | | | Adjusted Level of Significance | 0.0455 | | | | | 95% CLT UCL | 13.91 |
| 378 | | | | | Adjusted Chi Square Value | 125.1 | | | | | 95% Jackknife UCL | 13.95 |
| 379 | | | | | | | | | | | 95% Standard Bootstrap UCL | 13.88 |
| 380 | | | | | Anderson-Darling Test Statistic | 0.943 | | | | | 95% Bootstrap-t UCL | 14.9 |
| 381 | | | | | Anderson-Darling 5% Critical Value | 0.768 | | | | | 95% Hall's Bootstrap UCL | 15.35 |
| 382 | | | | | Kolmogorov-Smirnov Test Statistic | 0.123 | | | | | 95% Percentile Bootstrap UCL | 14.02 |
| 383 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.124 | | | | | 95% BCA Bootstrap UCL | 14.54 |
| 384 | | | **Data follow Appr. Gamma Distribution at 5% Significance Level** | | | | | | | | 95% Chebyshev(Mean, Sd) UCL | 18.12 |
| 385 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 21.05 |
| 386 | | | | **Assuming Gamma Distribution** | | | | | | | 99% Chebyshev(Mean, Sd) UCL | 26.81 |
| 387 | | | | | 95% Approximate Gamma UCL | 13.85 | | | | | | |
| 388 | | | | | 95% Adjusted Gamma UCL | 13.92 | | | | | | |
| 389 | | | | | | | | | | | | |
| 390 | | | | **Potential UCL to Use** | | | | | | | Use 95% Approximate Gamma UCL | 13.85 |
| 391 | | | | | | | | | | | | |
| 392 | | | | | | | | | | | | |
| 393 | **Benzo(a)pyrene** | | | | | | | | | | | |
| 394 | | | | | | | | | | | | |
| 395 | | | | | **General Statistics** | | | | | | | |
| 396 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 51 |
| 397 | | | | | Number of Distinct Detected Data | 49 | | | | | Number of Non-Detect Data | 2 |
| 398 | | | | | | | | | | | Percent Non-Detects | 3.77% |
| 399 | | | | | | | | | | | | |
| 400 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 401 | | | | | Minimum Detected | 0.00635 | | | | | Minimum Detected | -5.059 |
| 402 | | | | | Maximum Detected | 17.2 | | | | | Maximum Detected | 2.845 |
| 403 | | | | | Mean of Detected | 1.613 | | | | | Mean of Detected | -0.347 |
| 404 | | | | | SD of Detected | 2.656 | | | | | SD of Detected | 1.458 |
| 405 | | | | | Minimum Non-Detect | 0.00788 | | | | | Minimum Non-Detect | -4.843 |
| 406 | | | | | Maximum Non-Detect | 0.00864 | | | | | Maximum Non-Detect | -4.751 |
| 407 | | | | | | | | | | | | |
| 408 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 3 |
| 409 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 50 |
| 410 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 5.66% |
| 411 | | | | | | | | | | | | |
| 412 | | | | | **UCL Statistics** | | | | | | | |
| 413 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 414 | | | | | Lilliefors Test Statistic | 0.289 | | | | | Lilliefors Test Statistic | 0.0935 |
| 415 | | | | | 5% Lilliefors Critical Value | 0.124 | | | | | 5% Lilliefors Critical Value | 0.124 |
| 416 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 417 | | | | | | | | | | | | |
| 418 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 419 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 420 | | | | | Mean | 1.553 | | | | | Mean | -0.541 |
| 421 | | | | | SD | 2.623 | | | | | SD | 1.739 |
| 422 | | | | | 95% DL/2 (t) UCL | 2.156 | | | | | 95% H-Stat (DL/2) UCL | 4.713 |
| 423 | | | | | | | | | | | | |
| 424 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |

| | A–E | F | G–K | L |
|---|---|---|---|---|
| 425 | Mean | 1.456 | Mean in Log Scale | -0.465 |
| 426 | SD | 2.704 | SD in Log Scale | 1.551 |
| 427 | 95% MLE (t) UCL | 2.078 | Mean in Original Scale | 1.554 |
| 428 | 95% MLE (Tiku) UCL | 2.028 | SD in Original Scale | 2.622 |
| 429 | | | 95% Percentile Bootstrap UCL | 2.176 |
| 430 | | | 95% BCA Bootstrap UCL | 2.488 |
| 431 | | | | |
| 432 | **Gamma Distribution Test with Detected Values Only** | | **Data Distribution Test with Detected Values Only** | |
| 433 | k star (bias corrected) | 0.698 | **Data Follow Appr. Gamma Distribution at 5% Significance Level** | |
| 434 | Theta Star | 2.31 | | |
| 435 | nu star | 71.22 | | |
| 436 | | | | |
| 437 | A-D Test Statistic | 0.64 | **Nonparametric Statistics** | |
| 438 | 5% A-D Critical Value | 0.795 | Kaplan-Meier (KM) Method | |
| 439 | K-S Test Statistic | 0.795 | Mean | 1.553 |
| 440 | 5% K-S Critical Value | 0.129 | SD | 2.598 |
| 441 | **Data follow Appr. Gamma Distribution at 5% Significance Level** | | SE of Mean | 0.36 |
| 442 | | | 95% KM (t) UCL | 2.156 |
| 443 | **Assuming Gamma Distribution** | | 95% KM (z) UCL | 2.145 |
| 444 | Gamma ROS Statistics using Extrapolated Data | | 95% KM (jackknife) UCL | 2.155 |
| 445 | Minimum | 1E-09 | 95% KM (bootstrap t) UCL | 2.749 |
| 446 | Maximum | 17.2 | 95% KM (BCA) UCL | 2.264 |
| 447 | Mean | 1.552 | 95% KM (Percentile Bootstrap) UCL | 2.211 |
| 448 | Median | 0.685 | 95% KM (Chebyshev) UCL | 3.123 |
| 449 | SD | 2.623 | 97.5% KM (Chebyshev) UCL | 3.803 |
| 450 | k star | 0.408 | 99% KM (Chebyshev) UCL | 5.138 |
| 451 | Theta star | 3.8 | | |
| 452 | Nu star | 43.3 | **Potential UCLs to Use** | |
| 453 | AppChi2 | 29.21 | 95% KM (Chebyshev) UCL | 3.123 |
| 454 | 95% Gamma Approximate UCL | 2.301 | | |
| 455 | 95% Adjusted Gamma UCL | 2.327 | | |
| 456 | **Note: DL/2 is not a recommended method.** | | | |
| 457 | | | | |
| 458 | | | | |
| 459 | **Benzo(b)fluoranthene** | | | |
| 460 | | | | |
| 461 | **General Statistics** | | | |
| 462 | Number of Valid Data | 50 | Number of Detected Data | 48 |
| 463 | Number of Distinct Detected Data | 45 | Number of Non-Detect Data | 2 |
| 464 | | | Percent Non-Detects | 4.00% |
| 465 | | | | |
| 466 | **Raw Statistics** | | **Log-transformed Statistics** | |
| 467 | Minimum Detected | 0.01 | Minimum Detected | -4.605 |
| 468 | Maximum Detected | 9.63 | Maximum Detected | 2.265 |
| 469 | Mean of Detected | 1.827 | Mean of Detected | -0.148 |
| 470 | SD of Detected | 2.093 | SD of Detected | 1.487 |
| 471 | Minimum Non-Detect | 0.00788 | Minimum Non-Detect | -4.843 |
| 472 | Maximum Non-Detect | 0.00864 | Maximum Non-Detect | -4.751 |
| 473 | | | | |
| 474 | Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 2 |
| 475 | For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 48 |
| 476 | Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 4.00% |
| 477 | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 478 | | | | | | UCL Statistics | | | | | | |
| 479 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 480 | | | | | Shapiro Wilk Test Statistic | 0.769 | | | | | Shapiro Wilk Test Statistic | 0.939 |
| 481 | | | | | 5% Shapiro Wilk Critical Value | 0.947 | | | | | 5% Shapiro Wilk Critical Value | 0.947 |
| 482 | Data not Normal at 5% Significance Level | | | | | | Data not Lognormal at 5% Significance Level | | | | | |
| 483 | | | | | | | | | | | | |
| 484 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 485 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 486 | | | | | Mean | 1.754 | | | | | Mean | -0.362 |
| 487 | | | | | SD | 2.081 | | | | | SD | 1.8 |
| 488 | | | | | 95% DL/2 (t) UCL | 2.247 | | | | | 95% H-Stat (DL/2) UCL | 6.567 |
| 489 | | | | | | | | | | | | |
| 490 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 491 | | | | | Mean | 1.706 | | | | | Mean in Log Scale | -0.287 |
| 492 | | | | | SD | 2.123 | | | | | SD in Log Scale | 1.61 |
| 493 | | | | | 95% MLE (t) UCL | 2.209 | | | | | Mean in Original Scale | 1.755 |
| 494 | | | | | 95% MLE (Tiku) UCL | 2.177 | | | | | SD in Original Scale | 2.08 |
| 495 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 2.25 |
| 496 | | | | | | | | | | | 95% BCA Bootstrap UCL | 2.364 |
| 497 | | | | | | | | | | | | |
| 498 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 499 | | | | | k star (bias corrected) | 0.756 | Data appear Gamma Distributed at 5% Significance Level | | | | | |
| 500 | | | | | Theta Star | 2.416 | | | | | | |
| 501 | | | | | nu star | 72.6 | | | | | | |
| 502 | | | | | | | | | | | | |
| 503 | | | | | A-D Test Statistic | 0.26 | Nonparametric Statistics | | | | | |
| 504 | | | | | 5% A-D Critical Value | 0.79 | | | | | Kaplan-Meier (KM) Method | |
| 505 | | | | | K-S Test Statistic | 0.79 | | | | | Mean | 1.754 |
| 506 | | | | | 5% K-S Critical Value | 0.133 | | | | | SD | 2.06 |
| 507 | Data appear Gamma Distributed at 5% Significance Level | | | | | | | | | | SE of Mean | 0.294 |
| 508 | | | | | | | | | | | 95% KM (t) UCL | 2.248 |
| 509 | Assuming Gamma Distribution | | | | | | | | | | 95% KM (z) UCL | 2.238 |
| 510 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 2.247 |
| 511 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 2.393 |
| 512 | | | | | Maximum | 9.63 | | | | | 95% KM (BCA) UCL | 2.265 |
| 513 | | | | | Mean | 1.754 | | | | | 95% KM (Percentile Bootstrap) UCL | 2.224 |
| 514 | | | | | Median | 1.15 | | | | | 95% KM (Chebyshev) UCL | 3.037 |
| 515 | | | | | SD | 2.081 | | | | | 97.5% KM (Chebyshev) UCL | 3.593 |
| 516 | | | | | k star | 0.413 | | | | | 99% KM (Chebyshev) UCL | 4.683 |
| 517 | | | | | Theta star | 4.246 | | | | | | |
| 518 | | | | | Nu star | 41.3 | Potential UCLs to Use | | | | | |
| 519 | | | | | AppChi2 | 27.57 | | | | | 95% KM (Chebyshev) UCL | 3.037 |
| 520 | | | | | 95% Gamma Approximate UCL | 2.627 | | | | | | |
| 521 | | | | | 95% Adjusted Gamma UCL | 2.659 | | | | | | |
| 522 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 523 | | | | | | | | | | | | |
| 524 | | | | | | | | | | | | |
| 525 | Benzo(g,h,i)perylene | | | | | | | | | | | |
| 526 | | | | | | | | | | | | |
| 527 | | | | | | General Statistics | | | | | | |
| 528 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 51 |
| 529 | | | | | Number of Distinct Detected Data | 51 | | | | | Number of Non-Detect Data | 2 |
| 530 | | | | | | | | | | | Percent Non-Detects | 3.77% |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 531 | | | | | | | | | | | | |
| 532 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 533 | | | | | Minimum Detected | 0.00608 | | | | | Minimum Detected | -5.103 |
| 534 | | | | | Maximum Detected | 8.44 | | | | | Maximum Detected | 2.133 |
| 535 | | | | | Mean of Detected | 0.986 | | | | | Mean of Detected | -0.72 |
| 536 | | | | | SD of Detected | 1.322 | | | | | SD of Detected | 1.392 |
| 537 | | | | | Minimum Non-Detect | 0.00788 | | | | | Minimum Non-Detect | -4.843 |
| 538 | | | | | Maximum Non-Detect | 0.00864 | | | | | Maximum Non-Detect | -4.751 |
| 539 | | | | | | | | | | | | |
| 540 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 3 |
| 541 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 50 |
| 542 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 5.66% |
| 543 | | | | | | | | | | | | |
| 544 | **UCL Statistics** | | | | | | | | | | | |
| 545 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 546 | | | | | Lilliefors Test Statistic | 0.229 | | | | | Lilliefors Test Statistic | 0.0783 |
| 547 | | | | | 5% Lilliefors Critical Value | 0.124 | | | | | 5% Lilliefors Critical Value | 0.124 |
| 548 | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 549 | | | | | | | | | | | | |
| 550 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 551 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 552 | | | | | Mean | 0.949 | | | | | Mean | -0.9 |
| 553 | | | | | SD | 1.31 | | | | | SD | 1.645 |
| 554 | | | | | 95% DL/2 (t) UCL | 1.251 | | | | | 95% H-Stat (DL/2) UCL | 2.643 |
| 555 | | | | | | | | | | | | |
| 556 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 557 | | | | | Mean | 0.904 | | | | | Mean in Log Scale | -0.832 |
| 558 | | | | | SD | 1.353 | | | | | SD in Log Scale | 1.481 |
| 559 | | | | | 95% MLE (t) UCL | 1.215 | | | | | Mean in Original Scale | 0.95 |
| 560 | | | | | 95% MLE (Tiku) UCL | 1.194 | | | | | SD in Original Scale | 1.31 |
| 561 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 1.282 |
| 562 | | | | | | | | | | | 95% BCA Bootstrap UCL | 1.392 |
| 563 | | | | | | | | | | | | |
| 564 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 565 | | | | | k star (bias corrected) | 0.8 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | |
| 566 | | | | | Theta Star | 1.234 | | | | | | |
| 567 | | | | | nu star | 81.56 | | | | | | |
| 568 | | | | | | | | | | | | |
| 569 | | | | | A-D Test Statistic | 0.22 | **Nonparametric Statistics** | | | | | |
| 570 | | | | | 5% A-D Critical Value | 0.789 | | | | | Kaplan-Meier (KM) Method | |
| 571 | | | | | K-S Test Statistic | 0.789 | | | | | Mean | 0.949 |
| 572 | | | | | 5% K-S Critical Value | 0.129 | | | | | SD | 1.298 |
| 573 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.18 |
| 574 | | | | | | | | | | | 95% KM (t) UCL | 1.251 |
| 575 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 1.246 |
| 576 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 1.251 |
| 577 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 1.428 |
| 578 | | | | | Maximum | 8.44 | | | | | 95% KM (BCA) UCL | 1.289 |
| 579 | | | | | Mean | 0.949 | | | | | 95% KM (Percentile Bootstrap) UCL | 1.257 |
| 580 | | | | | Median | 0.51 | | | | | 95% KM (Chebyshev) UCL | 1.734 |
| 581 | | | | | SD | 1.311 | | | | | 97.5% KM (Chebyshev) UCL | 2.074 |
| 582 | | | | | k star | 0.44 | | | | | 99% KM (Chebyshev) UCL | 2.741 |
| 583 | | | | | Theta star | 2.156 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 584 | | | | | Nu star | 46.68 | **Potential UCLs to Use** | | | | | |
| 585 | | | | | AppChi2 | 32 | | | | | 95% KM (Chebyshev) UCL | 1.734 |
| 586 | | | | 95% Gamma Approximate UCL | | 1.385 | | | | | | |
| 587 | | | | 95% Adjusted Gamma UCL | | 1.399 | | | | | | |
| 588 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 589 | | | | | | | | | | | | |
| 590 | | | | | | | | | | | | |
| 591 | **Benzo(k)fluoranthene** | | | | | | | | | | | |
| 592 | | | | | | | | | | | | |
| 593 | | | | | **General Statistics** | | | | | | | |
| 594 | | | | Number of Valid Data | | 53 | | | | Number of Detected Data | | 51 |
| 595 | | | | Number of Distinct Detected Data | | 45 | | | | Number of Non-Detect Data | | 2 |
| 596 | | | | | | | | | | Percent Non-Detects | | 3.77% |
| 597 | | | | | | | | | | | | |
| 598 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 599 | | | | Minimum Detected | | 0.00506 | | | | Minimum Detected | | -5.286 |
| 600 | | | | Maximum Detected | | 6.18 | | | | Maximum Detected | | 1.821 |
| 601 | | | | Mean of Detected | | 0.967 | | | | Mean of Detected | | -0.865 |
| 602 | | | | SD of Detected | | 1.314 | | | | SD of Detected | | 1.484 |
| 603 | | | | Minimum Non-Detect | | 0.00788 | | | | Minimum Non-Detect | | -4.843 |
| 604 | | | | Maximum Non-Detect | | 0.00864 | | | | Maximum Non-Detect | | -4.751 |
| 605 | | | | | | | | | | | | |
| 606 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 3 |
| 607 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 50 |
| 608 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 5.66% |
| 609 | | | | | | | | | | | | |
| 610 | | | | | **UCL Statistics** | | | | | | | |
| 611 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 612 | | | | Lilliefors Test Statistic | | 0.237 | | | | Lilliefors Test Statistic | | 0.0825 |
| 613 | | | | 5% Lilliefors Critical Value | | 0.124 | | | | 5% Lilliefors Critical Value | | 0.124 |
| 614 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 615 | | | | | | | | | | | | |
| 616 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 617 | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | | |
| 618 | | | | Mean | | 0.93 | | | | Mean | | -1.04 |
| 619 | | | | SD | | 1.301 | | | | SD | | 1.705 |
| 620 | | | | 95% DL/2 (t) UCL | | 1.23 | | | | 95% H-Stat (DL/2) UCL | | 2.667 |
| 621 | | | | | | | | | | | | |
| 622 | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | | |
| 623 | | | | Mean | | 0.885 | | | | Mean in Log Scale | | -0.987 |
| 624 | | | | SD | | 1.344 | | | | SD in Log Scale | | 1.582 |
| 625 | | | | 95% MLE (t) UCL | | 1.194 | | | | Mean in Original Scale | | 0.931 |
| 626 | | | | 95% MLE (Tiku) UCL | | 1.173 | | | | SD in Original Scale | | 1.301 |
| 627 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 1.256 |
| 628 | | | | | | | | | | 95% BCA Bootstrap UCL | | 1.315 |
| 629 | | | | | | | | | | | | |
| 630 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 631 | | | | k star (bias corrected) | | 0.694 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 632 | | | | Theta Star | | 1.393 | | | | | | |
| 633 | | | | nu star | | 70.81 | | | | | | |
| 634 | | | | | | | | | | | | |
| 635 | | | | A-D Test Statistic | | 0.412 | | | | **Nonparametric Statistics** | | |
| 636 | | | | 5% A-D Critical Value | | 0.795 | | | | Kaplan-Meier (KM) Method | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 637 | | | | | K-S Test Statistic | 0.795 | | | | | Mean | 0.93 |
| 638 | | | | | 5% K-S Critical Value | 0.129 | | | | | SD | 1.289 |
| 639 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.179 |
| 640 | | | | | | | | | | | 95% KM (t) UCL | 1.23 |
| 641 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 1.225 |
| 642 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 1.23 |
| 643 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 1.353 |
| 644 | | | | | Maximum | 6.18 | | | | | 95% KM (BCA) UCL | 1.279 |
| 645 | | | | | Mean | 0.93 | | | | | 95% KM (Percentile Bootstrap) UCL | 1.253 |
| 646 | | | | | Median | 0.45 | | | | | 95% KM (Chebyshev) UCL | 1.71 |
| 647 | | | | | SD | 1.302 | | | | | 97.5% KM (Chebyshev) UCL | 2.047 |
| 648 | | | | | k star | 0.412 | | | | | 99% KM (Chebyshev) UCL | 2.71 |
| 649 | | | | | Theta star | 2.26 | | | | | | |
| 650 | | | | | Nu star | 43.62 | | | **Potential UCLs to Use** | | | |
| 651 | | | | | AppChi2 | 29.48 | | | | | 95% KM (Chebyshev) UCL | 1.71 |
| 652 | | | | | 95% Gamma Approximate UCL | 1.377 | | | | | | |
| 653 | | | | | 95% Adjusted Gamma UCL | 1.392 | | | | | | |
| 654 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 655 | | | | | | | | | | | | |
| 656 | | | | | | | | | | | | |
| 657 | **Benzo_a_anthracene** | | | | | | | | | | | |
| 658 | | | | | | | | | | | | |
| 659 | | | | | **General Statistics** | | | | | | | |
| 660 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 51 |
| 661 | | | | | Number of Distinct Detected Data | 45 | | | | | Number of Non-Detect Data | 2 |
| 662 | | | | | | | | | | | Percent Non-Detects | 3.77% |
| 663 | | | | | | | | | | | | |
| 664 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 665 | | | | | Minimum Detected | 0.00807 | | | | | Minimum Detected | -4.82 |
| 666 | | | | | Maximum Detected | 14.4 | | | | | Maximum Detected | 2.667 |
| 667 | | | | | Mean of Detected | 1.771 | | | | | Mean of Detected | -0.232 |
| 668 | | | | | SD of Detected | 2.527 | | | | | SD of Detected | 1.464 |
| 669 | | | | | Minimum Non-Detect | 0.00788 | | | | | Minimum Non-Detect | -4.843 |
| 670 | | | | | Maximum Non-Detect | 0.00864 | | | | | Maximum Non-Detect | -4.751 |
| 671 | | | | | | | | | | | | |
| 672 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 3 |
| 673 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 50 |
| 674 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 5.66% |
| 675 | | | | | | | | | | | | |
| 676 | | | | | **UCL Statistics** | | | | | | | |
| 677 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 678 | | | | | Lilliefors Test Statistic | 0.272 | | | | | Lilliefors Test Statistic | 0.118 |
| 679 | | | | | 5% Lilliefors Critical Value | 0.124 | | | | | 5% Lilliefors Critical Value | 0.124 |
| 680 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 681 | | | | | | | | | | | | |
| 682 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 683 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 684 | | | | | Mean | 1.704 | | | | | Mean | -0.431 |
| 685 | | | | | SD | 2.501 | | | | | SD | 1.756 |
| 686 | | | | | 95% DL/2 (t) UCL | 2.279 | | | | | 95% H-Stat (DL/2) UCL | 5.472 |
| 687 | | | | | | | | | | | | |
| 688 | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | | Log ROS Method | |
| 689 | | | | | Mean | 1.615 | | | | | Mean in Log Scale | -0.36 |

| | A–E | F | G–K | L |
|---|---|---|---|---|
| 690 | SD | 2.582 | SD in Log Scale | 1.578 |
| 691 | 95% MLE (t) UCL | 2.209 | Mean in Original Scale | 1.705 |
| 692 | 95% MLE (Tiku) UCL | 2.166 | SD in Original Scale | 2.5 |
| 693 | | | 95% Percentile Bootstrap UCL | 2.341 |
| 694 | | | 95% BCA Bootstrap UCL | 2.411 |
| 695 | | | | |
| 696 | **Gamma Distribution Test with Detected Values Only** | | **Data Distribution Test with Detected Values Only** | |
| 697 | k star (bias corrected) | 0.715 | **Data appear Gamma Distributed at 5% Significance Level** | |
| 698 | Theta Star | 2.477 | | |
| 699 | nu star | 72.91 | | |
| 700 | | | | |
| 701 | A-D Test Statistic | 0.589 | **Nonparametric Statistics** | |
| 702 | 5% A-D Critical Value | 0.794 | Kaplan-Meier (KM) Method | |
| 703 | K-S Test Statistic | 0.794 | Mean | 1.704 |
| 704 | 5% K-S Critical Value | 0.129 | SD | 2.477 |
| 705 | **Data appear Gamma Distributed at 5% Significance Level** | | SE of Mean | 0.344 |
| 706 | | | 95% KM (t) UCL | 2.28 |
| 707 | **Assuming Gamma Distribution** | | 95% KM (z) UCL | 2.27 |
| 708 | Gamma ROS Statistics using Extrapolated Data | | 95% KM (jackknife) UCL | 2.279 |
| 709 | Minimum | 1E-09 | 95% KM (bootstrap t) UCL | 2.639 |
| 710 | Maximum | 14.4 | 95% KM (BCA) UCL | 2.35 |
| 711 | Mean | 1.704 | 95% KM (Percentile Bootstrap) UCL | 2.301 |
| 712 | Median | 0.751 | 95% KM (Chebyshev) UCL | 3.202 |
| 713 | SD | 2.501 | 97.5% KM (Chebyshev) UCL | 3.85 |
| 714 | k star | 0.412 | 99% KM (Chebyshev) UCL | 5.124 |
| 715 | Theta star | 4.132 | | |
| 716 | Nu star | 43.71 | **Potential UCLs to Use** | |
| 717 | AppChi2 | 29.55 | 95% KM (Chebyshev) UCL | 3.202 |
| 718 | 95% Gamma Approximate UCL | 2.52 | | |
| 719 | 95% Adjusted Gamma UCL | 2.549 | | |
| 720 | **Note: DL/2 is not a recommended method.** | | | |
| 721 | | | | |
| 722 | | | | |
| 723 | **bis(2-Ethylhexyl)phthalate** | | | |
| 724 | | | | |
| 725 | **General Statistics** | | | |
| 726 | Number of Valid Data | 53 | Number of Detected Data | 29 |
| 727 | Number of Distinct Detected Data | 29 | Number of Non-Detect Data | 24 |
| 728 | | | Percent Non-Detects | 45.28% |
| 729 | | | | |
| 730 | **Raw Statistics** | | **Log-transformed Statistics** | |
| 731 | Minimum Detected | 0.0846 | Minimum Detected | -2.47 |
| 732 | Maximum Detected | 577 | Maximum Detected | 6.358 |
| 733 | Mean of Detected | 45.66 | Mean of Detected | 1.194 |
| 734 | SD of Detected | 117 | SD of Detected | 2.546 |
| 735 | Minimum Non-Detect | 0.139 | Minimum Non-Detect | -1.973 |
| 736 | Maximum Non-Detect | 1.51 | Maximum Non-Detect | 0.412 |
| 737 | | | | |
| 738 | Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 37 |
| 739 | For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 16 |
| 740 | Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 69.81% |
| 741 | | | | |
| 742 | **UCL Statistics** | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 743 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 744 | | | | | Shapiro Wilk Test Statistic | 0.45 | | | | | Shapiro Wilk Test Statistic | 0.934 |
| 745 | | | | | 5% Shapiro Wilk Critical Value | 0.926 | | | | | 5% Shapiro Wilk Critical Value | 0.926 |
| 746 | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 747 | | | | | | | | | | | | |
| 748 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 749 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 750 | | | | | Mean | 25.07 | | | | | Mean | -0.165 |
| 751 | | | | | SD | 88.82 | | | | | SD | 2.435 |
| 752 | | | | | 95% DL/2 (t) UCL | 45.51 | | | | | 95% H-Stat (DL/2) UCL | 44.57 |
| 753 | | | | | | | | | | | | |
| 754 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 755 | **MLE yields a negative mean** | | | | | | | | | | Mean in Log Scale | -0.722 |
| 756 | | | | | | | | | | | SD in Log Scale | 2.882 |
| 757 | | | | | | | | | | | Mean in Original Scale | 25.01 |
| 758 | | | | | | | | | | | SD in Original Scale | 88.84 |
| 759 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 47.94 |
| 760 | | | | | | | | | | | 95% BCA Bootstrap UCL | 55.23 |
| 761 | | | | | | | | | | | | |
| 762 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 763 | | | | | k star (bias corrected) | 0.263 | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 764 | | | | | Theta Star | 173.8 | | | | | | |
| 765 | | | | | nu star | 15.24 | | | | | | |
| 766 | | | | | | | | | | | | |
| 767 | | | | | A-D Test Statistic | 1.728 | **Nonparametric Statistics** | | | | | |
| 768 | | | | | 5% A-D Critical Value | 0.87 | | | | | Kaplan-Meier (KM) Method | |
| 769 | | | | | K-S Test Statistic | 0.87 | | | | | Mean | 25.05 |
| 770 | | | | | 5% K-S Critical Value | 0.178 | | | | | SD | 87.98 |
| 771 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 12.3 |
| 772 | | | | | | | | | | | 95% KM (t) UCL | 45.65 |
| 773 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 45.28 |
| 774 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 45.48 |
| 775 | | | | | Minimum | 0.0846 | | | | | 95% KM (bootstrap t) UCL | 88.11 |
| 776 | | | | | Maximum | 577 | | | | | 95% KM (BCA) UCL | 49.34 |
| 777 | | | | | Mean | 43.57 | | | | | 95% KM (Percentile Bootstrap) UCL | 48.51 |
| 778 | | | | | Median | 38.81 | | | | | 95% KM (Chebyshev) UCL | 78.66 |
| 779 | | | | | SD | 85.88 | | | | | 97.5% KM (Chebyshev) UCL | 101.9 |
| 780 | | | | | k star | 0.436 | | | | | 99% KM (Chebyshev) UCL | 147.4 |
| 781 | | | | | Theta star | 99.95 | | | | | | |
| 782 | | | | | Nu star | 46.21 | **Potential UCLs to Use** | | | | | |
| 783 | | | | | AppChi2 | 31.61 | | | | | 99% KM (Chebyshev) UCL | 147.4 |
| 784 | | | | | 95% Gamma Approximate UCL | 63.68 | | | | | | |
| 785 | | | | | 95% Adjusted Gamma UCL | 64.37 | | | | | | |
| 786 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 787 | | | | | | | | | | | | |
| 788 | | | | | | | | | | | | |
| 789 | **Cadmium** | | | | | | | | | | | |
| 790 | | | | | | | | | | | | |
| 791 | | | | | **General Statistics** | | | | | | | |
| 792 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 50 |
| 793 | | | | | Number of Distinct Detected Data | 48 | | | | | Number of Non-Detect Data | 3 |
| 794 | | | | | | | | | | | Percent Non-Detects | 5.66% |
| 795 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 796 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 797 | | | | | Minimum Detected | 0.084 | | | | | Minimum Detected | -2.477 |
| 798 | | | | | Maximum Detected | 21.8 | | | | | Maximum Detected | 3.082 |
| 799 | | | | | Mean of Detected | 3.344 | | | | | Mean of Detected | 0.615 |
| 800 | | | | | SD of Detected | 3.86 | | | | | SD of Detected | 1.249 |
| 801 | | | | | Minimum Non-Detect | 0.87 | | | | | Minimum Non-Detect | -0.139 |
| 802 | | | | | Maximum Non-Detect | 1.1 | | | | | Maximum Non-Detect | 0.0953 |
| 803 | | | | | | | | | | | | |
| 804 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 17 |
| 805 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 36 |
| 806 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 32.08% |
| 807 | | | | | | | | | | | | |
| 808 | **UCL Statistics** | | | | | | | | | | | |
| 809 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 810 | | | | | Shapiro Wilk Test Statistic | 0.719 | | | | | Shapiro Wilk Test Statistic | 0.942 |
| 811 | | | | | 5% Shapiro Wilk Critical Value | 0.947 | | | | | 5% Shapiro Wilk Critical Value | 0.947 |
| 812 | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | | | | | |
| 813 | | | | | | | | | | | | |
| 814 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 815 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 816 | | | | | Mean | 3.182 | | | | | Mean | 0.539 |
| 817 | | | | | SD | 3.806 | | | | | SD | 1.252 |
| 818 | | | | | 95% DL/2 (t) UCL | 4.058 | | | | | 95% H-Stat (DL/2) UCL | 5.845 |
| 819 | | | | | | | | | | | | |
| 820 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 821 | | | | | Mean | 2.27 | | | | | Mean in Log Scale | 0.532 |
| 822 | | | | | SD | 4.814 | | | | | SD in Log Scale | 1.26 |
| 823 | | | | | 95% MLE (t) UCL | 3.378 | | | | | Mean in Original Scale | 3.179 |
| 824 | | | | | 95% MLE (Tiku) UCL | 3.444 | | | | | SD in Original Scale | 3.809 |
| 825 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 4.116 |
| 826 | | | | | | | | | | | 95% BCA Bootstrap UCL | 4.26 |
| 827 | | | | | | | | | | | | |
| 828 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 829 | | | | | k star (bias corrected) | 0.932 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | |
| 830 | | | | | Theta Star | 3.59 | | | | | | |
| 831 | | | | | nu star | 93.15 | | | | | | |
| 832 | | | | | | | | | | | | |
| 833 | | | | | A-D Test Statistic | 0.394 | **Nonparametric Statistics** | | | | | |
| 834 | | | | | 5% A-D Critical Value | 0.781 | | | | | Kaplan-Meier (KM) Method | |
| 835 | | | | | K-S Test Statistic | 0.781 | | | | | Mean | 3.179 |
| 836 | | | | | 5% K-S Critical Value | 0.129 | | | | | SD | 3.773 |
| 837 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.524 |
| 838 | | | | | | | | | | | 95% KM (t) UCL | 4.056 |
| 839 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 4.041 |
| 840 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 4.056 |
| 841 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 4.399 |
| 842 | | | | | Maximum | 21.8 | | | | | 95% KM (BCA) UCL | 4.088 |
| 843 | | | | | Mean | 3.155 | | | | | 95% KM (Percentile Bootstrap) UCL | 4.081 |
| 844 | | | | | Median | 2.3 | | | | | 95% KM (Chebyshev) UCL | 5.462 |
| 845 | | | | | SD | 3.828 | | | | | 97.5% KM (Chebyshev) UCL | 6.449 |
| 846 | | | | | k star | 0.372 | | | | | 99% KM (Chebyshev) UCL | 8.389 |
| 847 | | | | | Theta star | 8.485 | | | | | | |
| 848 | | | | | Nu star | 39.41 | **Potential UCLs to Use** | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 849 | | | | | AppChi2 | 26.03 | | | | 95% KM (Chebyshev) UCL | | 5.462 |
| 850 | | | | | 95% Gamma Approximate UCL | 4.776 | | | | | | |
| 851 | | | | | 95% Adjusted Gamma UCL | 4.833 | | | | | | |
| 852 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 853 | | | | | | | | | | | | |
| 854 | | | | | | | | | | | | |
| 855 | **Carbazole** | | | | | | | | | | | |
| 856 | | | | | | | | | | | | |
| 857 | | | | | **General Statistics** | | | | | | | |
| 858 | | | | | Number of Valid Data | 53 | | | | Number of Detected Data | | 28 |
| 859 | | | | | Number of Distinct Detected Data | 25 | | | | Number of Non-Detect Data | | 25 |
| 860 | | | | | | | | | | Percent Non-Detects | | 47.17% |
| 861 | | | | | | | | | | | | |
| 862 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 863 | | | | | Minimum Detected | 0.024 | | | | Minimum Detected | | -3.73 |
| 864 | | | | | Maximum Detected | 0.99 | | | | Maximum Detected | | -0.0101 |
| 865 | | | | | Mean of Detected | 0.199 | | | | Mean of Detected | | -1.902 |
| 866 | | | | | SD of Detected | 0.185 | | | | SD of Detected | | 0.768 |
| 867 | | | | | Minimum Non-Detect | 0.138 | | | | Minimum Non-Detect | | -1.981 |
| 868 | | | | | Maximum Non-Detect | 2.49 | | | | Maximum Non-Detect | | 0.912 |
| 869 | | | | | | | | | | | | |
| 870 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 53 |
| 871 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 0 |
| 872 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 100.00% |
| 873 | | | | | | | | | | | | |
| 874 | | | | | **UCL Statistics** | | | | | | | |
| 875 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 876 | | | | | Shapiro Wilk Test Statistic | 0.692 | | | | Shapiro Wilk Test Statistic | | 0.982 |
| 877 | | | | | 5% Shapiro Wilk Critical Value | 0.924 | | | | 5% Shapiro Wilk Critical Value | | 0.924 |
| 878 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 879 | | | | | | | | | | | | |
| 880 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 881 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 882 | | | | | Mean | 0.208 | | | | Mean | | -1.896 |
| 883 | | | | | SD | 0.223 | | | | SD | | 0.754 |
| 884 | | | | | 95% DL/2 (t) UCL | 0.259 | | | | 95% H-Stat (DL/2) UCL | | 0.292 |
| 885 | | | | | | | | | | | | |
| 886 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 887 | | | | **MLE method failed to converge properly** | | | | | | Mean in Log Scale | | -2.065 |
| 888 | | | | | | | | | | SD in Log Scale | | 0.604 |
| 889 | | | | | | | | | | Mean in Original Scale | | 0.157 |
| 890 | | | | | | | | | | SD in Original Scale | | 0.142 |
| 891 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.19 |
| 892 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.208 |
| 893 | | | | | | | | | | | | |
| 894 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 895 | | | | | k star (bias corrected) | 1.706 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 896 | | | | | Theta Star | 0.117 | | | | | | |
| 897 | | | | | nu star | 95.56 | | | | | | |
| 898 | | | | | | | | | | | | |
| 899 | | | | | A-D Test Statistic | 0.485 | | | | **Nonparametric Statistics** | | |
| 900 | | | | | 5% A-D Critical Value | 0.759 | | | | Kaplan-Meier (KM) Method | | |
| 901 | | | | | K-S Test Statistic | 0.759 | | | | Mean | | 0.164 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 902 | | | | | 5% K-S Critical Value | 0.168 | | | | | SD | 0.149 |
| 903 | | | | Data appear Gamma Distributed at 5% Significance Level | | | | | | | SE of Mean | 0.0227 |
| 904 | | | | | | | | | | | 95% KM (t) UCL | 0.201 |
| 905 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 0.201 |
| 906 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.201 |
| 907 | | | | | Minimum | 0.024 | | | | | 95% KM (bootstrap t) UCL | 0.217 |
| 908 | | | | | Maximum | 0.99 | | | | | 95% KM (BCA) UCL | 0.204 |
| 909 | | | | | Mean | 0.213 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.202 |
| 910 | | | | | Median | 0.188 | | | | | 95% KM (Chebyshev) UCL | 0.262 |
| 911 | | | | | SD | 0.141 | | | | | 97.5% KM (Chebyshev) UCL | 0.305 |
| 912 | | | | | k star | 2.918 | | | | | 99% KM (Chebyshev) UCL | 0.389 |
| 913 | | | | | Theta star | 0.0729 | | | | | | |
| 914 | | | | | Nu star | 309.3 | | | Potential UCLs to Use | | | |
| 915 | | | | | AppChi2 | 269.6 | | | | | 95% KM (t) UCL | 0.201 |
| 916 | | | | | 95% Gamma Approximate UCL | 0.244 | | | | | | |
| 917 | | | | | 95% Adjusted Gamma UCL | 0.245 | | | | | | |
| 918 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 919 | | | | | | | | | | | | |
| 920 | | | | | | | | | | | | |
| 921 | Chromium | | | | | | | | | | | |
| 922 | | | | | | | | | | | | |
| 923 | | | | | General Statistics | | | | | | | |
| 924 | | | | | Number of Valid Observations | 53 | | | | | Number of Distinct Observations | 53 |
| 925 | | | | | | | | | | | | |
| 926 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 927 | | | | | Minimum | 6.11 | | | | | Minimum of Log Data | 1.81 |
| 928 | | | | | Maximum | 776 | | | | | Maximum of Log Data | 6.654 |
| 929 | | | | | Mean | 142.3 | | | | | Mean of log Data | 4.356 |
| 930 | | | | | Median | 69.5 | | | | | SD of log Data | 1.122 |
| 931 | | | | | SD | 176.1 | | | | | | |
| 932 | | | | | Coefficient of Variation | 1.238 | | | | | | |
| 933 | | | | | Skewness | 2.166 | | | | | | |
| 934 | | | | | | | | | | | | |
| 935 | | | | | Relevant UCL Statistics | | | | | | | |
| 936 | | | | Normal Distribution Test | | | | | | Lognormal Distribution Test | | |
| 937 | | | | | Lilliefors Test Statistic | 0.264 | | | | | Lilliefors Test Statistic | 0.096 |
| 938 | | | | | Lilliefors Critical Value | 0.122 | | | | | Lilliefors Critical Value | 0.122 |
| 939 | | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 940 | | | | | | | | | | | | |
| 941 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 942 | | | | | 95% Student's-t UCL | 182.8 | | | | | 95% H-UCL | 214.7 |
| 943 | | | | 95% UCLs (Adjusted for Skewness) | | | | | | | 95% Chebyshev (MVUE) UCL | 260.9 |
| 944 | | | | | 95% Adjusted-CLT UCL | 189.7 | | | | | 97.5% Chebyshev (MVUE) UCL | 311.6 |
| 945 | | | | | 95% Modified-t UCL | 184 | | | | | 99% Chebyshev (MVUE) UCL | 411.3 |
| 946 | | | | | | | | | | | | |
| 947 | | | | Gamma Distribution Test | | | | | | Data Distribution | | |
| 948 | | | | | k star (bias corrected) | 0.921 | | | | Data appear Lognormal at 5% Significance Level | | |
| 949 | | | | | Theta Star | 154.4 | | | | | | |
| 950 | | | | | MLE of Mean | 142.3 | | | | | | |
| 951 | | | | | MLE of Standard Deviation | 148.2 | | | | | | |
| 952 | | | | | nu star | 97.66 | | | | | | |
| 953 | | | | | Approximate Chi Square Value (.05) | 75.87 | | | | Nonparametric Statistics | | |
| 954 | | | | | Adjusted Level of Significance | 0.0455 | | | | | 95% CLT UCL | 182 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 955 | | | | | Adjusted Chi Square Value | 75.33 | | | | | 95% Jackknife UCL | 182.8 |
| 956 | | | | | | | | | | | 95% Standard Bootstrap UCL | 180.7 |
| 957 | | | | | Anderson-Darling Test Statistic | 1.437 | | | | | 95% Bootstrap-t UCL | 196.2 |
| 958 | | | | | Anderson-Darling 5% Critical Value | 0.782 | | | | | 95% Hall's Bootstrap UCL | 190 |
| 959 | | | | | Kolmogorov-Smirnov Test Statistic | 0.172 | | | | | 95% Percentile Bootstrap UCL | 184.7 |
| 960 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.126 | | | | | 95% BCA Bootstrap UCL | 190.6 |
| 961 | | | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | 95% Chebyshev(Mean, Sd) UCL | 247.7 |
| 962 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 293.3 |
| 963 | | | | | **Assuming Gamma Distribution** | | | | | | 99% Chebyshev(Mean, Sd) UCL | 382.9 |
| 964 | | | | | 95% Approximate Gamma UCL | 183.1 | | | | | | |
| 965 | | | | | 95% Adjusted Gamma UCL | 184.4 | | | | | | |
| 966 | | | | | | | | | | | | |
| 967 | | | | | **Potential UCL to Use** | | | | | | Use 95% H-UCL | 214.7 |
| 968 | | | | | | | | | | | | |
| 969 | | | | | | | | | | | | |
| 970 | **Cobalt** | | | | | | | | | | | |
| 971 | | | | | | | | | | | | |
| 972 | | | | | **General Statistics** | | | | | | | |
| 973 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 41 |
| 974 | | | | | Number of Distinct Detected Data | 38 | | | | | Number of Non-Detect Data | 12 |
| 975 | | | | | | | | | | | Percent Non-Detects | 22.64% |
| 976 | | | | | | | | | | | | |
| 977 | | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | |
| 978 | | | | | Minimum Detected | 1.76 | | | | | Minimum Detected | 0.565 |
| 979 | | | | | Maximum Detected | 18.7 | | | | | Maximum Detected | 2.929 |
| 980 | | | | | Mean of Detected | 5.342 | | | | | Mean of Detected | 1.484 |
| 981 | | | | | SD of Detected | 3.818 | | | | | SD of Detected | 0.597 |
| 982 | | | | | Minimum Non-Detect | 7.2 | | | | | Minimum Non-Detect | 1.974 |
| 983 | | | | | Maximum Non-Detect | 11 | | | | | Maximum Non-Detect | 2.398 |
| 984 | | | | | | | | | | | | |
| 985 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 50 |
| 986 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 3 |
| 987 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 94.34% |
| 988 | | | | | | | | | | | | |
| 989 | | | | | **UCL Statistics** | | | | | | | |
| 990 | | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | |
| 991 | | | | | Shapiro Wilk Test Statistic | 0.789 | | | | | Shapiro Wilk Test Statistic | 0.939 |
| 992 | | | | | 5% Shapiro Wilk Critical Value | 0.941 | | | | | 5% Shapiro Wilk Critical Value | 0.941 |
| 993 | | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | |
| 994 | | | | | | | | | | | | |
| 995 | | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | |
| 996 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 997 | | | | | Mean | 5.215 | | | | | Mean | 1.5 |
| 998 | | | | | SD | 3.374 | | | | | SD | 0.529 |
| 999 | | | | | 95% DL/2 (t) UCL | 5.991 | | | | | 95% H-Stat (DL/2) UCL | 7.725 |
| 1000 | | | | | | | | | | | | |
| 1001 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 1002 | | | | | **MLE yields a negative mean** | | | | | | Mean in Log Scale | 1.454 |
| 1003 | | | | | | | | | | | SD in Log Scale | 0.541 |
| 1004 | | | | | | | | | | | Mean in Original Scale | 5.039 |
| 1005 | | | | | | | | | | | SD in Original Scale | 3.436 |
| 1006 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 5.879 |
| 1007 | | | | | | | | | | | 95% BCA Bootstrap UCL | 6.051 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1008 | | | | | | | | | | | | |
| 1009 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 1010 | | | | | k star (bias corrected) | 2.58 | **Data do not follow a Discernable Distribution (0.05)** | | | | | |
| 1011 | | | | | Theta Star | 2.071 | | | | | | |
| 1012 | | | | | nu star | 211.5 | | | | | | |
| 1013 | | | | | | | | | | | | |
| 1014 | | | | | A-D Test Statistic | 1.399 | **Nonparametric Statistics** | | | | | |
| 1015 | | | | | 5% A-D Critical Value | 0.756 | | | | | Kaplan-Meier (KM) Method | |
| 1016 | | | | | K-S Test Statistic | 0.756 | | | | | Mean | 5.057 |
| 1017 | | | | | 5% K-S Critical Value | 0.139 | | | | | SD | 3.489 |
| 1018 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.506 |
| 1019 | | | | | | | | | | | 95% KM (t) UCL | 5.904 |
| 1020 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 5.889 |
| 1021 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 5.904 |
| 1022 | | | | | Minimum | 1.76 | | | | | 95% KM (bootstrap t) UCL | 6.052 |
| 1023 | | | | | Maximum | 18.7 | | | | | 95% KM (BCA) UCL | 5.97 |
| 1024 | | | | | Mean | 5.387 | | | | | 95% KM (Percentile Bootstrap) UCL | 5.867 |
| 1025 | | | | | Median | 4.502 | | | | | 95% KM (Chebyshev) UCL | 7.263 |
| 1026 | | | | | SD | 3.412 | | | | | 97.5% KM (Chebyshev) UCL | 8.217 |
| 1027 | | | | | k star | 3.182 | | | | | 99% KM (Chebyshev) UCL | 10.09 |
| 1028 | | | | | Theta star | 1.693 | | | | | | |
| 1029 | | | | | Nu star | 337.3 | | | **Potential UCLs to Use** | | | |
| 1030 | | | | | AppChi2 | 295.7 | | | | | 95% KM (BCA) UCL | 5.97 |
| 1031 | | | | | 95% Gamma Approximate UCL | 6.144 | | | | | | |
| 1032 | | | | | 95% Adjusted Gamma UCL | 6.167 | | | | | | |
| 1033 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1034 | | | | | | | | | | | | |
| 1035 | | | | | | | | | | | | |
| 1036 | **Copper** | | | | | | | | | | | |
| 1037 | | | | | | | | | | | | |
| 1038 | | | | | **General Statistics** | | | | | | | |
| 1039 | | | | | Number of Valid Observations | 53 | | | | | Number of Distinct Observations | 53 |
| 1040 | | | | | | | | | | | | |
| 1041 | | | **Raw Statistics** | | | | **Log-transformed Statistics** | | | | | |
| 1042 | | | | | Minimum | 2.9 | | | | | Minimum of Log Data | 1.065 |
| 1043 | | | | | Maximum | 1650 | | | | | Maximum of Log Data | 7.409 |
| 1044 | | | | | Mean | 238.7 | | | | | Mean of log Data | 4.672 |
| 1045 | | | | | Median | 87.8 | | | | | SD of log Data | 1.311 |
| 1046 | | | | | SD | 350.2 | | | | | | |
| 1047 | | | | | Coefficient of Variation | 1.467 | | | | | | |
| 1048 | | | | | Skewness | 2.482 | | | | | | |
| 1049 | | | | | | | | | | | | |
| 1050 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 1051 | | | **Normal Distribution Test** | | | | **Lognormal Distribution Test** | | | | | |
| 1052 | | | | | Lilliefors Test Statistic | 0.259 | | | | | Lilliefors Test Statistic | 0.0755 |
| 1053 | | | | | Lilliefors Critical Value | 0.122 | | | | | Lilliefors Critical Value | 0.122 |
| 1054 | | | **Data not Normal at 5% Significance Level** | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 1055 | | | | | | | | | | | | |
| 1056 | | | **Assuming Normal Distribution** | | | | **Assuming Lognormal Distribution** | | | | | |
| 1057 | | | | | 95% Student's-t UCL | 319.3 | | | | | 95% H-UCL | 413.6 |
| 1058 | | | **95% UCLs (Adjusted for Skewness)** | | | | | | | | 95% Chebyshev (MVUE) UCL | 490.6 |
| 1059 | | | | | 95% Adjusted-CLT UCL | 335.4 | | | | | 97.5% Chebyshev (MVUE) UCL | 596.7 |
| 1060 | | | | | 95% Modified-t UCL | 322 | | | | | 99% Chebyshev (MVUE) UCL | 805.2 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1061 | | | | | | | | | | | | |
| 1062 | **Gamma Distribution Test** | | | | | | **Data Distribution** | | | | | |
| 1063 | | | | | k star (bias corrected) | 0.716 | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 1064 | | | | | Theta Star | 333.4 | | | | | | |
| 1065 | | | | | MLE of Mean | 238.7 | | | | | | |
| 1066 | | | | | MLE of Standard Deviation | 282.1 | | | | | | |
| 1067 | | | | | nu star | 75.9 | | | | | | |
| 1068 | | | | | Approximate Chi Square Value (.05) | 56.83 | **Nonparametric Statistics** | | | | | |
| 1069 | | | | | Adjusted Level of Significance | 0.0455 | | | | | 95% CLT UCL | 317.8 |
| 1070 | | | | | Adjusted Chi Square Value | 56.37 | | | | | 95% Jackknife UCL | 319.3 |
| 1071 | | | | | | | | | | | 95% Standard Bootstrap UCL | 314.7 |
| 1072 | | | | | Anderson-Darling Test Statistic | 1.544 | | | | | 95% Bootstrap-t UCL | 346.2 |
| 1073 | | | | | Anderson-Darling 5% Critical Value | 0.793 | | | | | 95% Hall's Bootstrap UCL | 332.5 |
| 1074 | | | | | Kolmogorov-Smirnov Test Statistic | 0.146 | | | | | 95% Percentile Bootstrap UCL | 321.2 |
| 1075 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.127 | | | | | 95% BCA Bootstrap UCL | 330.9 |
| 1076 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | 95% Chebyshev(Mean, Sd) UCL | 448.4 |
| 1077 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 539.1 |
| 1078 | **Assuming Gamma Distribution** | | | | | | | | | | 99% Chebyshev(Mean, Sd) UCL | 717.3 |
| 1079 | | | | | 95% Approximate Gamma UCL | 318.8 | | | | | | |
| 1080 | | | | | 95% Adjusted Gamma UCL | 321.4 | | | | | | |
| 1081 | | | | | | | | | | | | |
| 1082 | **Potential UCL to Use** | | | | | | | | | | Use 95% H-UCL | 413.6 |
| 1083 | | | | | | | | | | | | |
| 1084 | | | | | | | | | | | | |
| 1085 | **Dibenz_a,h_anthracene** | | | | | | | | | | | |
| 1086 | | | | | | | | | | | | |
| 1087 | **General Statistics** | | | | | | | | | | | |
| 1088 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 44 |
| 1089 | | | | | Number of Distinct Detected Data | 41 | | | | | Number of Non-Detect Data | 9 |
| 1090 | | | | | | | | | | | Percent Non-Detects | 16.98% |
| 1091 | | | | | | | | | | | | |
| 1092 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 1093 | | | | | Minimum Detected | 0.0032 | | | | | Minimum Detected | -5.745 |
| 1094 | | | | | Maximum Detected | 1.73 | | | | | Maximum Detected | 0.548 |
| 1095 | | | | | Mean of Detected | 0.293 | | | | | Mean of Detected | -1.802 |
| 1096 | | | | | SD of Detected | 0.326 | | | | | SD of Detected | 1.233 |
| 1097 | | | | | Minimum Non-Detect | 0.00428 | | | | | Minimum Non-Detect | -5.454 |
| 1098 | | | | | Maximum Non-Detect | 3.4 | | | | | Maximum Non-Detect | 1.224 |
| 1099 | | | | | | | | | | | | |
| 1100 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 53 |
| 1101 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 1102 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 1103 | | | | | | | | | | | | |
| 1104 | **UCL Statistics** | | | | | | | | | | | |
| 1105 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 1106 | | | | | Shapiro Wilk Test Statistic | 0.755 | | | | | Shapiro Wilk Test Statistic | 0.959 |
| 1107 | | | | | 5% Shapiro Wilk Critical Value | 0.944 | | | | | 5% Shapiro Wilk Critical Value | 0.944 |
| 1108 | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 1109 | | | | | | | | | | | | |
| 1110 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 1111 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1112 | | | | | Mean | 0.29 | | | | | Mean | -2.004 |
| 1113 | | | | | SD | 0.365 | | | | | SD | 1.502 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1114 | | | | | 95% DL/2 (t) UCL | 0.374 | | | | 95% H-Stat (DL/2) UCL | | 0.752 |
| 1115 | | | | | | | | | | | | |
| 1116 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | Log ROS Method | | |
| 1117 | | | **MLE method failed to converge properly** | | | | | | | Mean in Log Scale | | -2.04 |
| 1118 | | | | | | | | | | SD in Log Scale | | 1.299 |
| 1119 | | | | | | | | | | Mean in Original Scale | | 0.254 |
| 1120 | | | | | | | | | | SD in Original Scale | | 0.31 |
| 1121 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.326 |
| 1122 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.341 |
| 1123 | | | | | | | | | | | | |
| 1124 | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | |
| 1125 | | | | | k star (bias corrected) | 0.948 | | | **Data appear Gamma Distributed at 5% Significance Level** | | | |
| 1126 | | | | | Theta Star | 0.309 | | | | | | |
| 1127 | | | | | nu star | 83.45 | | | | | | |
| 1128 | | | | | | | | | | | | |
| 1129 | | | | | A-D Test Statistic | 0.277 | | | **Nonparametric Statistics** | | | |
| 1130 | | | | | 5% A-D Critical Value | 0.777 | | | | Kaplan-Meier (KM) Method | | |
| 1131 | | | | | K-S Test Statistic | 0.777 | | | | Mean | | 0.258 |
| 1132 | | | | | 5% K-S Critical Value | 0.137 | | | | SD | | 0.31 |
| 1133 | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | | 0.0436 |
| 1134 | | | | | | | | | | 95% KM (t) UCL | | 0.331 |
| 1135 | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | | 0.33 |
| 1136 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | | 0.331 |
| 1137 | | | | | Minimum | 1E-09 | | | | 95% KM (bootstrap t) UCL | | 0.357 |
| 1138 | | | | | Maximum | 1.73 | | | | 95% KM (BCA) UCL | | 0.336 |
| 1139 | | | | | Mean | 0.268 | | | | 95% KM (Percentile Bootstrap) UCL | | 0.332 |
| 1140 | | | | | Median | 0.182 | | | | 95% KM (Chebyshev) UCL | | 0.448 |
| 1141 | | | | | SD | 0.308 | | | | 97.5% KM (Chebyshev) UCL | | 0.531 |
| 1142 | | | | | k star | 0.349 | | | | 99% KM (Chebyshev) UCL | | 0.692 |
| 1143 | | | | | Theta star | 0.768 | | | | | | |
| 1144 | | | | | Nu star | 37.01 | | | **Potential UCLs to Use** | | | |
| 1145 | | | | | AppChi2 | 24.08 | | | | 95% KM (Chebyshev) UCL | | 0.448 |
| 1146 | | | | | 95% Gamma Approximate UCL | 0.412 | | | | | | |
| 1147 | | | | | 95% Adjusted Gamma UCL | 0.417 | | | | | | |
| 1148 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1149 | | | | | | | | | | | | |
| 1150 | | | | | | | | | | | | |
| 1151 | **Dibenzofuran** | | | | | | | | | | | |
| 1152 | | | | | | | | | | | | |
| 1153 | | | | | **General Statistics** | | | | | | | |
| 1154 | | | | | Number of Valid Data | 53 | | | | Number of Detected Data | | 21 |
| 1155 | | | | | Number of Distinct Detected Data | 20 | | | | Number of Non-Detect Data | | 32 |
| 1156 | | | | | | | | | | Percent Non-Detects | | 60.38% |
| 1157 | | | | | | | | | | | | |
| 1158 | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | |
| 1159 | | | | | Minimum Detected | 0.061 | | | | Minimum Detected | | -2.797 |
| 1160 | | | | | Maximum Detected | 1.1 | | | | Maximum Detected | | 0.0953 |
| 1161 | | | | | Mean of Detected | 0.216 | | | | Mean of Detected | | -1.838 |
| 1162 | | | | | SD of Detected | 0.237 | | | | SD of Detected | | 0.704 |
| 1163 | | | | | Minimum Non-Detect | 0.138 | | | | Minimum Non-Detect | | -1.981 |
| 1164 | | | | | Maximum Non-Detect | 2.49 | | | | Maximum Non-Detect | | 0.912 |
| 1165 | | | | | | | | | | | | |
| 1166 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 53 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1167 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 1168 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 1169 | | | | | | | | | | | | |
| 1170 | | | | | | UCL Statistics | | | | | | |
| 1171 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 1172 | | | | | Shapiro Wilk Test Statistic | 0.59 | | | | | Shapiro Wilk Test Statistic | 0.886 |
| 1173 | | | | | 5% Shapiro Wilk Critical Value | 0.908 | | | | | 5% Shapiro Wilk Critical Value | 0.908 |
| 1174 | | | | Data not Normal at 5% Significance Level | | | | | | Data not Lognormal at 5% Significance Level | | |
| 1175 | | | | | | | | | | | | |
| 1176 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 1177 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1178 | | | | | Mean | 0.207 | | | | | Mean | -1.886 |
| 1179 | | | | | SD | 0.234 | | | | | SD | 0.691 |
| 1180 | | | | | 95% DL/2 (t) UCL | 0.261 | | | | | 95% H-Stat (DL/2) UCL | 0.287 |
| 1181 | | | | | | | | | | | | |
| 1182 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 1183 | | | | | MLE method failed to converge properly | | | | | | Mean in Log Scale | -2.033 |
| 1184 | | | | | | | | | | | SD in Log Scale | 0.495 |
| 1185 | | | | | | | | | | | Mean in Original Scale | 0.157 |
| 1186 | | | | | | | | | | | SD in Original Scale | 0.157 |
| 1187 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.195 |
| 1188 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.217 |
| 1189 | | | | | | | | | | | | |
| 1190 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 1191 | | | | | k star (bias corrected) | 1.557 | | | | Data do not follow a Discernable Distribution (0.05) | | |
| 1192 | | | | | Theta Star | 0.139 | | | | | | |
| 1193 | | | | | nu star | 65.39 | | | | | | |
| 1194 | | | | | | | | | | | | |
| 1195 | | | | | A-D Test Statistic | 1.61 | | | | Nonparametric Statistics | | |
| 1196 | | | | | 5% A-D Critical Value | 0.756 | | | | | Kaplan-Meier (KM) Method | |
| 1197 | | | | | K-S Test Statistic | 0.756 | | | | | Mean | 0.157 |
| 1198 | | | | | 5% K-S Critical Value | 0.192 | | | | | SD | 0.16 |
| 1199 | | | | Data not Gamma Distributed at 5% Significance Level | | | | | | | SE of Mean | 0.0237 |
| 1200 | | | | | | | | | | | 95% KM (t) UCL | 0.196 |
| 1201 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 0.196 |
| 1202 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.196 |
| 1203 | | | | | Minimum | 0.061 | | | | | 95% KM (bootstrap t) UCL | 0.237 |
| 1204 | | | | | Maximum | 1.1 | | | | | 95% KM (BCA) UCL | 0.196 |
| 1205 | | | | | Mean | 0.224 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.197 |
| 1206 | | | | | Median | 0.214 | | | | | 95% KM (Chebyshev) UCL | 0.26 |
| 1207 | | | | | SD | 0.15 | | | | | 97.5% KM (Chebyshev) UCL | 0.305 |
| 1208 | | | | | k star | 3.841 | | | | | 99% KM (Chebyshev) UCL | 0.392 |
| 1209 | | | | | Theta star | 0.0584 | | | | | | |
| 1210 | | | | | Nu star | 407.2 | | | | Potential UCLs to Use | | |
| 1211 | | | | | AppChi2 | 361.4 | | | | | 95% KM (t) UCL | 0.196 |
| 1212 | | | | | 95% Gamma Approximate UCL | 0.253 | | | | | 95% KM (% Bootstrap) UCL | 0.197 |
| 1213 | | | | | 95% Adjusted Gamma UCL | 0.254 | | | | | | |
| 1214 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 1215 | | | | | | | | | | | | |
| 1216 | | | | | | | | | | | | |
| 1217 | Dieldrin | | | | | | | | | | | |
| 1218 | | | | | | | | | | | | |
| 1219 | | | | | | General Statistics | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1220 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 46 |
| 1221 | | | | | Number of Distinct Detected Data | 45 | | | | | Number of Non-Detect Data | 7 |
| 1222 | | | | | | | | | | | Percent Non-Detects | 13.21% |
| 1223 | | | | | | | | | | | | |
| 1224 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1225 | | | | | Minimum Detected | 0.00071 | | | | | Minimum Detected | -7.25 |
| 1226 | | | | | Maximum Detected | 0.81 | | | | | Maximum Detected | -0.211 |
| 1227 | | | | | Mean of Detected | 0.0839 | | | | | Mean of Detected | -3.687 |
| 1228 | | | | | SD of Detected | 0.144 | | | | | SD of Detected | 1.77 |
| 1229 | | | | | Minimum Non-Detect | 0.000284 | | | | | Minimum Non-Detect | -8.167 |
| 1230 | | | | | Maximum Non-Detect | 0.0038 | | | | | Maximum Non-Detect | -5.573 |
| 1231 | | | | | | | | | | | | |
| 1232 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 16 |
| 1233 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 37 |
| 1234 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 30.19% |
| 1235 | | | | | | | | | | | | |
| 1236 | | | | | **UCL Statistics** | | | | | | | |
| 1237 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 1238 | | | | | Shapiro Wilk Test Statistic | 0.601 | | | | | Shapiro Wilk Test Statistic | 0.965 |
| 1239 | | | | | 5% Shapiro Wilk Critical Value | 0.945 | | | | | 5% Shapiro Wilk Critical Value | 0.945 |
| 1240 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1241 | | | | | | | | | | | | |
| 1242 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1243 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1244 | | | | | Mean | 0.073 | | | | | Mean | -4.182 |
| 1245 | | | | | SD | 0.137 | | | | | SD | 2.125 |
| 1246 | | | | | 95% DL/2 (t) UCL | 0.105 | | | | | 95% H-Stat (DL/2) UCL | 0.314 |
| 1247 | | | | | | | | | | | | |
| 1248 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 1249 | | | | | Mean | 0.0351 | | | | | Mean in Log Scale | -4.143 |
| 1250 | | | | | SD | 0.174 | | | | | SD in Log Scale | 2.044 |
| 1251 | | | | | 95% MLE (t) UCL | 0.0751 | | | | | Mean in Original Scale | 0.073 |
| 1252 | | | | | 95% MLE (Tiku) UCL | 0.0768 | | | | | SD in Original Scale | 0.137 |
| 1253 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.106 |
| 1254 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.115 |
| 1255 | | | | | | | | | | | | |
| 1256 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 1257 | | | | | k star (bias corrected) | 0.502 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 1258 | | | | | Theta Star | 0.167 | | | | | | |
| 1259 | | | | | nu star | 46.2 | | | | | | |
| 1260 | | | | | | | | | | | | |
| 1261 | | | | | A-D Test Statistic | 0.691 | | | | **Nonparametric Statistics** | | |
| 1262 | | | | | 5% A-D Critical Value | 0.812 | | | | | Kaplan-Meier (KM) Method | |
| 1263 | | | | | K-S Test Statistic | 0.812 | | | | | Mean | 0.073 |
| 1264 | | | | | 5% K-S Critical Value | 0.138 | | | | | SD | 0.136 |
| 1265 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 0.0189 |
| 1266 | | | | | | | | | | | 95% KM (t) UCL | 0.105 |
| 1267 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 0.104 |
| 1268 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.105 |
| 1269 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 0.124 |
| 1270 | | | | | Maximum | 0.81 | | | | | 95% KM (BCA) UCL | 0.106 |
| 1271 | | | | | Mean | 0.0729 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.105 |
| 1272 | | | | | Median | 0.023 | | | | | 95% KM (Chebyshev) UCL | 0.155 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1273 | | | | | SD | 0.137 | | | | 97.5% KM (Chebyshev) UCL | | 0.191 |
| 1274 | | | | | k star | 0.219 | | | | 99% KM (Chebyshev) UCL | | 0.261 |
| 1275 | | | | | Theta star | 0.333 | | | | | | |
| 1276 | | | | | Nu star | 23.2 | **Potential UCLs to Use** | | | | | |
| 1277 | | | | | AppChi2 | 13.24 | | | | 95% KM (Chebyshev) UCL | | 0.155 |
| 1278 | | | | 95% Gamma Approximate UCL | | 0.128 | | | | | | |
| 1279 | | | | 95% Adjusted Gamma UCL | | 0.13 | | | | | | |
| 1280 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1281 | | | | | | | | | | | | |
| 1282 | | | | | | | | | | | | |
| 1283 | **Indeno(1,2,3-cd)pyrene** | | | | | | | | | | | |
| 1284 | | | | | | | | | | | | |
| 1285 | | | | | **General Statistics** | | | | | | | |
| 1286 | | | | Number of Valid Data | | 53 | | | | Number of Detected Data | | 51 |
| 1287 | | | | Number of Distinct Detected Data | | 49 | | | | Number of Non-Detect Data | | 2 |
| 1288 | | | | | | | | | | Percent Non-Detects | | 3.77% |
| 1289 | | | | | | | | | | | | |
| 1290 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1291 | | | | Minimum Detected | | 0.00454 | | | | Minimum Detected | | -5.395 |
| 1292 | | | | Maximum Detected | | 6.21 | | | | Maximum Detected | | 1.826 |
| 1293 | | | | Mean of Detected | | 0.81 | | | | Mean of Detected | | -0.939 |
| 1294 | | | | SD of Detected | | 1.031 | | | | SD of Detected | | 1.428 |
| 1295 | | | | Minimum Non-Detect | | 0.00788 | | | | Minimum Non-Detect | | -4.843 |
| 1296 | | | | Maximum Non-Detect | | 0.00864 | | | | Maximum Non-Detect | | -4.751 |
| 1297 | | | | | | | | | | | | |
| 1298 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 3 |
| 1299 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 50 |
| 1300 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 5.66% |
| 1301 | | | | | | | | | | | | |
| 1302 | | | | | **UCL Statistics** | | | | | | | |
| 1303 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 1304 | | | | Lilliefors Test Statistic | | 0.217 | | | | Lilliefors Test Statistic | | 0.0879 |
| 1305 | | | | 5% Lilliefors Critical Value | | 0.124 | | | | 5% Lilliefors Critical Value | | 0.124 |
| 1306 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1307 | | | | | | | | | | | | |
| 1308 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1309 | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | | |
| 1310 | | | | Mean | | 0.78 | | | | Mean | | -1.111 |
| 1311 | | | | SD | | 1.023 | | | | SD | | 1.651 |
| 1312 | | | | 95% DL/2 (t) UCL | | 1.015 | | | | 95% H-Stat (DL/2) UCL | | 2.186 |
| 1313 | | | | | | | | | | | | |
| 1314 | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | | |
| 1315 | | | | Mean | | 0.744 | | | | Mean in Log Scale | | -1.055 |
| 1316 | | | | SD | | 1.057 | | | | SD in Log Scale | | 1.519 |
| 1317 | | | | 95% MLE (t) UCL | | 0.988 | | | | Mean in Original Scale | | 0.78 |
| 1318 | | | | 95% MLE (Tiku) UCL | | 0.972 | | | | SD in Original Scale | | 1.023 |
| 1319 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 1.022 |
| 1320 | | | | | | | | | | 95% BCA Bootstrap UCL | | 1.104 |
| 1321 | | | | | | | | | | | | |
| 1322 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 1323 | | | | k star (bias corrected) | | 0.778 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 1324 | | | | Theta Star | | 1.041 | | | | | | |
| 1325 | | | | nu star | | 79.35 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1326 | | | | | | | | | | | | |
| 1327 | | | | | A-D Test Statistic | 0.16 | **Nonparametric Statistics** | | | | | |
| 1328 | | | | | 5% A-D Critical Value | 0.79 | | | | | Kaplan-Meier (KM) Method | |
| 1329 | | | | | K-S Test Statistic | 0.79 | | | | | Mean | 0.78 |
| 1330 | | | | | 5% K-S Critical Value | 0.129 | | | | | SD | 1.013 |
| 1331 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.141 |
| 1332 | | | | | | | | | | | 95% KM (t) UCL | 1.015 |
| 1333 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 1.011 |
| 1334 | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | | 95% KM (jackknife) UCL | 1.015 |
| 1335 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 1.144 |
| 1336 | | | | | Maximum | 6.21 | | | | | 95% KM (BCA) UCL | 1.01 |
| 1337 | | | | | Mean | 0.779 | | | | | 95% KM (Percentile Bootstrap) UCL | 1.021 |
| 1338 | | | | | Median | 0.399 | | | | | 95% KM (Chebyshev) UCL | 1.392 |
| 1339 | | | | | SD | 1.023 | | | | | 97.5% KM (Chebyshev) UCL | 1.658 |
| 1340 | | | | | k star | 0.437 | | | | | 99% KM (Chebyshev) UCL | 2.178 |
| 1341 | | | | | Theta star | 1.785 | | | | | | |
| 1342 | | | | | Nu star | 46.28 | **Potential UCLs to Use** | | | | | |
| 1343 | | | | | AppChi2 | 31.67 | | | | | 95% KM (Chebyshev) UCL | 1.392 |
| 1344 | | | | | 95% Gamma Approximate UCL | 1.139 | | | | | | |
| 1345 | | | | | 95% Adjusted Gamma UCL | 1.151 | | | | | | |
| 1346 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1347 | | | | | | | | | | | | |
| 1348 | | | | | | | | | | | | |
| 1349 | **Iron** | | | | | | | | | | | |
| 1350 | | | | | | | | | | | | |
| 1351 | | | | | **General Statistics** | | | | | | | |
| 1352 | | | | | Number of Valid Observations | 53 | | | | | Number of Distinct Observations | 49 |
| 1353 | | | | | | | | | | | | |
| 1354 | | | **Raw Statistics** | | | | **Log-transformed Statistics** | | | | | |
| 1355 | | | | | Minimum | 5400 | | | | | Minimum of Log Data | 8.594 |
| 1356 | | | | | Maximum | 92500 | | | | | Maximum of Log Data | 11.43 |
| 1357 | | | | | Mean | 18661 | | | | | Mean of log Data | 9.587 |
| 1358 | | | | | Median | 11900 | | | | | SD of log Data | 0.638 |
| 1359 | | | | | SD | 17647 | | | | | | |
| 1360 | | | | | Coefficient of Variation | 0.946 | | | | | | |
| 1361 | | | | | Skewness | 3.043 | | | | | | |
| 1362 | | | | | | | | | | | | |
| 1363 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 1364 | | | **Normal Distribution Test** | | | | **Lognormal Distribution Test** | | | | | |
| 1365 | | | | | Lilliefors Test Statistic | 0.228 | | | | | Lilliefors Test Statistic | 0.152 |
| 1366 | | | | | Lilliefors Critical Value | 0.122 | | | | | Lilliefors Critical Value | 0.122 |
| 1367 | | | **Data not Normal at 5% Significance Level** | | | | **Data not Lognormal at 5% Significance Level** | | | | | |
| 1368 | | | | | | | | | | | | |
| 1369 | | | **Assuming Normal Distribution** | | | | **Assuming Lognormal Distribution** | | | | | |
| 1370 | | | | | 95% Student's-t UCL | 22721 | | | | | 95% H-UCL | 21279 |
| 1371 | | | **95% UCLs (Adjusted for Skewness)** | | | | | | | | 95% Chebyshev (MVUE) UCL | 25117 |
| 1372 | | | | | 95% Adjusted-CLT UCL | 23731 | | | | | 97.5% Chebyshev (MVUE) UCL | 28290 |
| 1373 | | | | | 95% Modified-t UCL | 22890 | | | | | 99% Chebyshev (MVUE) UCL | 34523 |
| 1374 | | | | | | | | | | | | |
| 1375 | | | **Gamma Distribution Test** | | | | **Data Distribution** | | | | | |
| 1376 | | | | | k star (bias corrected) | 2.067 | **Data do not follow a Discernable Distribution (0.05)** | | | | | |
| 1377 | | | | | Theta Star | 9028 | | | | | | |
| 1378 | | | | | MLE of Mean | 18661 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1379 | | | | | MLE of Standard Deviation | 12980 | | | | | | |
| 1380 | | | | | nu star | 219.1 | | | | | | |
| 1381 | | | | | Approximate Chi Square Value (.05) | 185.8 | **Nonparametric Statistics** | | | | | |
| 1382 | | | | | Adjusted Level of Significance | 0.0455 | | | | | 95% CLT UCL | 22648 |
| 1383 | | | | | Adjusted Chi Square Value | 185 | | | | | 95% Jackknife UCL | 22721 |
| 1384 | | | | | | | | | | | 95% Standard Bootstrap UCL | 22683 |
| 1385 | | | | | Anderson-Darling Test Statistic | 2.576 | | | | | 95% Bootstrap-t UCL | 25198 |
| 1386 | | | | | Anderson-Darling 5% Critical Value | 0.762 | | | | | 95% Hall's Bootstrap UCL | 28086 |
| 1387 | | | | | Kolmogorov-Smirnov Test Statistic | 0.191 | | | | | 95% Percentile Bootstrap UCL | 22915 |
| 1388 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.124 | | | | | 95% BCA Bootstrap UCL | 23567 |
| 1389 | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | 95% Chebyshev(Mean, Sd) UCL | 29227 |
| 1390 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 33799 |
| 1391 | | | **Assuming Gamma Distribution** | | | | | | | | 99% Chebyshev(Mean, Sd) UCL | 42779 |
| 1392 | | | | | 95% Approximate Gamma UCL | 22001 | | | | | | |
| 1393 | | | | | 95% Adjusted Gamma UCL | 22102 | | | | | | |
| 1394 | | | | | | | | | | | | |
| 1395 | | | **Potential UCL to Use** | | | | | | | | Use 95% Chebyshev (Mean, Sd) UCL | 29227 |
| 1396 | | | | | | | | | | | | |
| 1397 | | | | | | | | | | | | |
| 1398 | **Lead** | | | | | | | | | | | |
| 1399 | | | | | | | | | | | | |
| 1400 | | | | | **General Statistics** | | | | | | | |
| 1401 | | | | | Number of Valid Observations | 53 | | | | | Number of Distinct Observations | 52 |
| 1402 | | | | | | | | | | | | |
| 1403 | | | **Raw Statistics** | | | | **Log-transformed Statistics** | | | | | |
| 1404 | | | | | Minimum | 2.49 | | | | | Minimum of Log Data | 0.912 |
| 1405 | | | | | Maximum | 9640 | | | | | Maximum of Log Data | 9.174 |
| 1406 | | | | | Mean | 536 | | | | | Mean of log Data | 4.907 |
| 1407 | | | | | Median | 113 | | | | | SD of log Data | 1.703 |
| 1408 | | | | | SD | 1395 | | | | | | |
| 1409 | | | | | Coefficient of Variation | 2.602 | | | | | | |
| 1410 | | | | | Skewness | 5.648 | | | | | | |
| 1411 | | | | | | | | | | | | |
| 1412 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 1413 | | | **Normal Distribution Test** | | | | **Lognormal Distribution Test** | | | | | |
| 1414 | | | | | Lilliefors Test Statistic | 0.357 | | | | | Lilliefors Test Statistic | 0.086 |
| 1415 | | | | | Lilliefors Critical Value | 0.122 | | | | | Lilliefors Critical Value | 0.122 |
| 1416 | | | **Data not Normal at 5% Significance Level** | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 1417 | | | | | | | | | | | | |
| 1418 | | | **Assuming Normal Distribution** | | | | **Assuming Lognormal Distribution** | | | | | |
| 1419 | | | | | 95% Student's-t UCL | 856.8 | | | | | 95% H-UCL | 1232 |
| 1420 | | | **95% UCLs (Adjusted for Skewness)** | | | | | | | | 95% Chebyshev (MVUE) UCL | 1312 |
| 1421 | | | | | 95% Adjusted-CLT UCL | 1010 | | | | | 97.5% Chebyshev (MVUE) UCL | 1646 |
| 1422 | | | | | 95% Modified-t UCL | 881.6 | | | | | 99% Chebyshev (MVUE) UCL | 2300 |
| 1423 | | | | | | | | | | | | |
| 1424 | | | **Gamma Distribution Test** | | | | **Data Distribution** | | | | | |
| 1425 | | | | | k star (bias corrected) | 0.452 | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 1426 | | | | | Theta Star | 1185 | | | | | | |
| 1427 | | | | | MLE of Mean | 536 | | | | | | |
| 1428 | | | | | MLE of Standard Deviation | 796.8 | | | | | | |
| 1429 | | | | | nu star | 47.96 | | | | | | |
| 1430 | | | | | Approximate Chi Square Value (.05) | 33.06 | **Nonparametric Statistics** | | | | | |
| 1431 | | | | | Adjusted Level of Significance | 0.0455 | | | | | 95% CLT UCL | 851.1 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1432 | | | | | Adjusted Chi Square Value | 32.72 | | | | | 95% Jackknife UCL | 856.8 |
| 1433 | | | | | | | | | | | 95% Standard Bootstrap UCL | 850.7 |
| 1434 | | | | | Anderson-Darling Test Statistic | 2.317 | | | | | 95% Bootstrap-t UCL | 1311 |
| 1435 | | | | | Anderson-Darling 5% Critical Value | 0.823 | | | | | 95% Hall's Bootstrap UCL | 1958 |
| 1436 | | | | | Kolmogorov-Smirnov Test Statistic | 0.205 | | | | | 95% Percentile Bootstrap UCL | 893.4 |
| 1437 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.13 | | | | | 95% BCA Bootstrap UCL | 1069 |
| 1438 | | | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | 95% Chebyshev(Mean, Sd) UCL | 1371 |
| 1439 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 1732 |
| 1440 | | | | | **Assuming Gamma Distribution** | | | | | | 99% Chebyshev(Mean, Sd) UCL | 2442 |
| 1441 | | | | | 95% Approximate Gamma UCL | 777.4 | | | | | | |
| 1442 | | | | | 95% Adjusted Gamma UCL | 785.6 | | | | | | |
| 1443 | | | | | | | | | | | | |
| 1444 | | | | | **Potential UCL to Use** | | | | | | Use 95% H-UCL | 1232 |
| 1445 | | | | | | | | | | | | |
| 1446 | | | | | | | | | | | | |
| 1447 | **Manganese** | | | | | | | | | | | |
| 1448 | | | | | | | | | | | | |
| 1449 | | | | | **General Statistics** | | | | | | | |
| 1450 | | | | | Number of Valid Observations | 53 | | | | | Number of Distinct Observations | 50 |
| 1451 | | | | | | | | | | | | |
| 1452 | | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | |
| 1453 | | | | | Minimum | 71.4 | | | | | Minimum of Log Data | 4.268 |
| 1454 | | | | | Maximum | 1680 | | | | | Maximum of Log Data | 7.427 |
| 1455 | | | | | Mean | 238.3 | | | | | Mean of log Data | 5.211 |
| 1456 | | | | | Median | 144 | | | | | SD of log Data | 0.665 |
| 1457 | | | | | SD | 242.3 | | | | | | |
| 1458 | | | | | Coefficient of Variation | 1.016 | | | | | | |
| 1459 | | | | | Skewness | 4.286 | | | | | | |
| 1460 | | | | | | | | | | | | |
| 1461 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 1462 | | | | | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | |
| 1463 | | | | | Lilliefors Test Statistic | 0.245 | | | | | Lilliefors Test Statistic | 0.16 |
| 1464 | | | | | Lilliefors Critical Value | 0.122 | | | | | Lilliefors Critical Value | 0.122 |
| 1465 | | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | |
| 1466 | | | | | | | | | | | | |
| 1467 | | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | |
| 1468 | | | | | 95% Student's-t UCL | 294.1 | | | | | 95% H-UCL | 274.9 |
| 1469 | | | | | **95% UCLs (Adjusted for Skewness)** | | | | | | 95% Chebyshev (MVUE) UCL | 325.9 |
| 1470 | | | | | 95% Adjusted-CLT UCL | 314 | | | | | 97.5% Chebyshev (MVUE) UCL | 368.5 |
| 1471 | | | | | 95% Modified-t UCL | 297.3 | | | | | 99% Chebyshev (MVUE) UCL | 452.1 |
| 1472 | | | | | | | | | | | | |
| 1473 | | | | | **Gamma Distribution Test** | | | | | | **Data Distribution** | |
| 1474 | | | | | k star (bias corrected) | 1.952 | | | | | **Data do not follow a Discernable Distribution (0.05)** | |
| 1475 | | | | | Theta Star | 122.1 | | | | | | |
| 1476 | | | | | MLE of Mean | 238.3 | | | | | | |
| 1477 | | | | | MLE of Standard Deviation | 170.6 | | | | | | |
| 1478 | | | | | nu star | 206.9 | | | | | | |
| 1479 | | | | | Approximate Chi Square Value (.05) | 174.7 | | | | | **Nonparametric Statistics** | |
| 1480 | | | | | Adjusted Level of Significance | 0.0455 | | | | | 95% CLT UCL | 293.1 |
| 1481 | | | | | Adjusted Chi Square Value | 173.8 | | | | | 95% Jackknife UCL | 294.1 |
| 1482 | | | | | | | | | | | 95% Standard Bootstrap UCL | 291.8 |
| 1483 | | | | | Anderson-Darling Test Statistic | 2.179 | | | | | 95% Bootstrap-t UCL | 328.2 |
| 1484 | | | | | Anderson-Darling 5% Critical Value | 0.763 | | | | | 95% Hall's Bootstrap UCL | 537.3 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1485 | | | | | Kolmogorov-Smirnov Test Statistic | 0.176 | | | | | 95% Percentile Bootstrap UCL | 292.8 |
| 1486 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.124 | | | | | 95% BCA Bootstrap UCL | 330.2 |
| 1487 | | | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | 95% Chebyshev(Mean, Sd) UCL | 383.4 |
| 1488 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 446.2 |
| 1489 | | | | | **Assuming Gamma Distribution** | | | | | | 99% Chebyshev(Mean, Sd) UCL | 569.5 |
| 1490 | | | | | 95% Approximate Gamma UCL | 282.4 | | | | | | |
| 1491 | | | | | 95% Adjusted Gamma UCL | 283.8 | | | | | | |
| 1492 | | | | | | | | | | | | |
| 1493 | | | | | **Potential UCL to Use** | | | | | | Use 95% Chebyshev (Mean, Sd) UCL | 383.4 |
| 1494 | | | | | | | | | | | | |
| 1495 | | | | | | | | | | | | |
| 1496 | **Mercury** | | | | | | | | | | | |
| 1497 | | | | | | | | | | | | |
| 1498 | | | | | **General Statistics** | | | | | | | |
| 1499 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 51 |
| 1500 | | | | | Number of Distinct Detected Data | 48 | | | | | Number of Non-Detect Data | 2 |
| 1501 | | | | | | | | | | | Percent Non-Detects | 3.77% |
| 1502 | | | | | | | | | | | | |
| 1503 | | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | |
| 1504 | | | | | Minimum Detected | 0.0069 | | | | | Minimum Detected | -4.976 |
| 1505 | | | | | Maximum Detected | 3.43 | | | | | Maximum Detected | 1.233 |
| 1506 | | | | | Mean of Detected | 0.633 | | | | | Mean of Detected | -1.152 |
| 1507 | | | | | SD of Detected | 0.78 | | | | | SD of Detected | 1.319 |
| 1508 | | | | | Minimum Non-Detect | 0.011 | | | | | Minimum Non-Detect | -4.51 |
| 1509 | | | | | Maximum Non-Detect | 0.013 | | | | | Maximum Non-Detect | -4.343 |
| 1510 | | | | | | | | | | | | |
| 1511 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 3 |
| 1512 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 50 |
| 1513 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 5.66% |
| 1514 | | | | | | | | | | | | |
| 1515 | | | | | **UCL Statistics** | | | | | | | |
| 1516 | | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | |
| 1517 | | | | | Lilliefors Test Statistic | 0.259 | | | | | Lilliefors Test Statistic | 0.0994 |
| 1518 | | | | | 5% Lilliefors Critical Value | 0.124 | | | | | 5% Lilliefors Critical Value | 0.124 |
| 1519 | | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | |
| 1520 | | | | | | | | | | | | |
| 1521 | | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | |
| 1522 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1523 | | | | | Mean | 0.609 | | | | | Mean | -1.302 |
| 1524 | | | | | SD | 0.775 | | | | | SD | 1.502 |
| 1525 | | | | | 95% DL/2 (t) UCL | 0.787 | | | | | 95% H-Stat (DL/2) UCL | 1.303 |
| 1526 | | | | | | | | | | | | |
| 1527 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 1528 | | | | | Mean | 0.583 | | | | | Mean in Log Scale | -1.26 |
| 1529 | | | | | SD | 0.8 | | | | | SD in Log Scale | 1.405 |
| 1530 | | | | | 95% MLE (t) UCL | 0.767 | | | | | Mean in Original Scale | 0.609 |
| 1531 | | | | | 95% MLE (Tiku) UCL | 0.755 | | | | | SD in Original Scale | 0.774 |
| 1532 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.782 |
| 1533 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.82 |
| 1534 | | | | | | | | | | | | |
| 1535 | | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | |
| 1536 | | | | | k star (bias corrected) | 0.812 | | | | | **Data Follow Appr. Gamma Distribution at 5% Significance Level** | |
| 1537 | | | | | Theta Star | 0.779 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1538 | | | | | nu star | 82.8 | | | | | | |
| 1539 | | | | | | | | | | | | |
| 1540 | | | | | A-D Test Statistic | 0.82 | **Nonparametric Statistics** | | | | | |
| 1541 | | | | | 5% A-D Critical Value | 0.788 | | | | | Kaplan-Meier (KM) Method | |
| 1542 | | | | | K-S Test Statistic | 0.788 | | | | | Mean | 0.609 |
| 1543 | | | | | 5% K-S Critical Value | 0.129 | | | | | SD | 0.767 |
| 1544 | **Data follow Appr. Gamma Distribution at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.106 |
| 1545 | | | | | | | | | | | 95% KM (t) UCL | 0.787 |
| 1546 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 0.784 |
| 1547 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.787 |
| 1548 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 0.842 |
| 1549 | | | | | Maximum | 3.43 | | | | | 95% KM (BCA) UCL | 0.782 |
| 1550 | | | | | Mean | 0.609 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.79 |
| 1551 | | | | | Median | 0.3 | | | | | 95% KM (Chebyshev) UCL | 1.073 |
| 1552 | | | | | SD | 0.775 | | | | | 97.5% KM (Chebyshev) UCL | 1.274 |
| 1553 | | | | | k star | 0.448 | | | | | 99% KM (Chebyshev) UCL | 1.668 |
| 1554 | | | | | Theta star | 1.359 | | | | | | |
| 1555 | | | | | Nu star | 47.47 | **Potential UCLs to Use** | | | | | |
| 1556 | | | | | AppChi2 | 32.66 | | | | | 95% KM (Chebyshev) UCL | 1.073 |
| 1557 | | | | | 95% Gamma Approximate UCL | 0.885 | | | | | | |
| 1558 | | | | | 95% Adjusted Gamma UCL | 0.894 | | | | | | |
| 1559 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1560 | | | | | | | | | | | | |
| 1561 | | | | | | | | | | | | |
| 1562 | **Naphthalene** | | | | | | | | | | | |
| 1563 | | | | | | | | | | | | |
| 1564 | | | | | **General Statistics** | | | | | | | |
| 1565 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 34 |
| 1566 | | | | | Number of Distinct Detected Data | 32 | | | | | Number of Non-Detect Data | 19 |
| 1567 | | | | | | | | | | | Percent Non-Detects | 35.85% |
| 1568 | | | | | | | | | | | | |
| 1569 | | | | **Raw Statistics** | | | **Log-transformed Statistics** | | | | | |
| 1570 | | | | | Minimum Detected | 0.04 | | | | | Minimum Detected | -3.219 |
| 1571 | | | | | Maximum Detected | 4.75 | | | | | Maximum Detected | 1.558 |
| 1572 | | | | | Mean of Detected | 0.459 | | | | | Mean of Detected | -1.5 |
| 1573 | | | | | SD of Detected | 0.839 | | | | | SD of Detected | 1.1 |
| 1574 | | | | | Minimum Non-Detect | 0.00418 | | | | | Minimum Non-Detect | -5.477 |
| 1575 | | | | | Maximum Non-Detect | 0.4 | | | | | Maximum Non-Detect | -0.916 |
| 1576 | | | | | | | | | | | | |
| 1577 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 45 |
| 1578 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 8 |
| 1579 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 84.91% |
| 1580 | | | | | | | | | | | | |
| 1581 | | | | | **UCL Statistics** | | | | | | | |
| 1582 | | | | **Normal Distribution Test with Detected Values Only** | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 1583 | | | | | Shapiro Wilk Test Statistic | 0.481 | | | | | Shapiro Wilk Test Statistic | 0.944 |
| 1584 | | | | | 5% Shapiro Wilk Critical Value | 0.933 | | | | | 5% Shapiro Wilk Critical Value | 0.933 |
| 1585 | | | | **Data not Normal at 5% Significance Level** | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 1586 | | | | | | | | | | | | |
| 1587 | | | | **Assuming Normal Distribution** | | | **Assuming Lognormal Distribution** | | | | | |
| 1588 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1589 | | | | | Mean | 0.331 | | | | | Mean | -2.228 |
| 1590 | | | | | SD | 0.693 | | | | | SD | 1.815 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1591 | | | | | 95% DL/2 (t) UCL | 0.49 | | | | | 95% H-Stat (DL/2) UCL | 1.085 |
| 1592 | | | | | | | | | | | | |
| 1593 | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | | Log ROS Method | |
| 1594 | | | | | Mean | 2.047 | | | | | Mean in Log Scale | -2.053 |
| 1595 | | | | | SD | 1.277 | | | | | SD in Log Scale | 1.251 |
| 1596 | | | | | 95% MLE (t) UCL | 2.34 | | | | | Mean in Original Scale | 0.318 |
| 1597 | | | | | 95% MLE (Tiku) UCL | 2.771 | | | | | SD in Original Scale | 0.696 |
| 1598 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.497 |
| 1599 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.603 |
| 1600 | | | | | | | | | | | | |
| 1601 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 1602 | | | | | k star (bias corrected) | 0.767 | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1603 | | | | | Theta Star | 0.599 | | | | | | |
| 1604 | | | | | nu star | 52.14 | | | | | | |
| 1605 | | | | | | | | | | | | |
| 1606 | | | | | A-D Test Statistic | 1.967 | | | | **Nonparametric Statistics** | | |
| 1607 | | | | | 5% A-D Critical Value | 0.784 | | | | | Kaplan-Meier (KM) Method | |
| 1608 | | | | | K-S Test Statistic | 0.784 | | | | | Mean | 0.326 |
| 1609 | | | | | 5% K-S Critical Value | 0.156 | | | | | SD | 0.687 |
| 1610 | | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 0.096 |
| 1611 | | | | | | | | | | | 95% KM (t) UCL | 0.487 |
| 1612 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 0.484 |
| 1613 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.485 |
| 1614 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 0.684 |
| 1615 | | | | | Maximum | 4.75 | | | | | 95% KM (BCA) UCL | 0.499 |
| 1616 | | | | | Mean | 0.381 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.511 |
| 1617 | | | | | Median | 0.18 | | | | | 95% KM (Chebyshev) UCL | 0.745 |
| 1618 | | | | | SD | 0.702 | | | | | 97.5% KM (Chebyshev) UCL | 0.926 |
| 1619 | | | | | k star | 0.2 | | | | | 99% KM (Chebyshev) UCL | 1.281 |
| 1620 | | | | | Theta star | 1.91 | | | | | | |
| 1621 | | | | | Nu star | 21.17 | | | | **Potential UCLs to Use** | | |
| 1622 | | | | | AppChi2 | 11.72 | | | | | 95% KM (Chebyshev) UCL | 0.745 |
| 1623 | | | | | 95% Gamma Approximate UCL | 0.689 | | | | | | |
| 1624 | | | | | 95% Adjusted Gamma UCL | 0.701 | | | | | | |
| 1625 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1626 | | | | | | | | | | | | |
| 1627 | | | | | | | | | | | | |
| 1628 | **Nickel** | | | | | | | | | | | |
| 1629 | | | | | | | | | | | | |
| 1630 | | | | | **General Statistics** | | | | | | | |
| 1631 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 51 |
| 1632 | | | | | Number of Distinct Detected Data | 47 | | | | | Number of Non-Detect Data | 2 |
| 1633 | | | | | | | | | | | Percent Non-Detects | 3.77% |
| 1634 | | | | | | | | | | | | |
| 1635 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1636 | | | | | Minimum Detected | 4.44 | | | | | Minimum Detected | 1.491 |
| 1637 | | | | | Maximum Detected | 248 | | | | | Maximum Detected | 5.513 |
| 1638 | | | | | Mean of Detected | 25.48 | | | | | Mean of Detected | 2.715 |
| 1639 | | | | | SD of Detected | 41.91 | | | | | SD of Detected | 0.862 |
| 1640 | | | | | Minimum Non-Detect | 7 | | | | | Minimum Non-Detect | 1.946 |
| 1641 | | | | | Maximum Non-Detect | 9 | | | | | Maximum Non-Detect | 2.197 |
| 1642 | | | | | | | | | | | | |
| 1643 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 17 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1644 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 36 |
| 1645 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 32.08% |
| 1646 | | | | | | | | | | | | |
| 1647 | | | | | | UCL Statistics | | | | | | |
| 1648 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 1649 | | | | | | Lilliefors Test Statistic | 0.308 | | | | Lilliefors Test Statistic | 0.166 |
| 1650 | | | | | | 5% Lilliefors Critical Value | 0.124 | | | | 5% Lilliefors Critical Value | 0.124 |
| 1651 | | | | Data not Normal at 5% Significance Level | | | | | | Data not Lognormal at 5% Significance Level | | |
| 1652 | | | | | | | | | | | | |
| 1653 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 1654 | | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | |
| 1655 | | | | | | Mean | 24.67 | | | | Mean | 2.665 |
| 1656 | | | | | | SD | 41.31 | | | | SD | 0.884 |
| 1657 | | | | | | 95% DL/2 (t) UCL | 34.17 | | | | 95% H-Stat (DL/2) UCL | 27.7 |
| 1658 | | | | | | | | | | | | |
| 1659 | | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | Log ROS Method | |
| 1660 | | | | | | Mean | 12.39 | | | | Mean in Log Scale | 2.67 |
| 1661 | | | | | | SD | 52.35 | | | | SD in Log Scale | 0.877 |
| 1662 | | | | | | 95% MLE (t) UCL | 24.43 | | | | Mean in Original Scale | 24.7 |
| 1663 | | | | | | 95% MLE (Tiku) UCL | 25.1 | | | | SD in Original Scale | 41.29 |
| 1664 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 34.51 |
| 1665 | | | | | | | | | | | 95% BCA Bootstrap UCL | 38.37 |
| 1666 | | | | | | | | | | | | |
| 1667 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 1668 | | | | | | k star (bias corrected) | 1.042 | | | Data do not follow a Discernable Distribution (0.05) | | |
| 1669 | | | | | | Theta Star | 24.46 | | | | | |
| 1670 | | | | | | nu star | 106.2 | | | | | |
| 1671 | | | | | | | | | | | | |
| 1672 | | | | | | A-D Test Statistic | 4.27 | | | Nonparametric Statistics | | |
| 1673 | | | | | | 5% A-D Critical Value | 0.778 | | | | Kaplan-Meier (KM) Method | |
| 1674 | | | | | | K-S Test Statistic | 0.778 | | | | Mean | 24.75 |
| 1675 | | | | | | 5% K-S Critical Value | 0.128 | | | | SD | 40.88 |
| 1676 | | | | Data not Gamma Distributed at 5% Significance Level | | | | | | | SE of Mean | 5.671 |
| 1677 | | | | | | | | | | | 95% KM (t) UCL | 34.24 |
| 1678 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 34.08 |
| 1679 | | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | 34.24 |
| 1680 | | | | | | Minimum | 1E-09 | | | | 95% KM (bootstrap t) UCL | 43.26 |
| 1681 | | | | | | Maximum | 248 | | | | 95% KM (BCA) UCL | 34.59 |
| 1682 | | | | | | Mean | 24.52 | | | | 95% KM (Percentile Bootstrap) UCL | 34.74 |
| 1683 | | | | | | Median | 11.8 | | | | 95% KM (Chebyshev) UCL | 49.47 |
| 1684 | | | | | | SD | 41.39 | | | | 97.5% KM (Chebyshev) UCL | 60.16 |
| 1685 | | | | | | k star | 0.455 | | | | 99% KM (Chebyshev) UCL | 81.17 |
| 1686 | | | | | | Theta star | 53.91 | | | | | |
| 1687 | | | | | | Nu star | 48.21 | | | Potential UCLs to Use | | |
| 1688 | | | | | | AppChi2 | 33.27 | | | | 95% KM (Chebyshev) UCL | 49.47 |
| 1689 | | | | | | 95% Gamma Approximate UCL | 35.53 | | | | | |
| 1690 | | | | | | 95% Adjusted Gamma UCL | 35.9 | | | | | |
| 1691 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 1692 | | | | | | | | | | | | |
| 1693 | | | | | | | | | | | | |
| 1694 | Phenanthrene | | | | | | | | | | | |
| 1695 | | | | | | | | | | | | |
| 1696 | | | | | | General Statistics | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1697 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 51 |
| 1698 | | | | | Number of Distinct Detected Data | 46 | | | | | Number of Non-Detect Data | 2 |
| 1699 | | | | | | | | | | | Percent Non-Detects | 3.77% |
| 1700 | | | | | | | | | | | | |
| 1701 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1702 | | | | | Minimum Detected | 0.00687 | | | | | Minimum Detected | -4.981 |
| 1703 | | | | | Maximum Detected | 26.7 | | | | | Maximum Detected | 3.285 |
| 1704 | | | | | Mean of Detected | 2.243 | | | | | Mean of Detected | -0.229 |
| 1705 | | | | | SD of Detected | 4.177 | | | | | SD of Detected | 1.629 |
| 1706 | | | | | Minimum Non-Detect | 0.00788 | | | | | Minimum Non-Detect | -4.843 |
| 1707 | | | | | Maximum Non-Detect | 0.00864 | | | | | Maximum Non-Detect | -4.751 |
| 1708 | | | | | | | | | | | | |
| 1709 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 3 |
| 1710 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 50 |
| 1711 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 5.66% |
| 1712 | | | | | | | | | | | | |
| 1713 | | | | | **UCL Statistics** | | | | | | | |
| 1714 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 1715 | | | | | Lilliefors Test Statistic | 0.296 | | | | | Lilliefors Test Statistic | 0.108 |
| 1716 | | | | | 5% Lilliefors Critical Value | 0.124 | | | | | 5% Lilliefors Critical Value | 0.124 |
| 1717 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1718 | | | | | | | | | | | | |
| 1719 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1720 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1721 | | | | | Mean | 2.159 | | | | | Mean | -0.427 |
| 1722 | | | | | SD | 4.119 | | | | | SD | 1.891 |
| 1723 | | | | | 95% DL/2 (t) UCL | 3.106 | | | | | 95% H-Stat (DL/2) UCL | 7.749 |
| 1724 | | | | | | | | | | | | |
| 1725 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 1726 | | | | | Mean | 2.003 | | | | | Mean in Log Scale | -0.362 |
| 1727 | | | | | SD | 4.242 | | | | | SD in Log Scale | 1.737 |
| 1728 | | | | | 95% MLE (t) UCL | 2.979 | | | | | Mean in Original Scale | 2.159 |
| 1729 | | | | | 95% MLE (Tiku) UCL | 2.895 | | | | | SD in Original Scale | 4.118 |
| 1730 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 3.205 |
| 1731 | | | | | | | | | | | 95% BCA Bootstrap UCL | 3.631 |
| 1732 | | | | | | | | | | | | |
| 1733 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 1734 | | | | | k star (bias corrected) | 0.575 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 1735 | | | | | Theta Star | 3.904 | | | | | | |
| 1736 | | | | | nu star | 58.6 | | | | | | |
| 1737 | | | | | | | | | | | | |
| 1738 | | | | | A-D Test Statistic | 0.628 | | | | **Nonparametric Statistics** | | |
| 1739 | | | | | 5% A-D Critical Value | 0.806 | | | | | Kaplan-Meier (KM) Method | |
| 1740 | | | | | K-S Test Statistic | 0.806 | | | | | Mean | 2.159 |
| 1741 | | | | | 5% K-S Critical Value | 0.131 | | | | | SD | 4.08 |
| 1742 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 0.566 |
| 1743 | | | | | | | | | | | 95% KM (t) UCL | 3.106 |
| 1744 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 3.09 |
| 1745 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 3.106 |
| 1746 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 4.233 |
| 1747 | | | | | Maximum | 26.7 | | | | | 95% KM (BCA) UCL | 3.314 |
| 1748 | | | | | Mean | 2.158 | | | | | 95% KM (Percentile Bootstrap) UCL | 3.18 |
| 1749 | | | | | Median | 0.814 | | | | | 95% KM (Chebyshev) UCL | 4.626 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1750 | | | | | SD | 4.119 | | | | 97.5% KM (Chebyshev) UCL | | 5.693 |
| 1751 | | | | | k star | 0.367 | | | | 99% KM (Chebyshev) UCL | | 7.79 |
| 1752 | | | | | Theta star | 5.887 | | | | | | |
| 1753 | | | | | Nu star | 38.86 | **Potential UCLs to Use** | | | | | |
| 1754 | | | | | AppChi2 | 25.58 | | | | 95% KM (Chebyshev) UCL | | 4.626 |
| 1755 | | | | 95% Gamma Approximate UCL | | 3.279 | | | | | | |
| 1756 | | | | 95% Adjusted Gamma UCL | | 3.318 | | | | | | |
| 1757 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1758 | | | | | | | | | | | | |
| 1759 | | | | | | | | | | | | |
| 1760 | **TEQ - Total** | | | | | | | | | | | |
| 1761 | | | | | | | | | | | | |
| 1762 | | | | | **General Statistics** | | | | | | | |
| 1763 | | | | Number of Valid Observations | | 17 | | | | Number of Distinct Observations | | 17 |
| 1764 | | | | | | | | | | | | |
| 1765 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1766 | | | | | Minimum | 8.7E-08 | | | | Minimum of Log Data | | -16.26 |
| 1767 | | | | | Maximum | 0.00015 | | | | Maximum of Log Data | | -8.805 |
| 1768 | | | | | Mean | 3.439E-05 | | | | Mean of log Data | | -11.11 |
| 1769 | | | | | Median | 0.0000286 | | | | SD of log Data | | 1.887 |
| 1770 | | | | | SD | 3.646E-05 | | | | | | |
| 1771 | | | | | Coefficient of Variation | N/A | | | | | | |
| 1772 | | | | | Skewness | 2.127 | | | | | | |
| 1773 | | | | | | | | | | | | |
| 1774 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 1775 | | | | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | |
| 1776 | | | | | Shapiro Wilk Test Statistic | 0.793 | | | | Shapiro Wilk Test Statistic | | 0.825 |
| 1777 | | | | | Shapiro Wilk Critical Value | 0.892 | | | | Shapiro Wilk Critical Value | | 0.892 |
| 1778 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | | |
| 1779 | | | | | | | | | | | | |
| 1780 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1781 | | | | | 95% Student's-t UCL | 4.983E-05 | | | | 95% H-UCL | | 0.0006372 |
| 1782 | | | | **95% UCLs (Adjusted for Skewness)** | | | | | | 95% Chebyshev (MVUE) UCL | | 0.0002366 |
| 1783 | | | | | 95% Adjusted-CLT UCL | 5.381E-05 | | | | 97.5% Chebyshev (MVUE) UCL | | 0.0003085 |
| 1784 | | | | | 95% Modified-t UCL | 5.059E-05 | | | | 99% Chebyshev (MVUE) UCL | | 0.0004499 |
| 1785 | | | | | | | | | | | | |
| 1786 | | | | **Gamma Distribution Test** | | | | | | **Data Distribution** | | |
| 1787 | | | | | k star (bias corrected) | 0.635 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 1788 | | | | | Theta Star | 5.419E-05 | | | | | | |
| 1789 | | | | | MLE of Mean | 3.439E-05 | | | | | | |
| 1790 | | | | | MLE of Standard Deviation | 4.317E-05 | | | | | | |
| 1791 | | | | | nu star | 21.58 | | | | | | |
| 1792 | | | | | Approximate Chi Square Value (.05) | 12.02 | | | | **Nonparametric Statistics** | | |
| 1793 | | | | | Adjusted Level of Significance | 0.0346 | | | | 95% CLT UCL | | 4.894E-05 |
| 1794 | | | | | Adjusted Chi Square Value | 11.28 | | | | 95% Jackknife UCL | | 4.983E-05 |
| 1795 | | | | | | | | | | 95% Standard Bootstrap UCL | | 4.823E-05 |
| 1796 | | | | | Anderson-Darling Test Statistic | 0.371 | | | | 95% Bootstrap-t UCL | | 5.849E-05 |
| 1797 | | | | | Anderson-Darling 5% Critical Value | 0.779 | | | | 95% Hall's Bootstrap UCL | | 0.0001166 |
| 1798 | | | | | Kolmogorov-Smirnov Test Statistic | 0.129 | | | | 95% Percentile Bootstrap UCL | | 4.892E-05 |
| 1799 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.218 | | | | 95% BCA Bootstrap UCL | | 5.441E-05 |
| 1800 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | 95% Chebyshev(Mean, Sd) UCL | | 7.293E-05 |
| 1801 | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 8.961E-05 |
| 1802 | | | | **Assuming Gamma Distribution** | | | | | | 99% Chebyshev(Mean, Sd) UCL | | 0.0001224 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1803 | | | | 95% Approximate Gamma UCL | | 6.173E-05 | | | | | | |
| 1804 | | | | 95% Adjusted Gamma UCL | | 6.579E-05 | | | | | | |
| 1805 | | | | | | | | | | | | |
| 1806 | | | | **Potential UCL to Use** | | | | | | Use 95% Approximate Gamma UCL | | 6.173E-05 |
| 1807 | | | | | | | | | | | | |
| 1808 | | | | | | | | | | | | |
| 1809 | **Thallium** | | | | | | | | | | | |
| 1810 | | | | | | | | | | | | |
| 1811 | | | | | **General Statistics** | | | | | | | |
| 1812 | | | | Number of Valid Data | | 53 | | | | Number of Detected Data | | 31 |
| 1813 | | | | Number of Distinct Detected Data | | 31 | | | | Number of Non-Detect Data | | 22 |
| 1814 | | | | | | | | | | Percent Non-Detects | | 41.51% |
| 1815 | | | | | | | | | | | | |
| 1816 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1817 | | | | Minimum Detected | | 0.0298 | | | | Minimum Detected | | -3.513 |
| 1818 | | | | Maximum Detected | | 1.2 | | | | Maximum Detected | | 0.182 |
| 1819 | | | | Mean of Detected | | 0.195 | | | | Mean of Detected | | -2.145 |
| 1820 | | | | SD of Detected | | 0.277 | | | | SD of Detected | | 0.898 |
| 1821 | | | | Minimum Non-Detect | | 0.29 | | | | Minimum Non-Detect | | -1.238 |
| 1822 | | | | Maximum Non-Detect | | 1.1 | | | | Maximum Non-Detect | | 0.0953 |
| 1823 | | | | | | | | | | | | |
| 1824 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 52 |
| 1825 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 1 |
| 1826 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 98.11% |
| 1827 | | | | | | | | | | | | |
| 1828 | | | | | **UCL Statistics** | | | | | | | |
| 1829 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 1830 | | | | Shapiro Wilk Test Statistic | | 0.546 | | | | Shapiro Wilk Test Statistic | | 0.904 |
| 1831 | | | | 5% Shapiro Wilk Critical Value | | 0.929 | | | | 5% Shapiro Wilk Critical Value | | 0.929 |
| 1832 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | | |
| 1833 | | | | | | | | | | | | |
| 1834 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1835 | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | | |
| 1836 | | | | Mean | | 0.258 | | | | Mean | | -1.73 |
| 1837 | | | | SD | | 0.24 | | | | SD | | 0.892 |
| 1838 | | | | 95% DL/2 (t) UCL | | 0.313 | | | | 95% H-Stat (DL/2) UCL | | 0.74 |
| 1839 | | | | | | | | | | | | |
| 1840 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | Log ROS Method | | |
| 1841 | | | | **MLE method failed to converge properly** | | | | | | Mean in Log Scale | | -2.199 |
| 1842 | | | | | | | | | | SD in Log Scale | | 0.696 |
| 1843 | | | | | | | | | | Mean in Original Scale | | 0.157 |
| 1844 | | | | | | | | | | SD in Original Scale | | 0.216 |
| 1845 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.21 |
| 1846 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.229 |
| 1847 | | | | | | | | | | | | |
| 1848 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 1849 | | | | k star (bias corrected) | | 1.032 | | | | **Data do not follow a Discernable Distribution (0.05)** | | |
| 1850 | | | | Theta Star | | 0.189 | | | | | | |
| 1851 | | | | nu star | | 63.98 | | | | | | |
| 1852 | | | | | | | | | | | | |
| 1853 | | | | A-D Test Statistic | | 2.444 | | | | **Nonparametric Statistics** | | |
| 1854 | | | | 5% A-D Critical Value | | 0.773 | | | | Kaplan-Meier (KM) Method | | |
| 1855 | | | | K-S Test Statistic | | 0.773 | | | | Mean | | 0.163 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1856 | | | | | 5% K-S Critical Value | 0.162 | | | | | SD | 0.222 |
| 1857 | | | | Data not Gamma Distributed at 5% Significance Level | | | | | | | SE of Mean | 0.0329 |
| 1858 | | | | | | | | | | | 95% KM (t) UCL | 0.218 |
| 1859 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 0.217 |
| 1860 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.218 |
| 1861 | | | | | Minimum | 0.0298 | | | | | 95% KM (bootstrap t) UCL | 0.259 |
| 1862 | | | | | Maximum | 1.2 | | | | | 95% KM (BCA) UCL | 0.22 |
| 1863 | | | | | Mean | 0.195 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.217 |
| 1864 | | | | | Median | 0.165 | | | | | 95% KM (Chebyshev) UCL | 0.306 |
| 1865 | | | | | SD | 0.211 | | | | | 97.5% KM (Chebyshev) UCL | 0.368 |
| 1866 | | | | | k star | 1.726 | | | | | 99% KM (Chebyshev) UCL | 0.49 |
| 1867 | | | | | Theta star | 0.113 | | | | | | |
| 1868 | | | | | Nu star | 183 | | | | Potential UCLs to Use | | |
| 1869 | | | | | AppChi2 | 152.7 | | | | | 95% KM (t) UCL | 0.218 |
| 1870 | | | | | 95% Gamma Approximate UCL | 0.234 | | | | | 95% KM (% Bootstrap) UCL | 0.217 |
| 1871 | | | | | 95% Adjusted Gamma UCL | 0.235 | | | | | | |
| 1872 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 1873 | | | | | | | | | | | | |
| 1874 | | | | | | | | | | | | |
| 1875 | Vanadium | | | | | | | | | | | |
| 1876 | | | | | | | | | | | | |
| 1877 | | | | | General Statistics | | | | | | | |
| 1878 | | | | | Number of Valid Data | 53 | | | | | Number of Detected Data | 52 |
| 1879 | | | | | Number of Distinct Detected Data | 45 | | | | | Number of Non-Detect Data | 1 |
| 1880 | | | | | | | | | | | Percent Non-Detects | 1.89% |
| 1881 | | | | | | | | | | | | |
| 1882 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 1883 | | | | | Minimum Detected | 5.82 | | | | | Minimum Detected | 1.761 |
| 1884 | | | | | Maximum Detected | 49.9 | | | | | Maximum Detected | 3.91 |
| 1885 | | | | | Mean of Detected | 16.11 | | | | | Mean of Detected | 2.69 |
| 1886 | | | | | SD of Detected | 7.63 | | | | | SD of Detected | 0.415 |
| 1887 | | | | | Minimum Non-Detect | 12 | | | | | Minimum Non-Detect | 2.485 |
| 1888 | | | | | Maximum Non-Detect | 12 | | | | | Maximum Non-Detect | 2.485 |
| 1889 | | | | | | | | | | | | |
| 1890 | | | | | | | | | | | | |
| 1891 | | | | | UCL Statistics | | | | | | | |
| 1892 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 1893 | | | | | Lilliefors Test Statistic | 0.136 | | | | | Lilliefors Test Statistic | 0.109 |
| 1894 | | | | | 5% Lilliefors Critical Value | 0.123 | | | | | 5% Lilliefors Critical Value | 0.123 |
| 1895 | | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 1896 | | | | | | | | | | | | |
| 1897 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 1898 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1899 | | | | | Mean | 15.92 | | | | | Mean | 2.673 |
| 1900 | | | | | SD | 7.683 | | | | | SD | 0.429 |
| 1901 | | | | | 95% DL/2 (t) UCL | 17.69 | | | | | 95% H-Stat (DL/2) UCL | 17.39 |
| 1902 | | | | | | | | | | | | |
| 1903 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 1904 | | | | | Mean | 13.91 | | | | | Mean in Log Scale | 2.683 |
| 1905 | | | | | SD | 10.05 | | | | | SD in Log Scale | 0.414 |
| 1906 | | | | | 95% MLE (t) UCL | 16.22 | | | | | Mean in Original Scale | 16 |
| 1907 | | | | | 95% MLE (Tiku) UCL | 16.5 | | | | | SD in Original Scale | 7.6 |
| 1908 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 17.74 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1909 | | | | | | | | | | | 95% BCA Bootstrap UCL | 18.01 |
| 1910 | | | | | | | | | | | | |
| 1911 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 1912 | | | | | k star (bias corrected) | 5.43 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | |
| 1913 | | | | | Theta Star | 2.967 | | | | | | |
| 1914 | | | | | nu star | 564.7 | | | | | | |
| 1915 | | | | | | | | | | | | |
| 1916 | | | | | A-D Test Statistic | 0.714 | **Nonparametric Statistics** | | | | | |
| 1917 | | | | | 5% A-D Critical Value | 0.753 | | | | | Kaplan-Meier (KM) Method | |
| 1918 | | | | | K-S Test Statistic | 0.753 | | | | | Mean | 15.99 |
| 1919 | | | | | 5% K-S Critical Value | 0.123 | | | | | SD | 7.534 |
| 1920 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 1.045 |
| 1921 | | | | | | | | | | | 95% KM (t) UCL | 17.74 |
| 1922 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 17.71 |
| 1923 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 17.74 |
| 1924 | | | | | Minimum | 5.82 | | | | | 95% KM (bootstrap t) UCL | 18.31 |
| 1925 | | | | | Maximum | 49.9 | | | | | 95% KM (BCA) UCL | 17.92 |
| 1926 | | | | | Mean | 16.01 | | | | | 95% KM (Percentile Bootstrap) UCL | 17.75 |
| 1927 | | | | | Median | 14.1 | | | | | 95% KM (Chebyshev) UCL | 20.55 |
| 1928 | | | | | SD | 7.589 | | | | | 97.5% KM (Chebyshev) UCL | 22.52 |
| 1929 | | | | | k star | 5.465 | | | | | 99% KM (Chebyshev) UCL | 26.39 |
| 1930 | | | | | Theta star | 2.93 | | | | | | |
| 1931 | | | | | Nu star | 579.3 | **Potential UCLs to Use** | | | | | |
| 1932 | | | | | AppChi2 | 524.4 | | | | | 95% KM (BCA) UCL | 17.92 |
| 1933 | | | | | 95% Gamma Approximate UCL | 17.69 | | | | | | |
| 1934 | | | | | 95% Adjusted Gamma UCL | 17.73 | | | | | | |
| 1935 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1936 | | | | | | | | | | | | |
| 1937 | | | | | | | | | | | | |
| 1938 | **Zinc** | | | | | | | | | | | |
| 1939 | | | | | | | | | | | | |
| 1940 | | | | | **General Statistics** | | | | | | | |
| 1941 | | | | | Number of Valid Observations | 53 | | | | | Number of Distinct Observations | 52 |
| 1942 | | | | | | | | | | | | |
| 1943 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 1944 | | | | | Minimum | 25.9 | | | | | Minimum of Log Data | 3.254 |
| 1945 | | | | | Maximum | 2580 | | | | | Maximum of Log Data | 7.856 |
| 1946 | | | | | Mean | 405.7 | | | | | Mean of log Data | 5.05 |
| 1947 | | | | | Median | 89.3 | | | | | SD of log Data | 1.335 |
| 1948 | | | | | SD | 621.5 | | | | | | |
| 1949 | | | | | Coefficient of Variation | 1.532 | | | | | | |
| 1950 | | | | | Skewness | 2.066 | | | | | | |
| 1951 | | | | | | | | | | | | |
| 1952 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 1953 | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | | | | |
| 1954 | | | | | Lilliefors Test Statistic | 0.3 | | | | | Lilliefors Test Statistic | 0.198 |
| 1955 | | | | | Lilliefors Critical Value | 0.122 | | | | | Lilliefors Critical Value | 0.122 |
| 1956 | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | | | | | |
| 1957 | | | | | | | | | | | | |
| 1958 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 1959 | | | | | 95% Student's-t UCL | 548.7 | | | | | 95% H-UCL | 632.8 |
| 1960 | **95% UCLs (Adjusted for Skewness)** | | | | | | | | | | 95% Chebyshev (MVUE) UCL | 747.4 |
| 1961 | | | | | 95% Adjusted-CLT UCL | 572 | | | | | 97.5% Chebyshev (MVUE) UCL | 911.1 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1962 | | | | | 95% Modified-t UCL | 552.7 | | | | 99% Chebyshev (MVUE) UCL | | 1233 |
| 1963 | | | | | | | | | | | | |
| 1964 | | | | **Gamma Distribution Test** | | | | | | **Data Distribution** | | |
| 1965 | | | | | k star (bias corrected) | 0.617 | | | | **Data do not follow a Discernable Distribution (0.05)** | | |
| 1966 | | | | | Theta Star | 657.7 | | | | | | |
| 1967 | | | | | MLE of Mean | 405.7 | | | | | | |
| 1968 | | | | | MLE of Standard Deviation | 516.5 | | | | | | |
| 1969 | | | | | nu star | 65.38 | | | | | | |
| 1970 | | | | | Approximate Chi Square Value (.05) | 47.78 | | | | **Nonparametric Statistics** | | |
| 1971 | | | | | Adjusted Level of Significance | 0.0455 | | | | 95% CLT UCL | | 546.1 |
| 1972 | | | | | Adjusted Chi Square Value | 47.36 | | | | 95% Jackknife UCL | | 548.7 |
| 1973 | | | | | | | | | | 95% Standard Bootstrap UCL | | 542.9 |
| 1974 | | | | | Anderson-Darling Test Statistic | 4.003 | | | | 95% Bootstrap-t UCL | | 586.2 |
| 1975 | | | | | Anderson-Darling 5% Critical Value | 0.803 | | | | 95% Hall's Bootstrap UCL | | 572.8 |
| 1976 | | | | | Kolmogorov-Smirnov Test Statistic | 0.264 | | | | 95% Percentile Bootstrap UCL | | 545.3 |
| 1977 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.128 | | | | 95% BCA Bootstrap UCL | | 570.7 |
| 1978 | | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | 95% Chebyshev(Mean, Sd) UCL | | 777.8 |
| 1979 | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 938.8 |
| 1980 | | | | **Assuming Gamma Distribution** | | | | | | 99% Chebyshev(Mean, Sd) UCL | | 1255 |
| 1981 | | | | | 95% Approximate Gamma UCL | 555.2 | | | | | | |
| 1982 | | | | | 95% Adjusted Gamma UCL | 560.1 | | | | | | |
| 1983 | | | | | | | | | | | | |
| 1984 | | | | **Potential UCL to Use** | | | | | | Use 97.5% Chebyshev (Mean, Sd) UCL | | 938.8 |
| 1985 | | | | | | | | | | | | |

# Surface Soil

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | **General UCL Statistics for Data Sets with Non-Detects** | | | | | | | | |
| 2 | | **User Selected Options** | | | | | | | | | | |
| 3 | | | From File | C:\aa_Projects\Peterson\Unnamed Island\UCLs\SS conc_Crosstab.xls.wst | | | | | | | | |
| 4 | | | Full Precision | OFF | | | | | | | | |
| 5 | | | Confidence Coefficient | 95% | | | | | | | | |
| 6 | | | Number of Bootstrap Operations | 2000 | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | **Aluminum** | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | **General Statistics** | | | | | | |
| 12 | | | | | | Number of Valid Observations | 32 | | | | Number of Distinct Observations | 31 |
| 13 | | | | | | | | | | | | |
| 14 | | | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | |
| 15 | | | | | | Minimum | 3370 | | | | Minimum of Log Data | 8.123 |
| 16 | | | | | | Maximum | 11400 | | | | Maximum of Log Data | 9.341 |
| 17 | | | | | | Mean | 5931 | | | | Mean of log Data | 8.637 |
| 18 | | | | | | Median | 5175 | | | | SD of log Data | 0.312 |
| 19 | | | | | | SD | 2113 | | | | | |
| 20 | | | | | | Coefficient of Variation | 0.356 | | | | | |
| 21 | | | | | | Skewness | 1.466 | | | | | |
| 22 | | | | | | | | | | | | |
| 23 | | | | | | **Relevant UCL Statistics** | | | | | | |
| 24 | | | | | | **Normal Distribution Test** | | | | | **Lognormal Distribution Test** | |
| 25 | | | | | | Shapiro Wilk Test Statistic | 0.819 | | | | Shapiro Wilk Test Statistic | 0.914 |
| 26 | | | | | | Shapiro Wilk Critical Value | 0.93 | | | | Shapiro Wilk Critical Value | 0.93 |
| 27 | | | | | | **Data not Normal at 5% Significance Level** | | | | | **Data not Lognormal at 5% Significance Level** | |
| 28 | | | | | | | | | | | | |
| 29 | | | | | | **Assuming Normal Distribution** | | | | | **Assuming Lognormal Distribution** | |
| 30 | | | | | | 95% Student's-t UCL | 6565 | | | | 95% H-UCL | 6545 |
| 31 | | | | | | **95% UCLs (Adjusted for Skewness)** | | | | | 95% Chebyshev (MVUE) UCL | 7353 |
| 32 | | | | | | 95% Adjusted-CLT UCL | 6649 | | | | 97.5% Chebyshev (MVUE) UCL | 7978 |
| 33 | | | | | | 95% Modified-t UCL | 6581 | | | | 99% Chebyshev (MVUE) UCL | 9207 |
| 34 | | | | | | | | | | | | |
| 35 | | | | | | **Gamma Distribution Test** | | | | | **Data Distribution** | |
| 36 | | | | | | k star (bias corrected) | 9.027 | | | | **Data do not follow a Discernable Distribution (0.05)** | |
| 37 | | | | | | Theta Star | 657.1 | | | | | |
| 38 | | | | | | MLE of Mean | 5931 | | | | | |
| 39 | | | | | | MLE of Standard Deviation | 1974 | | | | | |
| 40 | | | | | | nu star | 577.7 | | | | | |
| 41 | | | | | | Approximate Chi Square Value (.05) | 523 | | | | **Nonparametric Statistics** | |
| 42 | | | | | | Adjusted Level of Significance | 0.0416 | | | | 95% CLT UCL | 6546 |
| 43 | | | | | | Adjusted Chi Square Value | 520.2 | | | | 95% Jackknife UCL | 6565 |
| 44 | | | | | | | | | | | 95% Standard Bootstrap UCL | 6550 |
| 45 | | | | | | Anderson-Darling Test Statistic | 1.364 | | | | 95% Bootstrap-t UCL | 6779 |
| 46 | | | | | | Anderson-Darling 5% Critical Value | 0.747 | | | | 95% Hall's Bootstrap UCL | 6648 |
| 47 | | | | | | Kolmogorov-Smirnov Test Statistic | 0.159 | | | | 95% Percentile Bootstrap UCL | 6538 |
| 48 | | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.155 | | | | 95% BCA Bootstrap UCL | 6680 |
| 49 | | | | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | 95% Chebyshev(Mean, Sd) UCL | 7559 |
| 50 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 8264 |
| 51 | | | | | | **Assuming Gamma Distribution** | | | | | 99% Chebyshev(Mean, Sd) UCL | 9648 |
| 52 | | | | | | 95% Approximate Gamma UCL | 6552 | | | | | |
| 53 | | | | | | 95% Adjusted Gamma UCL | 6587 | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 54 | | | | | | | | | | | | |
| 55 | **Potential UCL to Use** | | | | | | | | | | Use 95% Student's-t UCL | 6565 |
| 56 | | | | | | | | | | | or 95% Modified-t UCL | 6581 |
| 57 | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | |
| 59 | **Antimony** | | | | | | | | | | | |
| 60 | | | | | | | | | | | | |
| 61 | **General Statistics** | | | | | | | | | | | |
| 62 | | | | | Number of Valid Data | 32 | | | | | Number of Detected Data | 12 |
| 63 | | | | | Number of Distinct Detected Data | 12 | | | | | Number of Non-Detect Data | 20 |
| 64 | | | | | | | | | | | Percent Non-Detects | 62.50% |
| 65 | | | | | | | | | | | | |
| 66 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 67 | | | | | Minimum Detected | 0.392 | | | | | Minimum Detected | -0.936 |
| 68 | | | | | Maximum Detected | 63.6 | | | | | Maximum Detected | 4.153 |
| 69 | | | | | Mean of Detected | 12.46 | | | | | Mean of Detected | 1.233 |
| 70 | | | | | SD of Detected | 19.81 | | | | | SD of Detected | 1.778 |
| 71 | | | | | Minimum Non-Detect | 0.95 | | | | | Minimum Non-Detect | -0.0513 |
| 72 | | | | | Maximum Non-Detect | 15 | | | | | Maximum Non-Detect | 2.708 |
| 73 | | | | | | | | | | | | |
| 74 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 29 |
| 75 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 3 |
| 76 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 90.63% |
| 77 | | | | | | | | | | | | |
| 78 | **UCL Statistics** | | | | | | | | | | | |
| 79 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 80 | | | | | Shapiro Wilk Test Statistic | 0.68 | | | | | Shapiro Wilk Test Statistic | 0.922 |
| 81 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | | 5% Shapiro Wilk Critical Value | 0.859 |
| 82 | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 83 | | | | | | | | | | | | |
| 84 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 85 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 86 | | | | | Mean | 6.79 | | | | | Mean | 0.928 |
| 87 | | | | | SD | 12.82 | | | | | SD | 1.367 |
| 88 | | | | | 95% DL/2 (t) UCL | 10.63 | | | | | 95% H-Stat (DL/2) UCL | 25.62 |
| 89 | | | | | | | | | | | | |
| 90 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 91 | | | | | Mean | 45.75 | | | | | Mean in Log Scale | 0.37 |
| 92 | | | | | SD | 17.68 | | | | | SD in Log Scale | 1.383 |
| 93 | | | | | 95% MLE (t) UCL | 51.05 | | | | | Mean in Original Scale | 5.38 |
| 94 | | | | | 95% MLE (Tiku) UCL | 62.74 | | | | | SD in Original Scale | 13.07 |
| 95 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 9.611 |
| 96 | | | | | | | | | | | 95% BCA Bootstrap UCL | 11.61 |
| 97 | | | | | | | | | | | | |
| 98 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 99 | | | | | k star (bias corrected) | 0.426 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | |
| 100 | | | | | Theta Star | 29.28 | | | | | | |
| 101 | | | | | nu star | 10.21 | | | | | | |
| 102 | | | | | | | | | | | | |
| 103 | | | | | A-D Test Statistic | 0.606 | **Nonparametric Statistics** | | | | | |
| 104 | | | | | 5% A-D Critical Value | 0.786 | | | | | Kaplan-Meier (KM) Method | |
| 105 | | | | | K-S Test Statistic | 0.786 | | | | | Mean | 5.411 |
| 106 | | | | | 5% K-S Critical Value | 0.259 | | | | | SD | 12.9 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 107 | Data appear Gamma Distributed at 5% Significance Level | | | | | | | | | | SE of Mean | 2.401 |
| 108 | | | | | | | | | | | 95% KM (t) UCL | 9.482 |
| 109 | Assuming Gamma Distribution | | | | | | | | | | 95% KM (z) UCL | 9.36 |
| 110 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 9.375 |
| 111 | | | | | Minimum | 0.392 | | | | | 95% KM (bootstrap t) UCL | 16.9 |
| 112 | | | | | Maximum | 63.6 | | | | | 95% KM (BCA) UCL | 9.631 |
| 113 | | | | | Mean | 12.5 | | | | | 95% KM (Percentile Bootstrap) UCL | 9.624 |
| 114 | | | | | Median | 11.98 | | | | | 95% KM (Chebyshev) UCL | 15.88 |
| 115 | | | | | SD | 11.82 | | | | | 97.5% KM (Chebyshev) UCL | 20.4 |
| 116 | | | | | k star | 1.081 | | | | | 99% KM (Chebyshev) UCL | 29.3 |
| 117 | | | | | Theta star | 11.57 | | | | | | |
| 118 | | | | | Nu star | 69.16 | Potential UCLs to Use | | | | | |
| 119 | | | | | AppChi2 | 51.02 | | | | | 95% KM (t) UCL | 9.482 |
| 120 | | | | | 95% Gamma Approximate UCL | 16.95 | | | | | | |
| 121 | | | | | 95% Adjusted Gamma UCL | 17.23 | | | | | | |
| 122 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 123 | | | | | | | | | | | | |
| 124 | | | | | | | | | | | | |
| 125 | Aroclor-1242 | | | | | | | | | | | |
| 126 | | | | | | | | | | | | |
| 127 | General Statistics | | | | | | | | | | | |
| 128 | | | | | Number of Valid Data | 32 | | | | | Number of Detected Data | 1 |
| 129 | | | | | Number of Distinct Detected Data | 1 | | | | | Number of Non-Detect Data | 31 |
| 130 | | | | | | | | | | | Percent Non-Detects | 96.88% |
| 131 | | | | | | | | | | | | |
| 132 | Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set! | | | | | | | | | | | |
| 133 | It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 134 | | | | | | | | | | | | |
| 135 | The data set for variable Aroclor-1242 was not processed! | | | | | | | | | | | |
| 136 | | | | | | | | | | | | |
| 137 | | | | | | | | | | | | |
| 138 | | | | | | | | | | | | |
| 139 | Aroclor-1254 | | | | | | | | | | | |
| 140 | | | | | | | | | | | | |
| 141 | General Statistics | | | | | | | | | | | |
| 142 | | | | | Number of Valid Data | 32 | | | | | Number of Detected Data | 10 |
| 143 | | | | | Number of Distinct Detected Data | 10 | | | | | Number of Non-Detect Data | 22 |
| 144 | | | | | | | | | | | Percent Non-Detects | 68.75% |
| 145 | | | | | | | | | | | | |
| 146 | Raw Statistics | | | | | | Log-transformed Statistics | | | | | |
| 147 | | | | | Minimum Detected | 0.077 | | | | | Minimum Detected | -2.564 |
| 148 | | | | | Maximum Detected | 1.34 | | | | | Maximum Detected | 0.293 |
| 149 | | | | | Mean of Detected | 0.64 | | | | | Mean of Detected | -0.819 |
| 150 | | | | | SD of Detected | 0.513 | | | | | SD of Detected | 0.982 |
| 151 | | | | | Minimum Non-Detect | 0.034 | | | | | Minimum Non-Detect | -3.381 |
| 152 | | | | | Maximum Non-Detect | 0.0673 | | | | | Maximum Non-Detect | -2.699 |
| 153 | | | | | | | | | | | | |
| 154 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 22 |
| 155 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 10 |
| 156 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 68.75% |
| 157 | | | | | | | | | | | | |
| 158 | UCL Statistics | | | | | | | | | | | |
| 159 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |

| | A–E | F | G–K | L |
|---|---|---|---|---|
| 160 | Shapiro Wilk Test Statistic | 0.829 | Shapiro Wilk Test Statistic | 0.912 |
| 161 | 5% Shapiro Wilk Critical Value | 0.842 | 5% Shapiro Wilk Critical Value | 0.842 |
| 162 | **Data not Normal at 5% Significance Level** | | **Data appear Lognormal at 5% Significance Level** | |
| 163 | | | | |
| 164 | **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
| 165 | DL/2 Substitution Method | | DL/2 Substitution Method | |
| 166 | Mean | 0.214 | Mean | -2.947 |
| 167 | SD | 0.402 | SD | 1.556 |
| 168 | 95% DL/2 (t) UCL | 0.335 | 95% H-Stat (DL/2) UCL | 0.251 |
| 169 | | | | |
| 170 | Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| 171 | **MLE yields a negative mean** | | Mean in Log Scale | -3.018 |
| 172 | | | SD in Log Scale | 1.691 |
| 173 | | | Mean in Original Scale | 0.215 |
| 174 | | | SD in Original Scale | 0.402 |
| 175 | | | 95% Percentile Bootstrap UCL | 0.337 |
| 176 | | | 95% BCA Bootstrap UCL | 0.371 |
| 177 | | | | |
| 178 | **Gamma Distribution Test with Detected Values Only** | | **Data Distribution Test with Detected Values Only** | |
| 179 | k star (bias corrected) | 1.105 | **Data appear Gamma Distributed at 5% Significance Level** | |
| 180 | Theta Star | 0.58 | | |
| 181 | nu star | 22.09 | | |
| 182 | | | | |
| 183 | A-D Test Statistic | 0.512 | **Nonparametric Statistics** | |
| 184 | 5% A-D Critical Value | 0.74 | Kaplan-Meier (KM) Method | |
| 185 | K-S Test Statistic | 0.74 | Mean | 0.253 |
| 186 | 5% K-S Critical Value | 0.271 | SD | 0.377 |
| 187 | **Data appear Gamma Distributed at 5% Significance Level** | | SE of Mean | 0.0703 |
| 188 | | | 95% KM (t) UCL | 0.372 |
| 189 | **Assuming Gamma Distribution** | | 95% KM (z) UCL | 0.369 |
| 190 | Gamma ROS Statistics using Extrapolated Data | | 95% KM (jackknife) UCL | 0.355 |
| 191 | Minimum | 0.077 | 95% KM (bootstrap t) UCL | 0.41 |
| 192 | Maximum | 1.34 | 95% KM (BCA) UCL | 0.504 |
| 193 | Mean | 0.624 | 95% KM (Percentile Bootstrap) UCL | 0.428 |
| 194 | Median | 0.615 | 95% KM (Chebyshev) UCL | 0.559 |
| 195 | SD | 0.284 | 97.5% KM (Chebyshev) UCL | 0.692 |
| 196 | k star | 3.885 | 99% KM (Chebyshev) UCL | 0.952 |
| 197 | Theta star | 0.161 | | |
| 198 | Nu star | 248.7 | **Potential UCLs to Use** | |
| 199 | AppChi2 | 213.2 | 95% KM (t) UCL | 0.372 |
| 200 | 95% Gamma Approximate UCL | 0.728 | | |
| 201 | 95% Adjusted Gamma UCL | 0.734 | | |
| 202 | **Note: DL/2 is not a recommended method.** | | | |
| 203 | | | | |
| 204 | | | | |
| 205 | **Aroclor-1260** | | | |
| 206 | | | | |
| 207 | **General Statistics** | | | |
| 208 | Number of Valid Data | 32 | Number of Detected Data | 26 |
| 209 | Number of Distinct Detected Data | 25 | Number of Non-Detect Data | 6 |
| 210 | | | Percent Non-Detects | 18.75% |
| 211 | | | | |
| 212 | **Raw Statistics** | | **Log-transformed Statistics** | |

| | A–E | F | G–K | L |
|---|---|---|---|---|
| 213 | Minimum Detected | 0.045 | Minimum Detected | -3.101 |
| 214 | Maximum Detected | 1.47 | Maximum Detected | 0.385 |
| 215 | Mean of Detected | 0.304 | Mean of Detected | -1.645 |
| 216 | SD of Detected | 0.358 | SD of Detected | 0.922 |
| 217 | Minimum Non-Detect | 0.035 | Minimum Non-Detect | -3.352 |
| 218 | Maximum Non-Detect | 0.038 | Maximum Non-Detect | -3.27 |
| 219 | | | | |
| 220 | Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 6 |
| 221 | For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 26 |
| 222 | Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 18.75% |
| 223 | | | | |
| 224 | **UCL Statistics** | | | |
| 225 | **Normal Distribution Test with Detected Values Only** | | **Lognormal Distribution Test with Detected Values Only** | |
| 226 | Shapiro Wilk Test Statistic | 0.669 | Shapiro Wilk Test Statistic | 0.953 |
| 227 | 5% Shapiro Wilk Critical Value | 0.92 | 5% Shapiro Wilk Critical Value | 0.92 |
| 228 | **Data not Normal at 5% Significance Level** | | **Data appear Lognormal at 5% Significance Level** | |
| 229 | | | | |
| 230 | **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
| 231 | DL/2 Substitution Method | | DL/2 Substitution Method | |
| 232 | Mean | 0.251 | Mean | -2.086 |
| 233 | SD | 0.341 | SD | 1.247 |
| 234 | 95% DL/2 (t) UCL | 0.353 | 95% H-Stat (DL/2) UCL | 0.383 |
| 235 | | | | |
| 236 | Maximum Likelihood Estimate(MLE) Method | | Log ROS Method | |
| 237 | Mean | 0.207 | Mean in Log Scale | -2.04 |
| 238 | SD | 0.386 | SD in Log Scale | 1.182 |
| 239 | 95% MLE (t) UCL | 0.322 | Mean in Original Scale | 0.252 |
| 240 | 95% MLE (Tiku) UCL | 0.32 | SD in Original Scale | 0.34 |
| 241 | | | 95% Percentile Bootstrap UCL | 0.356 |
| 242 | | | 95% BCA Bootstrap UCL | 0.391 |
| 243 | | | | |
| 244 | **Gamma Distribution Test with Detected Values Only** | | **Data Distribution Test with Detected Values Only** | |
| 245 | k star (bias corrected) | 1.122 | **Data appear Lognormal at 5% Significance Level** | |
| 246 | Theta Star | 0.271 | | |
| 247 | nu star | 58.36 | | |
| 248 | | | | |
| 249 | A-D Test Statistic | 1.102 | **Nonparametric Statistics** | |
| 250 | 5% A-D Critical Value | 0.768 | Kaplan-Meier (KM) Method | |
| 251 | K-S Test Statistic | 0.768 | Mean | 0.256 |
| 252 | 5% K-S Critical Value | 0.175 | SD | 0.332 |
| 253 | **Data not Gamma Distributed at 5% Significance Level** | | SE of Mean | 0.0598 |
| 254 | | | 95% KM (t) UCL | 0.357 |
| 255 | **Assuming Gamma Distribution** | | 95% KM (z) UCL | 0.354 |
| 256 | Gamma ROS Statistics using Extrapolated Data | | 95% KM (jackknife) UCL | 0.356 |
| 257 | Minimum | 1E-09 | 95% KM (bootstrap t) UCL | 0.441 |
| 258 | Maximum | 1.47 | 95% KM (BCA) UCL | 0.375 |
| 259 | Mean | 0.247 | 95% KM (Percentile Bootstrap) UCL | 0.363 |
| 260 | Median | 0.143 | 95% KM (Chebyshev) UCL | 0.516 |
| 261 | SD | 0.343 | 97.5% KM (Chebyshev) UCL | 0.629 |
| 262 | k star | 0.196 | 99% KM (Chebyshev) UCL | 0.851 |
| 263 | Theta star | 1.26 | | |
| 264 | Nu star | 12.55 | **Potential UCLs to Use** | |
| 265 | AppChi2 | 5.593 | 95% KM (Chebyshev) UCL | 0.516 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 266 | | | | | 95% Gamma Approximate UCL | 0.555 | | | | | | |
| 267 | | | | | 95% Adjusted Gamma UCL | 0.58 | | | | | | |
| 268 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 269 | | | | | | | | | | | | |
| 270 | | | | | | | | | | | | |
| 271 | Arsenic | | | | | | | | | | | |
| 272 | | | | | | | | | | | | |
| 273 | | | | | | General Statistics | | | | | | |
| 274 | | | | | | Number of Valid Observations | 32 | | | | Number of Distinct Observations | 28 |
| 275 | | | | | | | | | | | | |
| 276 | | | | | | Raw Statistics | | | | | Log-transformed Statistics | |
| 277 | | | | | | Minimum | 2 | | | | Minimum of Log Data | 0.693 |
| 278 | | | | | | Maximum | 26.1 | | | | Maximum of Log Data | 3.262 |
| 279 | | | | | | Mean | 9.298 | | | | Mean of log Data | 1.983 |
| 280 | | | | | | Median | 7.1 | | | | SD of log Data | 0.713 |
| 281 | | | | | | SD | 6.866 | | | | | |
| 282 | | | | | | Coefficient of Variation | 0.738 | | | | | |
| 283 | | | | | | Skewness | 1.192 | | | | | |
| 284 | | | | | | | | | | | | |
| 285 | | | | | | Relevant UCL Statistics | | | | | | |
| 286 | | | | | | Normal Distribution Test | | | | | Lognormal Distribution Test | |
| 287 | | | | | | Shapiro Wilk Test Statistic | 0.843 | | | | Shapiro Wilk Test Statistic | 0.96 |
| 288 | | | | | | Shapiro Wilk Critical Value | 0.93 | | | | Shapiro Wilk Critical Value | 0.93 |
| 289 | | | | | | Data not Normal at 5% Significance Level | | | | | Data appear Lognormal at 5% Significance Level | |
| 290 | | | | | | | | | | | | |
| 291 | | | | | | Assuming Normal Distribution | | | | | Assuming Lognormal Distribution | |
| 292 | | | | | | 95% Student's-t UCL | 11.36 | | | | 95% H-UCL | 12.29 |
| 293 | | | | | | 95% UCLs (Adjusted for Skewness) | | | | | 95% Chebyshev (MVUE) UCL | 14.81 |
| 294 | | | | | | 95% Adjusted-CLT UCL | 11.57 | | | | 97.5% Chebyshev (MVUE) UCL | 17.21 |
| 295 | | | | | | 95% Modified-t UCL | 11.4 | | | | 99% Chebyshev (MVUE) UCL | 21.91 |
| 296 | | | | | | | | | | | | |
| 297 | | | | | | Gamma Distribution Test | | | | | Data Distribution | |
| 298 | | | | | | k star (bias corrected) | 1.996 | | | | Data appear Gamma Distributed at 5% Significance Level | |
| 299 | | | | | | Theta Star | 4.658 | | | | | |
| 300 | | | | | | MLE of Mean | 9.298 | | | | | |
| 301 | | | | | | MLE of Standard Deviation | 6.581 | | | | | |
| 302 | | | | | | nu star | 127.8 | | | | | |
| 303 | | | | | | Approximate Chi Square Value (.05) | 102.7 | | | | Nonparametric Statistics | |
| 304 | | | | | | Adjusted Level of Significance | 0.0416 | | | | 95% CLT UCL | 11.29 |
| 305 | | | | | | Adjusted Chi Square Value | 101.5 | | | | 95% Jackknife UCL | 11.36 |
| 306 | | | | | | | | | | | 95% Standard Bootstrap UCL | 11.2 |
| 307 | | | | | | Anderson-Darling Test Statistic | 0.655 | | | | 95% Bootstrap-t UCL | 11.6 |
| 308 | | | | | | Anderson-Darling 5% Critical Value | 0.758 | | | | 95% Hall's Bootstrap UCL | 11.54 |
| 309 | | | | | | Kolmogorov-Smirnov Test Statistic | 0.142 | | | | 95% Percentile Bootstrap UCL | 11.34 |
| 310 | | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.157 | | | | 95% BCA Bootstrap UCL | 11.61 |
| 311 | | | | | | Data appear Gamma Distributed at 5% Significance Level | | | | | 95% Chebyshev(Mean, Sd) UCL | 14.59 |
| 312 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 16.88 |
| 313 | | | | | | Assuming Gamma Distribution | | | | | 99% Chebyshev(Mean, Sd) UCL | 21.37 |
| 314 | | | | | | 95% Approximate Gamma UCL | 11.57 | | | | | |
| 315 | | | | | | 95% Adjusted Gamma UCL | 11.71 | | | | | |
| 316 | | | | | | | | | | | | |
| 317 | | | | | | Potential UCL to Use | | | | | Use 95% Approximate Gamma UCL | 11.57 |
| 318 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 319 | | | | | | | | | | | | |
| 320 | **Benzo(a)pyrene** | | | | | | | | | | | |
| 321 | | | | | | | | | | | | |
| 322 | | | | | | **General Statistics** | | | | | | |
| 323 | | | | | Number of Valid Observations | 32 | | | | Number of Distinct Observations | | 31 |
| 324 | | | | | | | | | | | | |
| 325 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 326 | | | | | Minimum | 0.085 | | | | Minimum of Log Data | | -2.465 |
| 327 | | | | | Maximum | 4 | | | | Maximum of Log Data | | 1.386 |
| 328 | | | | | Mean | 1.027 | | | | Mean of log Data | | -0.356 |
| 329 | | | | | Median | 0.655 | | | | SD of log Data | | 0.942 |
| 330 | | | | | SD | 0.904 | | | | | | |
| 331 | | | | | Coefficient of Variation | 0.88 | | | | | | |
| 332 | | | | | Skewness | 1.552 | | | | | | |
| 333 | | | | | | | | | | | | |
| 334 | | | | | | **Relevant UCL Statistics** | | | | | | |
| 335 | | | | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | |
| 336 | | | | | Shapiro Wilk Test Statistic | 0.849 | | | | Shapiro Wilk Test Statistic | | 0.979 |
| 337 | | | | | Shapiro Wilk Critical Value | 0.93 | | | | Shapiro Wilk Critical Value | | 0.93 |
| 338 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 339 | | | | | | | | | | | | |
| 340 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 341 | | | | | 95% Student's-t UCL | 1.298 | | | | 95% H-UCL | | 1.629 |
| 342 | | | | **95% UCLs (Adjusted for Skewness)** | | | | | | 95% Chebyshev (MVUE) UCL | | 1.957 |
| 343 | | | | | 95% Adjusted-CLT UCL | 1.337 | | | | 97.5% Chebyshev (MVUE) UCL | | 2.34 |
| 344 | | | | | 95% Modified-t UCL | 1.305 | | | | 99% Chebyshev (MVUE) UCL | | 3.093 |
| 345 | | | | | | | | | | | | |
| 346 | | | | **Gamma Distribution Test** | | | | | | **Data Distribution** | | |
| 347 | | | | | k star (bias corrected) | 1.335 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 348 | | | | | Theta Star | 0.77 | | | | | | |
| 349 | | | | | MLE of Mean | 1.027 | | | | | | |
| 350 | | | | | MLE of Standard Deviation | 0.889 | | | | | | |
| 351 | | | | | nu star | 85.43 | | | | | | |
| 352 | | | | | Approximate Chi Square Value (.05) | 65.13 | | | | **Nonparametric Statistics** | | |
| 353 | | | | | Adjusted Level of Significance | 0.0416 | | | | 95% CLT UCL | | 1.29 |
| 354 | | | | | Adjusted Chi Square Value | 64.18 | | | | 95% Jackknife UCL | | 1.298 |
| 355 | | | | | | | | | | 95% Standard Bootstrap UCL | | 1.28 |
| 356 | | | | | Anderson-Darling Test Statistic | 0.229 | | | | 95% Bootstrap-t UCL | | 1.35 |
| 357 | | | | | Anderson-Darling 5% Critical Value | 0.766 | | | | 95% Hall's Bootstrap UCL | | 1.419 |
| 358 | | | | | Kolmogorov-Smirnov Test Statistic | 0.108 | | | | 95% Percentile Bootstrap UCL | | 1.289 |
| 359 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.158 | | | | 95% BCA Bootstrap UCL | | 1.331 |
| 360 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | 95% Chebyshev(Mean, Sd) UCL | | 1.724 |
| 361 | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 2.025 |
| 362 | | | | **Assuming Gamma Distribution** | | | | | | 99% Chebyshev(Mean, Sd) UCL | | 2.617 |
| 363 | | | | | 95% Approximate Gamma UCL | 1.348 | | | | | | |
| 364 | | | | | 95% Adjusted Gamma UCL | 1.367 | | | | | | |
| 365 | | | | | | | | | | | | |
| 366 | | | | **Potential UCL to Use** | | | | | | Use 95% Approximate Gamma UCL | | 1.348 |
| 367 | | | | | | | | | | | | |
| 368 | | | | | | | | | | | | |
| 369 | **Benzo(b)fluoranthene** | | | | | | | | | | | |
| 370 | | | | | | | | | | | | |
| 371 | | | | | | **General Statistics** | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 372 | | | | | Number of Valid Observations | 29 | | | | Number of Distinct Observations | | 27 |
| 373 | | | | | | | | | | | | |
| 374 | | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | | |
| 375 | | | | | Minimum | 0.12 | | | | Minimum of Log Data | | -2.12 |
| 376 | | | | | Maximum | 6.4 | | | | Maximum of Log Data | | 1.856 |
| 377 | | | | | Mean | 1.481 | | | | Mean of log Data | | -0.0784 |
| 378 | | | | | Median | 1.1 | | | | SD of log Data | | 1.071 |
| 379 | | | | | SD | 1.397 | | | | | | |
| 380 | | | | | Coefficient of Variation | 0.943 | | | | | | |
| 381 | | | | | Skewness | 1.718 | | | | | | |
| 382 | | | | | | | | | | | | |
| 383 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 384 | | | | | **Normal Distribution Test** | | | | | **Lognormal Distribution Test** | | |
| 385 | | | | | Shapiro Wilk Test Statistic | 0.836 | | | | Shapiro Wilk Test Statistic | | 0.956 |
| 386 | | | | | Shapiro Wilk Critical Value | 0.926 | | | | Shapiro Wilk Critical Value | | 0.926 |
| 387 | | | | | **Data not Normal at 5% Significance Level** | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 388 | | | | | | | | | | | | |
| 389 | | | | | **Assuming Normal Distribution** | | | | | **Assuming Lognormal Distribution** | | |
| 390 | | | | | 95% Student's-t UCL | 1.923 | | | | 95% H-UCL | | 2.751 |
| 391 | | | | | **95% UCLs (Adjusted for Skewness)** | | | | | 95% Chebyshev (MVUE) UCL | | 3.197 |
| 392 | | | | | 95% Adjusted-CLT UCL | 1.997 | | | | 97.5% Chebyshev (MVUE) UCL | | 3.892 |
| 393 | | | | | 95% Modified-t UCL | 1.937 | | | | 99% Chebyshev (MVUE) UCL | | 5.256 |
| 394 | | | | | | | | | | | | |
| 395 | | | | | **Gamma Distribution Test** | | | | | **Data Distribution** | | |
| 396 | | | | | k star (bias corrected) | 1.099 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 397 | | | | | Theta Star | 1.348 | | | | | | |
| 398 | | | | | MLE of Mean | 1.481 | | | | | | |
| 399 | | | | | MLE of Standard Deviation | 1.413 | | | | | | |
| 400 | | | | | nu star | 63.73 | | | | | | |
| 401 | | | | | Approximate Chi Square Value (.05) | 46.36 | | | | **Nonparametric Statistics** | | |
| 402 | | | | | Adjusted Level of Significance | 0.0407 | | | | 95% CLT UCL | | 1.908 |
| 403 | | | | | Adjusted Chi Square Value | 45.48 | | | | 95% Jackknife UCL | | 1.923 |
| 404 | | | | | | | | | | 95% Standard Bootstrap UCL | | 1.897 |
| 405 | | | | | Anderson-Darling Test Statistic | 0.318 | | | | 95% Bootstrap-t UCL | | 2.067 |
| 406 | | | | | Anderson-Darling 5% Critical Value | 0.77 | | | | 95% Hall's Bootstrap UCL | | 2.127 |
| 407 | | | | | Kolmogorov-Smirnov Test Statistic | 0.101 | | | | 95% Percentile Bootstrap UCL | | 1.928 |
| 408 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.167 | | | | 95% BCA Bootstrap UCL | | 1.954 |
| 409 | | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | 95% Chebyshev(Mean, Sd) UCL | | 2.612 |
| 410 | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 3.101 |
| 411 | | | | | **Assuming Gamma Distribution** | | | | | 99% Chebyshev(Mean, Sd) UCL | | 4.062 |
| 412 | | | | | 95% Approximate Gamma UCL | 2.036 | | | | | | |
| 413 | | | | | 95% Adjusted Gamma UCL | 2.076 | | | | | | |
| 414 | | | | | | | | | | | | |
| 415 | | | | | **Potential UCL to Use** | | | | | Use 95% Approximate Gamma UCL | | 2.036 |
| 416 | | | | | | | | | | | | |
| 417 | | | | | | | | | | | | |
| 418 | **Benzo(k)fluoranthene** | | | | | | | | | | | |
| 419 | | | | | | | | | | | | |
| 420 | | | | | **General Statistics** | | | | | | | |
| 421 | | | | | Number of Valid Observations | 32 | | | | Number of Distinct Observations | | 27 |
| 422 | | | | | | | | | | | | |
| 423 | | | | | **Raw Statistics** | | | | | **Log-transformed Statistics** | | |
| 424 | | | | | Minimum | 0.036 | | | | Minimum of Log Data | | -3.324 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 425 | | | | | Maximum | 2.41 | | | | Maximum of Log Data | | 0.88 |
| 426 | | | | | Mean | 0.637 | | | | Mean of log Data | | -0.958 |
| 427 | | | | | Median | 0.413 | | | | SD of log Data | | 1.08 |
| 428 | | | | | SD | 0.646 | | | | | | |
| 429 | | | | | Coefficient of Variation | 1.015 | | | | | | |
| 430 | | | | | Skewness | 1.543 | | | | | | |
| 431 | | | | | | | | | | | | |
| 432 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 433 | | | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | | |
| 434 | | | | | Shapiro Wilk Test Statistic | 0.798 | | | | Shapiro Wilk Test Statistic | | 0.975 |
| 435 | | | | | Shapiro Wilk Critical Value | 0.93 | | | | Shapiro Wilk Critical Value | | 0.93 |
| 436 | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | |
| 437 | | | | | | | | | | | | |
| 438 | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | |
| 439 | | | | | 95% Student's-t UCL | 0.831 | | | | 95% H-UCL | | 1.122 |
| 440 | | | **95% UCLs (Adjusted for Skewness)** | | | | | | | 95% Chebyshev (MVUE) UCL | | 1.321 |
| 441 | | | | | 95% Adjusted-CLT UCL | 0.858 | | | | 97.5% Chebyshev (MVUE) UCL | | 1.603 |
| 442 | | | | | 95% Modified-t UCL | 0.836 | | | | 99% Chebyshev (MVUE) UCL | | 2.158 |
| 443 | | | | | | | | | | | | |
| 444 | | | **Gamma Distribution Test** | | | | | | **Data Distribution** | | | |
| 445 | | | | | k star (bias corrected) | 1.04 | | | **Data appear Gamma Distributed at 5% Significance Level** | | | |
| 446 | | | | | Theta Star | 0.613 | | | | | | |
| 447 | | | | | MLE of Mean | 0.637 | | | | | | |
| 448 | | | | | MLE of Standard Deviation | 0.625 | | | | | | |
| 449 | | | | | nu star | 66.54 | | | | | | |
| 450 | | | | | Approximate Chi Square Value (.05) | 48.76 | | | **Nonparametric Statistics** | | | |
| 451 | | | | | Adjusted Level of Significance | 0.0416 | | | | 95% CLT UCL | | 0.825 |
| 452 | | | | | Adjusted Chi Square Value | 47.95 | | | | 95% Jackknife UCL | | 0.831 |
| 453 | | | | | | | | | | 95% Standard Bootstrap UCL | | 0.816 |
| 454 | | | | | Anderson-Darling Test Statistic | 0.432 | | | | 95% Bootstrap-t UCL | | 0.871 |
| 455 | | | | | Anderson-Darling 5% Critical Value | 0.773 | | | | 95% Hall's Bootstrap UCL | | 0.852 |
| 456 | | | | | Kolmogorov-Smirnov Test Statistic | 0.126 | | | | 95% Percentile Bootstrap UCL | | 0.833 |
| 457 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.16 | | | | 95% BCA Bootstrap UCL | | 0.87 |
| 458 | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | 95% Chebyshev(Mean, Sd) UCL | | 1.135 |
| 459 | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 1.35 |
| 460 | | | **Assuming Gamma Distribution** | | | | | | | 99% Chebyshev(Mean, Sd) UCL | | 1.774 |
| 461 | | | | | 95% Approximate Gamma UCL | 0.869 | | | | | | |
| 462 | | | | | 95% Adjusted Gamma UCL | 0.884 | | | | | | |
| 463 | | | | | | | | | | | | |
| 464 | | | **Potential UCL to Use** | | | | | | | Use 95% Approximate Gamma UCL | | 0.869 |
| 465 | | | | | | | | | | | | |
| 466 | | | | | | | | | | | | |
| 467 | **Benzo_a_anthracene** | | | | | | | | | | | |
| 468 | | | | | | | | | | | | |
| 469 | | | | | **General Statistics** | | | | | | | |
| 470 | | | | | Number of Valid Observations | 32 | | | | Number of Distinct Observations | | 28 |
| 471 | | | | | | | | | | | | |
| 472 | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | |
| 473 | | | | | Minimum | 0.08 | | | | Minimum of Log Data | | -2.526 |
| 474 | | | | | Maximum | 4.5 | | | | Maximum of Log Data | | 1.504 |
| 475 | | | | | Mean | 1.132 | | | | Mean of log Data | | -0.318 |
| 476 | | | | | Median | 0.71 | | | | SD of log Data | | 1.026 |
| 477 | | | | | SD | 1.043 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 478 | | | | | Coefficient of Variation | 0.921 | | | | | | |
| 479 | | | | | Skewness | 1.554 | | | | | | |
| 480 | | | | | | | | | | | | |
| 481 | | | | | Relevant UCL Statistics | | | | | | | |
| 482 | | | | Normal Distribution Test | | | | | | Lognormal Distribution Test | | |
| 483 | | | | | Shapiro Wilk Test Statistic | 0.839 | | | | | Shapiro Wilk Test Statistic | 0.965 |
| 484 | | | | | Shapiro Wilk Critical Value | 0.93 | | | | | Shapiro Wilk Critical Value | 0.93 |
| 485 | | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 486 | | | | | | | | | | | | |
| 487 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 488 | | | | | 95% Student's-t UCL | 1.445 | | | | | 95% H-UCL | 1.937 |
| 489 | | | | 95% UCLs (Adjusted for Skewness) | | | | | | | 95% Chebyshev (MVUE) UCL | 2.303 |
| 490 | | | | | 95% Adjusted-CLT UCL | 1.49 | | | | | 97.5% Chebyshev (MVUE) UCL | 2.779 |
| 491 | | | | | 95% Modified-t UCL | 1.453 | | | | | 99% Chebyshev (MVUE) UCL | 3.715 |
| 492 | | | | | | | | | | | | |
| 493 | | | | Gamma Distribution Test | | | | | | Data Distribution | | |
| 494 | | | | | k star (bias corrected) | 1.173 | | | | Data appear Gamma Distributed at 5% Significance Level | | |
| 495 | | | | | Theta Star | 0.965 | | | | | | |
| 496 | | | | | MLE of Mean | 1.132 | | | | | | |
| 497 | | | | | MLE of Standard Deviation | 1.046 | | | | | | |
| 498 | | | | | nu star | 75.06 | | | | | | |
| 499 | | | | | Approximate Chi Square Value (.05) | 56.11 | | | | Nonparametric Statistics | | |
| 500 | | | | | Adjusted Level of Significance | 0.0416 | | | | | 95% CLT UCL | 1.436 |
| 501 | | | | | Adjusted Chi Square Value | 55.23 | | | | | 95% Jackknife UCL | 1.445 |
| 502 | | | | | | | | | | | 95% Standard Bootstrap UCL | 1.429 |
| 503 | | | | | Anderson-Darling Test Statistic | 0.398 | | | | | 95% Bootstrap-t UCL | 1.532 |
| 504 | | | | | Anderson-Darling 5% Critical Value | 0.77 | | | | | 95% Hall's Bootstrap UCL | 1.545 |
| 505 | | | | | Kolmogorov-Smirnov Test Statistic | 0.113 | | | | | 95% Percentile Bootstrap UCL | 1.448 |
| 506 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.159 | | | | | 95% BCA Bootstrap UCL | 1.45 |
| 507 | | | | Data appear Gamma Distributed at 5% Significance Level | | | | | | | 95% Chebyshev(Mean, Sd) UCL | 1.936 |
| 508 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 2.283 |
| 509 | | | | Assuming Gamma Distribution | | | | | | | 99% Chebyshev(Mean, Sd) UCL | 2.966 |
| 510 | | | | | 95% Approximate Gamma UCL | 1.515 | | | | | | |
| 511 | | | | | 95% Adjusted Gamma UCL | 1.539 | | | | | | |
| 512 | | | | | | | | | | | | |
| 513 | | | | Potential UCL to Use | | | | | | | Use 95% Approximate Gamma UCL | 1.515 |
| 514 | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | |
| 516 | bis(2-Ethylhexyl)phthalate | | | | | | | | | | | |
| 517 | | | | | | | | | | | | |
| 518 | | | | | General Statistics | | | | | | | |
| 519 | | | | | Number of Valid Data | 32 | | | | | Number of Detected Data | 19 |
| 520 | | | | | Number of Distinct Detected Data | 19 | | | | | Number of Non-Detect Data | 13 |
| 521 | | | | | | | | | | | Percent Non-Detects | 40.63% |
| 522 | | | | | | | | | | | | |
| 523 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 524 | | | | | Minimum Detected | 0.13 | | | | | Minimum Detected | -2.04 |
| 525 | | | | | Maximum Detected | 260 | | | | | Maximum Detected | 5.561 |
| 526 | | | | | Mean of Detected | 29.23 | | | | | Mean of Detected | 1.284 |
| 527 | | | | | SD of Detected | 64.03 | | | | | SD of Detected | 2.272 |
| 528 | | | | | Minimum Non-Detect | 0.34 | | | | | Minimum Non-Detect | -1.079 |
| 529 | | | | | Maximum Non-Detect | 0.64 | | | | | Maximum Non-Detect | -0.446 |
| 530 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 531 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 19 |
| 532 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 13 |
| 533 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 59.38% |
| 534 | | | | | | | | | | | | |
| 535 | | | | | | UCL Statistics | | | | | | |
| 536 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 537 | | | | | | Shapiro Wilk Test Statistic | 0.52 | | | | Shapiro Wilk Test Statistic | 0.95 |
| 538 | | | | | | 5% Shapiro Wilk Critical Value | 0.901 | | | | 5% Shapiro Wilk Critical Value | 0.901 |
| 539 | | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 540 | | | | | | | | | | | | |
| 541 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 542 | | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | |
| 543 | | | | | | Mean | 17.44 | | | | Mean | 0.119 |
| 544 | | | | | | SD | 50.9 | | | | SD | 2.25 |
| 545 | | | | | | 95% DL/2 (t) UCL | 32.7 | | | | 95% H-Stat (DL/2) UCL | 61.8 |
| 546 | | | | | | | | | | | | |
| 547 | | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | |
| 548 | | | | MLE yields a negative mean | | | | | | | Mean in Log Scale | -0.229 |
| 549 | | | | | | | | | | | SD in Log Scale | 2.577 |
| 550 | | | | | | | | | | | Mean in Original Scale | 17.4 |
| 551 | | | | | | | | | | | SD in Original Scale | 50.91 |
| 552 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 33.64 |
| 553 | | | | | | | | | | | 95% BCA Bootstrap UCL | 41.53 |
| 554 | | | | | | | | | | | | |
| 555 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 556 | | | | | | k star (bias corrected) | 0.309 | | | Data Follow Appr. Gamma Distribution at 5% Significance Level | | |
| 557 | | | | | | Theta Star | 94.57 | | | | | |
| 558 | | | | | | nu star | 11.75 | | | | | |
| 559 | | | | | | | | | | | | |
| 560 | | | | | | A-D Test Statistic | 0.976 | | | Nonparametric Statistics | | |
| 561 | | | | | | 5% A-D Critical Value | 0.838 | | | | Kaplan-Meier (KM) Method | |
| 562 | | | | | | K-S Test Statistic | 0.838 | | | | Mean | 17.44 |
| 563 | | | | | | 5% K-S Critical Value | 0.214 | | | | SD | 50.1 |
| 564 | | | | Data follow Appr. Gamma Distribution at 5% Significance Level | | | | | | | SE of Mean | 9.098 |
| 565 | | | | | | | | | | | 95% KM (t) UCL | 32.87 |
| 566 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 32.4 |
| 567 | | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | 32.69 |
| 568 | | | | | | Minimum | 0.13 | | | | 95% KM (bootstrap t) UCL | 74.37 |
| 569 | | | | | | Maximum | 260 | | | | 95% KM (BCA) UCL | 36.64 |
| 570 | | | | | | Mean | 26.28 | | | | 95% KM (Percentile Bootstrap) UCL | 33.38 |
| 571 | | | | | | Median | 18.5 | | | | 95% KM (Chebyshev) UCL | 57.1 |
| 572 | | | | | | SD | 48.97 | | | | 97.5% KM (Chebyshev) UCL | 74.26 |
| 573 | | | | | | k star | 0.479 | | | | 99% KM (Chebyshev) UCL | 108 |
| 574 | | | | | | Theta star | 54.92 | | | | | |
| 575 | | | | | | Nu star | 30.63 | | | Potential UCLs to Use | | |
| 576 | | | | | | AppChi2 | 18.99 | | | | 95% KM (BCA) UCL | 36.64 |
| 577 | | | | | | 95% Gamma Approximate UCL | 42.4 | | | | | |
| 578 | | | | | | 95% Adjusted Gamma UCL | 43.52 | | | | | |
| 579 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 580 | | | | | | | | | | | | |
| 581 | | | | | | | | | | | | |
| 582 | Cadmium | | | | | | | | | | | |
| 583 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 584 | | | | | | General Statistics | | | | | | |
| 585 | | | | | Number of Valid Data | 32 | | | | | Number of Detected Data | 29 |
| 586 | | | | | Number of Distinct Detected Data | 27 | | | | | Number of Non-Detect Data | 3 |
| 587 | | | | | | | | | | | Percent Non-Detects | 9.38% |
| 588 | | | | | | | | | | | | |
| 589 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 590 | | | | | Minimum Detected | 0.31 | | | | | Minimum Detected | -1.171 |
| 591 | | | | | Maximum Detected | 21.8 | | | | | Maximum Detected | 3.082 |
| 592 | | | | | Mean of Detected | 3.961 | | | | | Mean of Detected | 0.987 |
| 593 | | | | | SD of Detected | 4.348 | | | | | SD of Detected | 0.894 |
| 594 | | | | | Minimum Non-Detect | 0.87 | | | | | Minimum Non-Detect | -0.139 |
| 595 | | | | | Maximum Non-Detect | 1.1 | | | | | Maximum Non-Detect | 0.0953 |
| 596 | | | | | | | | | | | | |
| 597 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 7 |
| 598 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 25 |
| 599 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 21.88% |
| 600 | | | | | | | | | | | | |
| 601 | | | | | | UCL Statistics | | | | | | |
| 602 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 603 | | | | | Shapiro Wilk Test Statistic | 0.666 | | | | | Shapiro Wilk Test Statistic | 0.966 |
| 604 | | | | | 5% Shapiro Wilk Critical Value | 0.926 | | | | | 5% Shapiro Wilk Critical Value | 0.926 |
| 605 | | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 606 | | | | | | | | | | | | |
| 607 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 608 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 609 | | | | | Mean | 3.635 | | | | | Mean | 0.828 |
| 610 | | | | | SD | 4.258 | | | | | SD | 0.989 |
| 611 | | | | | 95% DL/2 (t) UCL | 4.912 | | | | | 95% H-Stat (DL/2) UCL | 5.14 |
| 612 | | | | | | | | | | | | |
| 613 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 614 | | | | | Mean | 3.026 | | | | | Mean in Log Scale | 0.844 |
| 615 | | | | | SD | 4.909 | | | | | SD in Log Scale | 0.964 |
| 616 | | | | | 95% MLE (t) UCL | 4.497 | | | | | Mean in Original Scale | 3.644 |
| 617 | | | | | 95% MLE (Tiku) UCL | 4.494 | | | | | SD in Original Scale | 4.252 |
| 618 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 4.892 |
| 619 | | | | | | | | | | | 95% BCA Bootstrap UCL | 5.382 |
| 620 | | | | | | | | | | | | |
| 621 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 622 | | | | | k star (bias corrected) | 1.304 | | | | Data Follow Appr. Gamma Distribution at 5% Significance Level | | |
| 623 | | | | | Theta Star | 3.037 | | | | | | |
| 624 | | | | | nu star | 75.65 | | | | | | |
| 625 | | | | | | | | | | | | |
| 626 | | | | | A-D Test Statistic | 0.892 | | | | Nonparametric Statistics | | |
| 627 | | | | | 5% A-D Critical Value | 0.764 | | | | | Kaplan-Meier (KM) Method | |
| 628 | | | | | K-S Test Statistic | 0.764 | | | | | Mean | 3.635 |
| 629 | | | | | 5% K-S Critical Value | 0.166 | | | | | SD | 4.192 |
| 630 | | | | Data follow Appr. Gamma Distribution at 5% Significance Level | | | | | | | SE of Mean | 0.754 |
| 631 | | | | | | | | | | | 95% KM (t) UCL | 4.914 |
| 632 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 4.876 |
| 633 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 4.912 |
| 634 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 5.825 |
| 635 | | | | | Maximum | 21.8 | | | | | 95% KM (BCA) UCL | 5.069 |
| 636 | | | | | Mean | 3.589 | | | | | 95% KM (Percentile Bootstrap) UCL | 4.918 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 637 | | | | | Median | 2.42 | | | | 95% KM (Chebyshev) UCL | | 6.923 |
| 638 | | | | | SD | 4.296 | | | | 97.5% KM (Chebyshev) UCL | | 8.346 |
| 639 | | | | | k star | 0.29 | | | | 99% KM (Chebyshev) UCL | | 11.14 |
| 640 | | | | | Theta star | 12.38 | | | | | | |
| 641 | | | | | Nu star | 18.56 | | | | **Potential UCLs to Use** | | |
| 642 | | | | | AppChi2 | 9.795 | | | | 95% KM (Chebyshev) UCL | | 6.923 |
| 643 | | | | | 95% Gamma Approximate UCL | 6.8 | | | | | | |
| 644 | | | | | 95% Adjusted Gamma UCL | 7.046 | | | | | | |
| 645 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 646 | | | | | | | | | | | | |
| 647 | | | | | | | | | | | | |
| 648 | **Carbazole** | | | | | | | | | | | |
| 649 | | | | | | | | | | | | |
| 650 | | | | | **General Statistics** | | | | | | | |
| 651 | | | | | Number of Valid Data | 32 | | | | Number of Detected Data | | 18 |
| 652 | | | | | Number of Distinct Detected Data | 17 | | | | Number of Non-Detect Data | | 14 |
| 653 | | | | | | | | | | Percent Non-Detects | | 43.75% |
| 654 | | | | | | | | | | | | |
| 655 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 656 | | | | | Minimum Detected | 0.024 | | | | Minimum Detected | | -3.73 |
| 657 | | | | | Maximum Detected | 0.99 | | | | Maximum Detected | | -0.0101 |
| 658 | | | | | Mean of Detected | 0.218 | | | | Mean of Detected | | -1.896 |
| 659 | | | | | SD of Detected | 0.221 | | | | SD of Detected | | 0.904 |
| 660 | | | | | Minimum Non-Detect | 0.148 | | | | Minimum Non-Detect | | -1.911 |
| 661 | | | | | Maximum Non-Detect | 0.4 | | | | Maximum Non-Detect | | -0.916 |
| 662 | | | | | | | | | | | | |
| 663 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 31 |
| 664 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 1 |
| 665 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 96.88% |
| 666 | | | | | | | | | | | | |
| 667 | | | | | **UCL Statistics** | | | | | | | |
| 668 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 669 | | | | | Shapiro Wilk Test Statistic | 0.708 | | | | Shapiro Wilk Test Statistic | | 0.983 |
| 670 | | | | | 5% Shapiro Wilk Critical Value | 0.897 | | | | 5% Shapiro Wilk Critical Value | | 0.897 |
| 671 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 672 | | | | | | | | | | | | |
| 673 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 674 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 675 | | | | | Mean | 0.193 | | | | Mean | | -1.888 |
| 676 | | | | | SD | 0.168 | | | | SD | | 0.708 |
| 677 | | | | | 95% DL/2 (t) UCL | 0.243 | | | | 95% H-Stat (DL/2) UCL | | 0.298 |
| 678 | | | | | | | | | | | | |
| 679 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 680 | | | | **MLE method failed to converge properly** | | | | | | Mean in Log Scale | | -2.047 |
| 681 | | | | | | | | | | SD in Log Scale | | 0.736 |
| 682 | | | | | | | | | | Mean in Original Scale | | 0.173 |
| 683 | | | | | | | | | | SD in Original Scale | | 0.174 |
| 684 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.228 |
| 685 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.257 |
| 686 | | | | | | | | | | | | |
| 687 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 688 | | | | | k star (bias corrected) | 1.276 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 689 | | | | | Theta Star | 0.171 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 690 | | | | | nu star | 45.95 | | | | | | |
| 691 | | | | | | | | | | | | |
| 692 | | | | | A-D Test Statistic | 0.276 | **Nonparametric Statistics** | | | | | |
| 693 | | | | | 5% A-D Critical Value | 0.757 | | | | Kaplan-Meier (KM) Method | | |
| 694 | | | | | K-S Test Statistic | 0.757 | | | | | Mean | 0.182 |
| 695 | | | | | 5% K-S Critical Value | 0.207 | | | | | SD | 0.177 |
| 696 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.0348 |
| 697 | | | | | | | | | | | 95% KM (t) UCL | 0.241 |
| 698 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 0.239 |
| 699 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.24 |
| 700 | | | | | Minimum | 0.024 | | | | | 95% KM (bootstrap t) UCL | 0.274 |
| 701 | | | | | Maximum | 0.99 | | | | | 95% KM (BCA) UCL | 0.241 |
| 702 | | | | | Mean | 0.221 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.24 |
| 703 | | | | | Median | 0.18 | | | | | 95% KM (Chebyshev) UCL | 0.333 |
| 704 | | | | | SD | 0.169 | | | | | 97.5% KM (Chebyshev) UCL | 0.399 |
| 705 | | | | | k star | 2.143 | | | | | 99% KM (Chebyshev) UCL | 0.528 |
| 706 | | | | | Theta star | 0.103 | | | | | | |
| 707 | | | | | Nu star | 137.2 | **Potential UCLs to Use** | | | | | |
| 708 | | | | | AppChi2 | 111.1 | | | | | 95% KM (t) UCL | 0.241 |
| 709 | | | | | 95% Gamma Approximate UCL | 0.273 | | | | | | |
| 710 | | | | | 95% Adjusted Gamma UCL | 0.276 | | | | | | |
| 711 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 712 | | | | | | | | | | | | |
| 713 | | | | | | | | | | | | |
| 714 | **Chromium** | | | | | | | | | | | |
| 715 | | | | | | | | | | | | |
| 716 | | | | | **General Statistics** | | | | | | | |
| 717 | | | | | Number of Valid Observations | 32 | | | | | Number of Distinct Observations | 32 |
| 718 | | | | | | | | | | | | |
| 719 | | | | | **Raw Statistics** | | **Log-transformed Statistics** | | | | | |
| 720 | | | | | Minimum | 21.4 | | | | | Minimum of Log Data | 3.063 |
| 721 | | | | | Maximum | 471 | | | | | Maximum of Log Data | 6.155 |
| 722 | | | | | Mean | 107.9 | | | | | Mean of log Data | 4.349 |
| 723 | | | | | Median | 69.3 | | | | | SD of log Data | 0.785 |
| 724 | | | | | SD | 107.1 | | | | | | |
| 725 | | | | | Coefficient of Variation | 0.992 | | | | | | |
| 726 | | | | | Skewness | 2.193 | | | | | | |
| 727 | | | | | | | | | | | | |
| 728 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 729 | | | | | **Normal Distribution Test** | | **Lognormal Distribution Test** | | | | | |
| 730 | | | | | Shapiro Wilk Test Statistic | 0.706 | | | | | Shapiro Wilk Test Statistic | 0.954 |
| 731 | | | | | Shapiro Wilk Critical Value | 0.93 | | | | | Shapiro Wilk Critical Value | 0.93 |
| 732 | | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | |
| 733 | | | | | | | | | | | | |
| 734 | | | | | **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | | | | | |
| 735 | | | | | 95% Student's-t UCL | 140 | | | | | 95% H-UCL | 143.3 |
| 736 | | | | | **95% UCLs (Adjusted for Skewness)** | | | | | | 95% Chebyshev (MVUE) UCL | 173.2 |
| 737 | | | | | 95% Adjusted-CLT UCL | 146.9 | | | | | 97.5% Chebyshev (MVUE) UCL | 203.2 |
| 738 | | | | | 95% Modified-t UCL | 141.3 | | | | | 99% Chebyshev (MVUE) UCL | 262.1 |
| 739 | | | | | | | | | | | | |
| 740 | | | | | **Gamma Distribution Test** | | **Data Distribution** | | | | | |
| 741 | | | | | k star (bias corrected) | 1.515 | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 742 | | | | | Theta Star | 71.25 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 743 | | | | | MLE of Mean | 107.9 | | | | | | |
| 744 | | | | | MLE of Standard Deviation | 87.7 | | | | | | |
| 745 | | | | | nu star | 96.96 | | | | | | |
| 746 | | | | | Approximate Chi Square Value (.05) | 75.24 | | | | **Nonparametric Statistics** | | |
| 747 | | | | | Adjusted Level of Significance | 0.0416 | | | | | 95% CLT UCL | 139.1 |
| 748 | | | | | Adjusted Chi Square Value | 74.22 | | | | | 95% Jackknife UCL | 140 |
| 749 | | | | | | | | | | | 95% Standard Bootstrap UCL | 138.1 |
| 750 | | | | | Anderson-Darling Test Statistic | 1.205 | | | | | 95% Bootstrap-t UCL | 153.2 |
| 751 | | | | | Anderson-Darling 5% Critical Value | 0.763 | | | | | 95% Hall's Bootstrap UCL | 147.2 |
| 752 | | | | | Kolmogorov-Smirnov Test Statistic | 0.179 | | | | | 95% Percentile Bootstrap UCL | 139 |
| 753 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.158 | | | | | 95% BCA Bootstrap UCL | 149.2 |
| 754 | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | 95% Chebyshev(Mean, Sd) UCL | 190.5 |
| 755 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 226.2 |
| 756 | | | **Assuming Gamma Distribution** | | | | | | | | 99% Chebyshev(Mean, Sd) UCL | 296.3 |
| 757 | | | | | 95% Approximate Gamma UCL | 139.1 | | | | | | |
| 758 | | | | | 95% Adjusted Gamma UCL | 141 | | | | | | |
| 759 | | | | | | | | | | | | |
| 760 | | | **Potential UCL to Use** | | | | | | | | Use 95% H-UCL | 143.3 |
| 761 | | | | | | | | | | | | |
| 762 | | | | | | | | | | | | |
| 763 | **Cobalt** | | | | | | | | | | | |
| 764 | | | | | | | | | | | | |
| 765 | | | | | **General Statistics** | | | | | | | |
| 766 | | | | | Number of Valid Data | 32 | | | | | Number of Detected Data | 20 |
| 767 | | | | | Number of Distinct Detected Data | 18 | | | | | Number of Non-Detect Data | 12 |
| 768 | | | | | | | | | | | Percent Non-Detects | 37.50% |
| 769 | | | | | | | | | | | | |
| 770 | | | **Raw Statistics** | | | | | | | **Log-transformed Statistics** | | |
| 771 | | | | | Minimum Detected | 2 | | | | | Minimum Detected | 0.693 |
| 772 | | | | | Maximum Detected | 12.8 | | | | | Maximum Detected | 2.549 |
| 773 | | | | | Mean of Detected | 5.011 | | | | | Mean of Detected | 1.5 |
| 774 | | | | | SD of Detected | 2.729 | | | | | SD of Detected | 0.464 |
| 775 | | | | | Minimum Non-Detect | 7.2 | | | | | Minimum Non-Detect | 1.974 |
| 776 | | | | | Maximum Non-Detect | 11 | | | | | Maximum Non-Detect | 2.398 |
| 777 | | | | | | | | | | | | |
| 778 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 31 |
| 779 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 1 |
| 780 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 96.88% |
| 781 | | | | | | | | | | | | |
| 782 | | | | | **UCL Statistics** | | | | | | | |
| 783 | | | **Normal Distribution Test with Detected Values Only** | | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 784 | | | | | Shapiro Wilk Test Statistic | 0.808 | | | | | Shapiro Wilk Test Statistic | 0.959 |
| 785 | | | | | 5% Shapiro Wilk Critical Value | 0.905 | | | | | 5% Shapiro Wilk Critical Value | 0.905 |
| 786 | | | **Data not Normal at 5% Significance Level** | | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 787 | | | | | | | | | | | | |
| 788 | | | **Assuming Normal Distribution** | | | | | | | **Assuming Lognormal Distribution** | | |
| 789 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 790 | | | | | Mean | 4.924 | | | | | Mean | 1.52 |
| 791 | | | | | SD | 2.183 | | | | | SD | 0.376 |
| 792 | | | | | 95% DL/2 (t) UCL | 5.578 | | | | | 95% H-Stat (DL/2) UCL | 7.078 |
| 793 | | | | | | | | | | | | |
| 794 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 795 | | | **MLE method failed to converge properly** | | | | | | | | Mean in Log Scale | 1.471 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 796 | | | | | | | | | | | SD in Log Scale | 0.387 |
| 797 | | | | | | | | | | | Mean in Original Scale | 4.719 |
| 798 | | | | | | | | | | | SD in Original Scale | 2.242 |
| 799 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 5.392 |
| 800 | | | | | | | | | | | 95% BCA Bootstrap UCL | 5.509 |
| 801 | | | | | | | | | | | | |
| 802 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 803 | | | | | k star (bias corrected) | 3.989 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 804 | | | | | Theta Star | 1.256 | | | | | | |
| 805 | | | | | nu star | 159.5 | | | | | | |
| 806 | | | | | | | | | | | | |
| 807 | | | | | A-D Test Statistic | 0.593 | | | | **Nonparametric Statistics** | | |
| 808 | | | | | 5% A-D Critical Value | 0.745 | | | | | Kaplan-Meier (KM) Method | |
| 809 | | | | | K-S Test Statistic | 0.745 | | | | | Mean | 4.746 |
| 810 | | | | | 5% K-S Critical Value | 0.195 | | | | | SD | 2.34 |
| 811 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 0.475 |
| 812 | | | | | | | | | | | 95% KM (t) UCL | 5.551 |
| 813 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 5.527 |
| 814 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 5.552 |
| 815 | | | | | Minimum | 2 | | | | | 95% KM (bootstrap t) UCL | 5.831 |
| 816 | | | | | Maximum | 12.8 | | | | | 95% KM (BCA) UCL | 5.479 |
| 817 | | | | | Mean | 5.094 | | | | | 95% KM (Percentile Bootstrap) UCL | 5.571 |
| 818 | | | | | Median | 5.093 | | | | | 95% KM (Chebyshev) UCL | 6.816 |
| 819 | | | | | SD | 2.223 | | | | | 97.5% KM (Chebyshev) UCL | 7.712 |
| 820 | | | | | k star | 6.043 | | | | | 99% KM (Chebyshev) UCL | 9.472 |
| 821 | | | | | Theta star | 0.843 | | | | | | |
| 822 | | | | | Nu star | 386.8 | | | | **Potential UCLs to Use** | | |
| 823 | | | | | AppChi2 | 342.2 | | | | | 95% KM (Percentile Bootstrap) UCL | 5.571 |
| 824 | | | | | 95% Gamma Approximate UCL | 5.757 | | | | | | |
| 825 | | | | | 95% Adjusted Gamma UCL | 5.795 | | | | | | |
| 826 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 827 | | | | | | | | | | | | |
| 828 | | | | | | | | | | | | |
| 829 | **Copper** | | | | | | | | | | | |
| 830 | | | | | | | | | | | | |
| 831 | | | | | | **General Statistics** | | | | | | |
| 832 | | | | | Number of Valid Observations | 32 | | | | | Number of Distinct Observations | 32 |
| 833 | | | | | | | | | | | | |
| 834 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 835 | | | | | Minimum | 15.7 | | | | | Minimum of Log Data | 2.754 |
| 836 | | | | | Maximum | 1310 | | | | | Maximum of Log Data | 7.178 |
| 837 | | | | | Mean | 203.6 | | | | | Mean of log Data | 4.643 |
| 838 | | | | | Median | 80.1 | | | | | SD of log Data | 1.119 |
| 839 | | | | | SD | 291.7 | | | | | | |
| 840 | | | | | Coefficient of Variation | 1.433 | | | | | | |
| 841 | | | | | Skewness | 2.567 | | | | | | |
| 842 | | | | | | | | | | | | |
| 843 | | | | | | **Relevant UCL Statistics** | | | | | | |
| 844 | | | | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | |
| 845 | | | | | Shapiro Wilk Test Statistic | 0.637 | | | | | Shapiro Wilk Test Statistic | 0.957 |
| 846 | | | | | Shapiro Wilk Critical Value | 0.93 | | | | | Shapiro Wilk Critical Value | 0.93 |
| 847 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 848 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 849 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 850 | | | | | 95% Student's-t UCL | 291.1 | | | | | 95% H-UCL | 325.8 |
| 851 | **95% UCLs (Adjusted for Skewness)** | | | | | | | | | | 95% Chebyshev (MVUE) UCL | 380.4 |
| 852 | | | | | 95% Adjusted-CLT UCL | 313.5 | | | | | 97.5% Chebyshev (MVUE) UCL | 463.5 |
| 853 | | | | | 95% Modified-t UCL | 295 | | | | | 99% Chebyshev (MVUE) UCL | 626.6 |
| 854 | | | | | | | | | | | | |
| 855 | **Gamma Distribution Test** | | | | | | **Data Distribution** | | | | | |
| 856 | | | | | k star (bias corrected) | 0.811 | **Data appear Lognormal at 5% Significance Level** | | | | | |
| 857 | | | | | Theta Star | 251.1 | | | | | | |
| 858 | | | | | MLE of Mean | 203.6 | | | | | | |
| 859 | | | | | MLE of Standard Deviation | 226.1 | | | | | | |
| 860 | | | | | nu star | 51.91 | | | | | | |
| 861 | | | | | Approximate Chi Square Value (.05) | 36.36 | **Nonparametric Statistics** | | | | | |
| 862 | | | | | Adjusted Level of Significance | 0.0416 | | | | | 95% CLT UCL | 288.5 |
| 863 | | | | | Adjusted Chi Square Value | 35.67 | | | | | 95% Jackknife UCL | 291.1 |
| 864 | | | | | | | | | | | 95% Standard Bootstrap UCL | 287.4 |
| 865 | | | | | Anderson-Darling Test Statistic | 1.505 | | | | | 95% Bootstrap-t UCL | 343.7 |
| 866 | | | | | Anderson-Darling 5% Critical Value | 0.782 | | | | | 95% Hall's Bootstrap UCL | 343 |
| 867 | | | | | Kolmogorov-Smirnov Test Statistic | 0.203 | | | | | 95% Percentile Bootstrap UCL | 289.4 |
| 868 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.161 | | | | | 95% BCA Bootstrap UCL | 326.8 |
| 869 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | 95% Chebyshev(Mean, Sd) UCL | 428.4 |
| 870 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 525.7 |
| 871 | **Assuming Gamma Distribution** | | | | | | | | | | 99% Chebyshev(Mean, Sd) UCL | 716.8 |
| 872 | | | | | 95% Approximate Gamma UCL | 290.7 | | | | | | |
| 873 | | | | | 95% Adjusted Gamma UCL | 296.4 | | | | | | |
| 874 | | | | | | | | | | | | |
| 875 | **Potential UCL to Use** | | | | | | | | | | Use 95% H-UCL | 325.8 |
| 876 | | | | | | | | | | | | |
| 877 | | | | | | | | | | | | |
| 878 | **Dibenz_a,h_anthracene** | | | | | | | | | | | |
| 879 | | | | | | | | | | | | |
| 880 | **General Statistics** | | | | | | | | | | | |
| 881 | | | | | Number of Valid Data | 32 | | | | | Number of Detected Data | 27 |
| 882 | | | | | Number of Distinct Detected Data | 26 | | | | | Number of Non-Detect Data | 5 |
| 883 | | | | | | | | | | | Percent Non-Detects | 15.63% |
| 884 | | | | | | | | | | | | |
| 885 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 886 | | | | | Minimum Detected | 0.041 | | | | | Minimum Detected | -3.194 |
| 887 | | | | | Maximum Detected | 0.75 | | | | | Maximum Detected | -0.288 |
| 888 | | | | | Mean of Detected | 0.217 | | | | | Mean of Detected | -1.841 |
| 889 | | | | | SD of Detected | 0.182 | | | | | SD of Detected | 0.808 |
| 890 | | | | | Minimum Non-Detect | 0.35 | | | | | Minimum Non-Detect | -1.05 |
| 891 | | | | | Maximum Non-Detect | 3.4 | | | | | Maximum Non-Detect | 1.224 |
| 892 | | | | | | | | | | | | |
| 893 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 32 |
| 894 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 0 |
| 895 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 100.00% |
| 896 | | | | | | | | | | | | |
| 897 | **UCL Statistics** | | | | | | | | | | | |
| 898 | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | | | | |
| 899 | | | | | Shapiro Wilk Test Statistic | 0.826 | | | | | Shapiro Wilk Test Statistic | 0.961 |
| 900 | | | | | 5% Shapiro Wilk Critical Value | 0.923 | | | | | 5% Shapiro Wilk Critical Value | 0.923 |
| 901 | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 902 | | | | | | | | | | | | |
| 903 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 904 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 905 | | | | | Mean | 0.259 | | | | | Mean | -1.752 |
| 906 | | | | | SD | 0.311 | | | | | SD | 0.85 |
| 907 | | | | | 95% DL/2 (t) UCL | 0.352 | | | | | 95% H-Stat (DL/2) UCL | 0.449 |
| 908 | | | | | | | | | | | | |
| 909 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 910 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | -1.875 |
| 911 | | | | | | | | | | | SD in Log Scale | 0.749 |
| 912 | | | | | | | | | | | Mean in Original Scale | 0.203 |
| 913 | | | | | | | | | | | SD in Original Scale | 0.17 |
| 914 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.254 |
| 915 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.262 |
| 916 | | | | | | | | | | | | |
| 917 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 918 | | | | | k star (bias corrected) | 1.579 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | |
| 919 | | | | | Theta Star | 0.137 | | | | | | |
| 920 | | | | | nu star | 85.28 | | | | | | |
| 921 | | | | | | | | | | | | |
| 922 | | | | | A-D Test Statistic | 0.66 | **Nonparametric Statistics** | | | | | |
| 923 | | | | | 5% A-D Critical Value | 0.76 | | | | | Kaplan-Meier (KM) Method | |
| 924 | | | | | K-S Test Statistic | 0.76 | | | | | Mean | 0.206 |
| 925 | | | | | 5% K-S Critical Value | 0.171 | | | | | SD | 0.171 |
| 926 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.0317 |
| 927 | | | | | | | | | | | 95% KM (t) UCL | 0.26 |
| 928 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 0.258 |
| 929 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.26 |
| 930 | | | | | Minimum | 0.041 | | | | | 95% KM (bootstrap t) UCL | 0.274 |
| 931 | | | | | Maximum | 0.75 | | | | | 95% KM (BCA) UCL | 0.261 |
| 932 | | | | | Mean | 0.217 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.259 |
| 933 | | | | | Median | 0.183 | | | | | 95% KM (Chebyshev) UCL | 0.344 |
| 934 | | | | | SD | 0.167 | | | | | 97.5% KM (Chebyshev) UCL | 0.404 |
| 935 | | | | | k star | 1.855 | | | | | 99% KM (Chebyshev) UCL | 0.521 |
| 936 | | | | | Theta star | 0.117 | | | | | | |
| 937 | | | | | Nu star | 118.7 | **Potential UCLs to Use** | | | | | |
| 938 | | | | | AppChi2 | 94.59 | | | | | 95% KM (BCA) UCL | 0.261 |
| 939 | | | | | 95% Gamma Approximate UCL | 0.273 | | | | | | |
| 940 | | | | | 95% Adjusted Gamma UCL | 0.276 | | | | | | |
| 941 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 942 | | | | | | | | | | | | |
| 943 | | | | | | | | | | | | |
| 944 | **Dibenzofuran** | | | | | | | | | | | |
| 945 | | | | | | | | | | | | |
| 946 | | | | | **General Statistics** | | | | | | | |
| 947 | | | | | Number of Valid Data | 32 | | | | | Number of Detected Data | 14 |
| 948 | | | | | Number of Distinct Detected Data | 13 | | | | | Number of Non-Detect Data | 18 |
| 949 | | | | | | | | | | | Percent Non-Detects | 56.25% |
| 950 | | | | | | | | | | | | |
| 951 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 952 | | | | | Minimum Detected | 0.061 | | | | | Minimum Detected | -2.797 |
| 953 | | | | | Maximum Detected | 1.1 | | | | | Maximum Detected | 0.0953 |
| 954 | | | | | Mean of Detected | 0.202 | | | | | Mean of Detected | -1.942 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 955 | | | | | SD of Detected | 0.264 | | | | | SD of Detected | 0.716 |
| 956 | | | | | Minimum Non-Detect | 0.148 | | | | | Minimum Non-Detect | -1.911 |
| 957 | | | | | Maximum Non-Detect | 0.4 | | | | | Maximum Non-Detect | -0.916 |
| 958 | | | | | | | | | | | | |
| 959 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 31 |
| 960 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 1 |
| 961 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 96.88% |
| 962 | | | | | | | | | | | | |
| 963 | | | | | **UCL Statistics** | | | | | | | |
| 964 | | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | |
| 965 | | | | | Shapiro Wilk Test Statistic | 0.485 | | | | | Shapiro Wilk Test Statistic | 0.836 |
| 966 | | | | | 5% Shapiro Wilk Critical Value | 0.874 | | | | | 5% Shapiro Wilk Critical Value | 0.874 |
| 967 | | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | |
| 968 | | | | | | | | | | | | |
| 969 | | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | |
| 970 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 971 | | | | | Mean | 0.182 | | | | | Mean | -1.88 |
| 972 | | | | | SD | 0.175 | | | | | SD | 0.524 |
| 973 | | | | | 95% DL/2 (t) UCL | 0.235 | | | | | 95% H-Stat (DL/2) UCL | 0.277 |
| 974 | | | | | | | | | | | | |
| 975 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 976 | | | | | **MLE method failed to converge properly** | | | | | | Mean in Log Scale | -2.044 |
| 977 | | | | | | | | | | | SD in Log Scale | 0.523 |
| 978 | | | | | | | | | | | Mean in Original Scale | 0.159 |
| 979 | | | | | | | | | | | SD in Original Scale | 0.178 |
| 980 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.22 |
| 981 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.247 |
| 982 | | | | | | | | | | | | |
| 983 | | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | |
| 984 | | | | | k star (bias corrected) | 1.301 | | | | | **Data do not follow a Discernable Distribution (0.05)** | |
| 985 | | | | | Theta Star | 0.156 | | | | | | |
| 986 | | | | | nu star | 36.44 | | | | | | |
| 987 | | | | | | | | | | | | |
| 988 | | | | | A-D Test Statistic | 1.481 | | | | | **Nonparametric Statistics** | |
| 989 | | | | | 5% A-D Critical Value | 0.75 | | | | | Kaplan-Meier (KM) Method | |
| 990 | | | | | K-S Test Statistic | 0.75 | | | | | Mean | 0.158 |
| 991 | | | | | 5% K-S Critical Value | 0.233 | | | | | SD | 0.177 |
| 992 | | | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | SE of Mean | 0.0339 |
| 993 | | | | | | | | | | | 95% KM (t) UCL | 0.215 |
| 994 | | | | | **Assuming Gamma Distribution** | | | | | | 95% KM (z) UCL | 0.214 |
| 995 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.215 |
| 996 | | | | | Minimum | 0.0347 | | | | | 95% KM (bootstrap t) UCL | 0.298 |
| 997 | | | | | Maximum | 1.1 | | | | | 95% KM (BCA) UCL | 0.22 |
| 998 | | | | | Mean | 0.221 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.218 |
| 999 | | | | | Median | 0.174 | | | | | 95% KM (Chebyshev) UCL | 0.306 |
| 1000 | | | | | SD | 0.194 | | | | | 97.5% KM (Chebyshev) UCL | 0.37 |
| 1001 | | | | | k star | 1.968 | | | | | 99% KM (Chebyshev) UCL | 0.495 |
| 1002 | | | | | Theta star | 0.112 | | | | | | |
| 1003 | | | | | Nu star | 125.9 | | | | | **Potential UCLs to Use** | |
| 1004 | | | | | AppChi2 | 101 | | | | | 95% KM (t) UCL | 0.215 |
| 1005 | | | | | 95% Gamma Approximate UCL | 0.275 | | | | | 95% KM (% Bootstrap) UCL | 0.218 |
| 1006 | | | | | 95% Adjusted Gamma UCL | 0.279 | | | | | | |
| 1007 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1008 | | | | | | | | | | | | |
| 1009 | | | | | | | | | | | | |
| 1010 | **Dieldrin** | | | | | | | | | | | |
| 1011 | | | | | | | | | | | | |
| 1012 | | | | | | **General Statistics** | | | | | | |
| 1013 | | | | | Number of Valid Data | 32 | | | | Number of Detected Data | | 29 |
| 1014 | | | | | Number of Distinct Detected Data | 28 | | | | Number of Non-Detect Data | | 3 |
| 1015 | | | | | | | | | | Percent Non-Detects | | 9.38% |
| 1016 | | | | | | | | | | | | |
| 1017 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1018 | | | | | Minimum Detected | 0.0031 | | | | Minimum Detected | | -5.776 |
| 1019 | | | | | Maximum Detected | 0.81 | | | | Maximum Detected | | -0.211 |
| 1020 | | | | | Mean of Detected | 0.0973 | | | | Mean of Detected | | -3.171 |
| 1021 | | | | | SD of Detected | 0.161 | | | | SD of Detected | | 1.311 |
| 1022 | | | | | Minimum Non-Detect | 0.0035 | | | | Minimum Non-Detect | | -5.655 |
| 1023 | | | | | Maximum Non-Detect | 0.0038 | | | | Maximum Non-Detect | | -5.573 |
| 1024 | | | | | | | | | | | | |
| 1025 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 4 |
| 1026 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 28 |
| 1027 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 12.50% |
| 1028 | | | | | | | | | | | | |
| 1029 | | | | | | **UCL Statistics** | | | | | | |
| 1030 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 1031 | | | | | Shapiro Wilk Test Statistic | 0.572 | | | | Shapiro Wilk Test Statistic | | 0.979 |
| 1032 | | | | | 5% Shapiro Wilk Critical Value | 0.926 | | | | 5% Shapiro Wilk Critical Value | | 0.926 |
| 1033 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1034 | | | | | | | | | | | | |
| 1035 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1036 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 1037 | | | | | Mean | 0.0883 | | | | Mean | | -3.463 |
| 1038 | | | | | SD | 0.155 | | | | SD | | 1.552 |
| 1039 | | | | | 95% DL/2 (t) UCL | 0.135 | | | | 95% H-Stat (DL/2) UCL | | 0.198 |
| 1040 | | | | | | | | | | | | |
| 1041 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | Log ROS Method | | |
| 1042 | | | | | Mean | 0.0747 | | | | Mean in Log Scale | | -3.424 |
| 1043 | | | | | SD | 0.167 | | | | SD in Log Scale | | 1.483 |
| 1044 | | | | | 95% MLE (t) UCL | 0.125 | | | | Mean in Original Scale | | 0.0884 |
| 1045 | | | | | 95% MLE (Tiku) UCL | 0.122 | | | | SD in Original Scale | | 0.155 |
| 1046 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.133 |
| 1047 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.157 |
| 1048 | | | | | | | | | | | | |
| 1049 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 1050 | | | | | k star (bias corrected) | 0.665 | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1051 | | | | | Theta Star | 0.146 | | | | | | |
| 1052 | | | | | nu star | 38.6 | | | | | | |
| 1053 | | | | | | | | | | | | |
| 1054 | | | | | A-D Test Statistic | 1.094 | | | | **Nonparametric Statistics** | | |
| 1055 | | | | | 5% A-D Critical Value | 0.787 | | | | Kaplan-Meier (KM) Method | | |
| 1056 | | | | | K-S Test Statistic | 0.787 | | | | Mean | | 0.0885 |
| 1057 | | | | | 5% K-S Critical Value | 0.169 | | | | SD | | 0.153 |
| 1058 | | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | SE of Mean | | 0.0275 |
| 1059 | | | | | | | | | | 95% KM (t) UCL | | 0.135 |
| 1060 | | | | **Assuming Gamma Distribution** | | | | | | 95% KM (z) UCL | | 0.134 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1061 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | | 0.135 |
| 1062 | | | | | Minimum | 1E-09 | | | | 95% KM (bootstrap t) UCL | | 0.177 |
| 1063 | | | | | Maximum | 0.81 | | | | 95% KM (BCA) UCL | | 0.138 |
| 1064 | | | | | Mean | 0.0882 | | | | 95% KM (Percentile Bootstrap) UCL | | 0.138 |
| 1065 | | | | | Median | 0.033 | | | | 95% KM (Chebyshev) UCL | | 0.208 |
| 1066 | | | | | SD | 0.155 | | | | 97.5% KM (Chebyshev) UCL | | 0.26 |
| 1067 | | | | | k star | 0.284 | | | | 99% KM (Chebyshev) UCL | | 0.362 |
| 1068 | | | | | Theta star | 0.311 | | | | | | |
| 1069 | | | | | Nu star | 18.17 | | | | **Potential UCLs to Use** | | |
| 1070 | | | | | AppChi2 | 9.516 | | | | 97.5% KM (Chebyshev) UCL | | 0.26 |
| 1071 | | | | | 95% Gamma Approximate UCL | 0.168 | | | | | | |
| 1072 | | | | | 95% Adjusted Gamma UCL | 0.175 | | | | | | |
| 1073 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1074 | | | | | | | | | | | | |
| 1075 | | | | | | | | | | | | |
| 1076 | **Indeno(1,2,3-cd)pyrene** | | | | | | | | | | | |
| 1077 | | | | | | | | | | | | |
| 1078 | | | | | **General Statistics** | | | | | | | |
| 1079 | | | | | Number of Valid Observations | 32 | | | | Number of Distinct Observations | | 30 |
| 1080 | | | | | | | | | | | | |
| 1081 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1082 | | | | | Minimum | 0.052 | | | | Minimum of Log Data | | -2.957 |
| 1083 | | | | | Maximum | 2.4 | | | | Maximum of Log Data | | 0.875 |
| 1084 | | | | | Mean | 0.611 | | | | Mean of log Data | | -0.916 |
| 1085 | | | | | Median | 0.395 | | | | SD of log Data | | 1.002 |
| 1086 | | | | | SD | 0.552 | | | | | | |
| 1087 | | | | | Coefficient of Variation | 0.904 | | | | | | |
| 1088 | | | | | Skewness | 1.451 | | | | | | |
| 1089 | | | | | | | | | | | | |
| 1090 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 1091 | | | | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | |
| 1092 | | | | | Shapiro Wilk Test Statistic | 0.846 | | | | Shapiro Wilk Test Statistic | | 0.968 |
| 1093 | | | | | Shapiro Wilk Critical Value | 0.93 | | | | Shapiro Wilk Critical Value | | 0.93 |
| 1094 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1095 | | | | | | | | | | | | |
| 1096 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1097 | | | | | 95% Student's-t UCL | 0.776 | | | | 95% H-UCL | | 1.023 |
| 1098 | | | | **95% UCLs (Adjusted for Skewness)** | | | | | | 95% Chebyshev (MVUE) UCL | | 1.221 |
| 1099 | | | | | 95% Adjusted-CLT UCL | 0.798 | | | | 97.5% Chebyshev (MVUE) UCL | | 1.469 |
| 1100 | | | | | 95% Modified-t UCL | 0.78 | | | | 99% Chebyshev (MVUE) UCL | | 1.958 |
| 1101 | | | | | | | | | | | | |
| 1102 | | | | **Gamma Distribution Test** | | | | | | **Data Distribution** | | |
| 1103 | | | | | k star (bias corrected) | 1.221 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 1104 | | | | | Theta Star | 0.5 | | | | | | |
| 1105 | | | | | MLE of Mean | 0.611 | | | | | | |
| 1106 | | | | | MLE of Standard Deviation | 0.553 | | | | | | |
| 1107 | | | | | nu star | 78.11 | | | | | | |
| 1108 | | | | | Approximate Chi Square Value (.05) | 58.75 | | | | **Nonparametric Statistics** | | |
| 1109 | | | | | Adjusted Level of Significance | 0.0416 | | | | 95% CLT UCL | | 0.771 |
| 1110 | | | | | Adjusted Chi Square Value | 57.85 | | | | 95% Jackknife UCL | | 0.776 |
| 1111 | | | | | | | | | | 95% Standard Bootstrap UCL | | 0.766 |
| 1112 | | | | | Anderson-Darling Test Statistic | 0.283 | | | | 95% Bootstrap-t UCL | | 0.813 |
| 1113 | | | | | Anderson-Darling 5% Critical Value | 0.768 | | | | 95% Hall's Bootstrap UCL | | 0.828 |

| | A–E | F | G–K | L |
|---|---|---|---|---|
| 1114 | Kolmogorov-Smirnov Test Statistic | 0.0933 | 95% Percentile Bootstrap UCL | 0.777 |
| 1115 | Kolmogorov-Smirnov 5% Critical Value | 0.159 | 95% BCA Bootstrap UCL | 0.788 |
| 1116 | **Data appear Gamma Distributed at 5% Significance Level** | | 95% Chebyshev(Mean, Sd) UCL | 1.036 |
| 1117 | | | 97.5% Chebyshev(Mean, Sd) UCL | 1.22 |
| 1118 | **Assuming Gamma Distribution** | | 99% Chebyshev(Mean, Sd) UCL | 1.582 |
| 1119 | 95% Approximate Gamma UCL | 0.812 | | |
| 1120 | 95% Adjusted Gamma UCL | 0.825 | | |
| 1121 | | | | |
| 1122 | **Potential UCL to Use** | | Use 95% Approximate Gamma UCL | 0.812 |
| 1123 | | | | |
| 1124 | | | | |
| 1125 | Iron | | | |
| 1126 | | | | |
| 1127 | **General Statistics** | | | |
| 1128 | Number of Valid Observations | 32 | Number of Distinct Observations | 29 |
| 1129 | | | | |
| 1130 | **Raw Statistics** | | **Log-transformed Statistics** | |
| 1131 | Minimum | 6130 | Minimum of Log Data | 8.721 |
| 1132 | Maximum | 55750 | Maximum of Log Data | 10.93 |
| 1133 | Mean | 15723 | Mean of log Data | 9.489 |
| 1134 | Median | 11250 | SD of log Data | 0.556 |
| 1135 | SD | 11121 | | |
| 1136 | Coefficient of Variation | 0.707 | | |
| 1137 | Skewness | 2.031 | | |
| 1138 | | | | |
| 1139 | **Relevant UCL Statistics** | | | |
| 1140 | **Normal Distribution Test** | | **Lognormal Distribution Test** | |
| 1141 | Shapiro Wilk Test Statistic | 0.741 | Shapiro Wilk Test Statistic | 0.883 |
| 1142 | Shapiro Wilk Critical Value | 0.93 | Shapiro Wilk Critical Value | 0.93 |
| 1143 | **Data not Normal at 5% Significance Level** | | **Data not Lognormal at 5% Significance Level** | |
| 1144 | | | | |
| 1145 | **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
| 1146 | 95% Student's-t UCL | 19056 | 95% H-UCL | 18805 |
| 1147 | **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 22290 |
| 1148 | 95% Adjusted-CLT UCL | 19711 | 97.5% Chebyshev (MVUE) UCL | 25294 |
| 1149 | 95% Modified-t UCL | 19174 | 99% Chebyshev (MVUE) UCL | 31195 |
| 1150 | | | | |
| 1151 | **Gamma Distribution Test** | | **Data Distribution** | |
| 1152 | k star (bias corrected) | 2.776 | **Data do not follow a Discernable Distribution (0.05)** | |
| 1153 | Theta Star | 5664 | | |
| 1154 | MLE of Mean | 15723 | | |
| 1155 | MLE of Standard Deviation | 9437 | | |
| 1156 | nu star | 177.7 | | |
| 1157 | Approximate Chi Square Value (.05) | 147.8 | **Nonparametric Statistics** | |
| 1158 | Adjusted Level of Significance | 0.0416 | 95% CLT UCL | 18957 |
| 1159 | Adjusted Chi Square Value | 146.4 | 95% Jackknife UCL | 19056 |
| 1160 | | | 95% Standard Bootstrap UCL | 18879 |
| 1161 | Anderson-Darling Test Statistic | 2.017 | 95% Bootstrap-t UCL | 20267 |
| 1162 | Anderson-Darling 5% Critical Value | 0.753 | 95% Hall's Bootstrap UCL | 20216 |
| 1163 | Kolmogorov-Smirnov Test Statistic | 0.262 | 95% Percentile Bootstrap UCL | 18953 |
| 1164 | Kolmogorov-Smirnov 5% Critical Value | 0.157 | 95% BCA Bootstrap UCL | 19739 |
| 1165 | **Data not Gamma Distributed at 5% Significance Level** | | 95% Chebyshev(Mean, Sd) UCL | 24292 |
| 1166 | | | 97.5% Chebyshev(Mean, Sd) UCL | 28000 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1167 | **Assuming Gamma Distribution** | | | | | | 99% Chebyshev(Mean, Sd) UCL | | | | | 35284 |
| 1168 | 95% Approximate Gamma UCL | | | | | 18895 | | | | | | |
| 1169 | 95% Adjusted Gamma UCL | | | | | 19083 | | | | | | |
| 1170 | | | | | | | | | | | | |
| 1171 | **Potential UCL to Use** | | | | | | Use 95% Chebyshev (Mean, Sd) UCL | | | | | 24292 |
| 1172 | | | | | | | | | | | | |
| 1173 | | | | | | | | | | | | |
| 1174 | **Lead** | | | | | | | | | | | |
| 1175 | | | | | | | | | | | | |
| 1176 | **General Statistics** | | | | | | | | | | | |
| 1177 | Number of Valid Observations | | | | | 32 | Number of Distinct Observations | | | | | 32 |
| 1178 | | | | | | | | | | | | |
| 1179 | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | | | | |
| 1180 | Minimum | | | | | 19.1 | Minimum of Log Data | | | | | 2.95 |
| 1181 | Maximum | | | | | 2230 | Maximum of Log Data | | | | | 7.71 |
| 1182 | Mean | | | | | 357.9 | Mean of log Data | | | | | 4.991 |
| 1183 | Median | | | | | 107 | SD of log Data | | | | | 1.265 |
| 1184 | SD | | | | | 573.3 | | | | | | |
| 1185 | Coefficient of Variation | | | | | 1.602 | | | | | | |
| 1186 | Skewness | | | | | 2.234 | | | | | | |
| 1187 | | | | | | | | | | | | |
| 1188 | **Relevant UCL Statistics** | | | | | | | | | | | |
| 1189 | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | | | | |
| 1190 | Shapiro Wilk Test Statistic | | | | | 0.605 | Shapiro Wilk Test Statistic | | | | | 0.92 |
| 1191 | Shapiro Wilk Critical Value | | | | | 0.93 | Shapiro Wilk Critical Value | | | | | 0.93 |
| 1192 | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | | | | | |
| 1193 | | | | | | | | | | | | |
| 1194 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 1195 | 95% Student's-t UCL | | | | | 529.7 | 95% H-UCL | | | | | 613.6 |
| 1196 | **95% UCLs (Adjusted for Skewness)** | | | | | | 95% Chebyshev (MVUE) UCL | | | | | 685.9 |
| 1197 | 95% Adjusted-CLT UCL | | | | | 567.4 | 97.5% Chebyshev (MVUE) UCL | | | | | 847 |
| 1198 | 95% Modified-t UCL | | | | | 536.4 | 99% Chebyshev (MVUE) UCL | | | | | 1163 |
| 1199 | | | | | | | | | | | | |
| 1200 | **Gamma Distribution Test** | | | | | | **Data Distribution** | | | | | |
| 1201 | k star (bias corrected) | | | | | 0.639 | **Data do not follow a Discernable Distribution (0.05)** | | | | | |
| 1202 | Theta Star | | | | | 560.2 | | | | | | |
| 1203 | MLE of Mean | | | | | 357.9 | | | | | | |
| 1204 | MLE of Standard Deviation | | | | | 447.8 | | | | | | |
| 1205 | nu star | | | | | 40.89 | | | | | | |
| 1206 | Approximate Chi Square Value (.05) | | | | | 27.23 | **Nonparametric Statistics** | | | | | |
| 1207 | Adjusted Level of Significance | | | | | 0.0416 | 95% CLT UCL | | | | | 524.6 |
| 1208 | Adjusted Chi Square Value | | | | | 26.64 | 95% Jackknife UCL | | | | | 529.7 |
| 1209 | | | | | | | 95% Standard Bootstrap UCL | | | | | 523.3 |
| 1210 | Anderson-Darling Test Statistic | | | | | 2.336 | 95% Bootstrap-t UCL | | | | | 615.1 |
| 1211 | Anderson-Darling 5% Critical Value | | | | | 0.794 | 95% Hall's Bootstrap UCL | | | | | 530.7 |
| 1212 | Kolmogorov-Smirnov Test Statistic | | | | | 0.238 | 95% Percentile Bootstrap UCL | | | | | 531.9 |
| 1213 | Kolmogorov-Smirnov 5% Critical Value | | | | | 0.162 | 95% BCA Bootstrap UCL | | | | | 581.4 |
| 1214 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | 95% Chebyshev(Mean, Sd) UCL | | | | | 799.7 |
| 1215 | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | | | | | 990.8 |
| 1216 | **Assuming Gamma Distribution** | | | | | | 99% Chebyshev(Mean, Sd) UCL | | | | | 1366 |
| 1217 | 95% Approximate Gamma UCL | | | | | 537.3 | | | | | | |
| 1218 | 95% Adjusted Gamma UCL | | | | | 549.4 | | | | | | |
| 1219 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1220 | | | Potential UCL to Use | | | | | | Use 99% Chebyshev (Mean, Sd) UCL | | | 1366 |
| 1221 | | | | | | | | | | | | |
| 1222 | | | | | | | | | | | | |
| 1223 | Manganese | | | | | | | | | | | |
| 1224 | | | | | | | | | | | | |
| 1225 | | | | | General Statistics | | | | | | | |
| 1226 | | | | | Number of Valid Observations | 32 | | | Number of Distinct Observations | | | 30 |
| 1227 | | | | | | | | | | | | |
| 1228 | | | | Raw Statistics | | | | | Log-transformed Statistics | | | |
| 1229 | | | | | Minimum | 86.1 | | | Minimum of Log Data | | | 4.456 |
| 1230 | | | | | Maximum | 1680 | | | Maximum of Log Data | | | 7.427 |
| 1231 | | | | | Mean | 272.4 | | | Mean of log Data | | | 5.337 |
| 1232 | | | | | Median | 191 | | | SD of log Data | | | 0.67 |
| 1233 | | | | | SD | 288 | | | | | | |
| 1234 | | | | | Coefficient of Variation | 1.057 | | | | | | |
| 1235 | | | | | Skewness | 3.999 | | | | | | |
| 1236 | | | | | | | | | | | | |
| 1237 | | | | | Relevant UCL Statistics | | | | | | | |
| 1238 | | | | Normal Distribution Test | | | | | Lognormal Distribution Test | | | |
| 1239 | | | | | Shapiro Wilk Test Statistic | 0.566 | | | Shapiro Wilk Test Statistic | | | 0.913 |
| 1240 | | | | | Shapiro Wilk Critical Value | 0.93 | | | Shapiro Wilk Critical Value | | | 0.93 |
| 1241 | | | | Data not Normal at 5% Significance Level | | | | | Data not Lognormal at 5% Significance Level | | | |
| 1242 | | | | | | | | | | | | |
| 1243 | | | | Assuming Normal Distribution | | | | | Assuming Lognormal Distribution | | | |
| 1244 | | | | | 95% Student's-t UCL | 358.7 | | | 95% H-UCL | | | 334.1 |
| 1245 | | | | 95% UCLs (Adjusted for Skewness) | | | | | 95% Chebyshev (MVUE) UCL | | | 401.5 |
| 1246 | | | | | 95% Adjusted-CLT UCL | 394.6 | | | 97.5% Chebyshev (MVUE) UCL | | | 463.5 |
| 1247 | | | | | 95% Modified-t UCL | 364.7 | | | 99% Chebyshev (MVUE) UCL | | | 585.4 |
| 1248 | | | | | | | | | | | | |
| 1249 | | | | Gamma Distribution Test | | | | | Data Distribution | | | |
| 1250 | | | | | k star (bias corrected) | 1.837 | | | Data Follow Appr. Gamma Distribution at 5% Significance Level | | | |
| 1251 | | | | | Theta Star | 148.3 | | | | | | |
| 1252 | | | | | MLE of Mean | 272.4 | | | | | | |
| 1253 | | | | | MLE of Standard Deviation | 201 | | | | | | |
| 1254 | | | | | nu star | 117.5 | | | | | | |
| 1255 | | | | | Approximate Chi Square Value (.05) | 93.51 | | | Nonparametric Statistics | | | |
| 1256 | | | | | Adjusted Level of Significance | 0.0416 | | | 95% CLT UCL | | | 356.1 |
| 1257 | | | | | Adjusted Chi Square Value | 92.36 | | | 95% Jackknife UCL | | | 358.7 |
| 1258 | | | | | | | | | 95% Standard Bootstrap UCL | | | 354.3 |
| 1259 | | | | | Anderson-Darling Test Statistic | 1.322 | | | 95% Bootstrap-t UCL | | | 453.3 |
| 1260 | | | | | Anderson-Darling 5% Critical Value | 0.759 | | | 95% Hall's Bootstrap UCL | | | 699 |
| 1261 | | | | | Kolmogorov-Smirnov Test Statistic | 0.149 | | | 95% Percentile Bootstrap UCL | | | 363.8 |
| 1262 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.158 | | | 95% BCA Bootstrap UCL | | | 416.3 |
| 1263 | | | | Data follow Appr. Gamma Distribution at 5% Significance Level | | | | | 95% Chebyshev(Mean, Sd) UCL | | | 494.3 |
| 1264 | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | | | 590.3 |
| 1265 | | | | Assuming Gamma Distribution | | | | | 99% Chebyshev(Mean, Sd) UCL | | | 778.9 |
| 1266 | | | | | 95% Approximate Gamma UCL | 342.4 | | | | | | |
| 1267 | | | | | 95% Adjusted Gamma UCL | 346.7 | | | | | | |
| 1268 | | | | | | | | | | | | |
| 1269 | | | | Potential UCL to Use | | | | | Use 95% Approximate Gamma UCL | | | 342.4 |
| 1270 | | | | | | | | | | | | |
| 1271 | | | | | | | | | | | | |
| 1272 | Mercury | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1273 | | | | | | | | | | | | |
| 1274 | | | | | | General Statistics | | | | | | |
| 1275 | | | | | Number of Valid Observations | 32 | | | | | Number of Distinct Observations | 29 |
| 1276 | | | | | | | | | | | | |
| 1277 | | | | | Raw Statistics | | | | | | Log-transformed Statistics | |
| 1278 | | | | | Minimum | 0.037 | | | | | Minimum of Log Data | -3.297 |
| 1279 | | | | | Maximum | 1.8 | | | | | Maximum of Log Data | 0.588 |
| 1280 | | | | | Mean | 0.421 | | | | | Mean of log Data | -1.225 |
| 1281 | | | | | Median | 0.285 | | | | | SD of log Data | 0.879 |
| 1282 | | | | | SD | 0.397 | | | | | | |
| 1283 | | | | | Coefficient of Variation | 0.943 | | | | | | |
| 1284 | | | | | Skewness | 2.037 | | | | | | |
| 1285 | | | | | | | | | | | | |
| 1286 | | | | | | Relevant UCL Statistics | | | | | | |
| 1287 | | | | | Normal Distribution Test | | | | | | Lognormal Distribution Test | |
| 1288 | | | | | Shapiro Wilk Test Statistic | 0.775 | | | | | Shapiro Wilk Test Statistic | 0.986 |
| 1289 | | | | | Shapiro Wilk Critical Value | 0.93 | | | | | Shapiro Wilk Critical Value | 0.93 |
| 1290 | | | | | Data not Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | |
| 1291 | | | | | | | | | | | | |
| 1292 | | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | |
| 1293 | | | | | 95% Student's-t UCL | 0.54 | | | | | 95% H-UCL | 0.621 |
| 1294 | | | | | 95% UCLs (Adjusted for Skewness) | | | | | | 95% Chebyshev (MVUE) UCL | 0.749 |
| 1295 | | | | | 95% Adjusted-CLT UCL | 0.564 | | | | | 97.5% Chebyshev (MVUE) UCL | 0.889 |
| 1296 | | | | | 95% Modified-t UCL | 0.544 | | | | | 99% Chebyshev (MVUE) UCL | 1.164 |
| 1297 | | | | | | | | | | | | |
| 1298 | | | | | Gamma Distribution Test | | | | | | Data Distribution | |
| 1299 | | | | | k star (bias corrected) | 1.409 | | | | | Data appear Gamma Distributed at 5% Significance Level | |
| 1300 | | | | | Theta Star | 0.299 | | | | | | |
| 1301 | | | | | MLE of Mean | 0.421 | | | | | | |
| 1302 | | | | | MLE of Standard Deviation | 0.355 | | | | | | |
| 1303 | | | | | nu star | 90.21 | | | | | | |
| 1304 | | | | | Approximate Chi Square Value (.05) | 69.31 | | | | | Nonparametric Statistics | |
| 1305 | | | | | Adjusted Level of Significance | 0.0416 | | | | | 95% CLT UCL | 0.537 |
| 1306 | | | | | Adjusted Chi Square Value | 68.33 | | | | | 95% Jackknife UCL | 0.54 |
| 1307 | | | | | | | | | | | 95% Standard Bootstrap UCL | 0.538 |
| 1308 | | | | | Anderson-Darling Test Statistic | 0.473 | | | | | 95% Bootstrap-t UCL | 0.574 |
| 1309 | | | | | Anderson-Darling 5% Critical Value | 0.764 | | | | | 95% Hall's Bootstrap UCL | 0.572 |
| 1310 | | | | | Kolmogorov-Smirnov Test Statistic | 0.127 | | | | | 95% Percentile Bootstrap UCL | 0.543 |
| 1311 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.158 | | | | | 95% BCA Bootstrap UCL | 0.57 |
| 1312 | | | | | Data appear Gamma Distributed at 5% Significance Level | | | | | | 95% Chebyshev(Mean, Sd) UCL | 0.727 |
| 1313 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 0.86 |
| 1314 | | | | | Assuming Gamma Distribution | | | | | | 99% Chebyshev(Mean, Sd) UCL | 1.12 |
| 1315 | | | | | 95% Approximate Gamma UCL | 0.548 | | | | | | |
| 1316 | | | | | 95% Adjusted Gamma UCL | 0.556 | | | | | | |
| 1317 | | | | | | | | | | | | |
| 1318 | | | | | Potential UCL to Use | | | | | | Use 95% Approximate Gamma UCL | 0.548 |
| 1319 | | | | | | | | | | | | |
| 1320 | | | | | | | | | | | | |
| 1321 | Nickel | | | | | | | | | | | |
| 1322 | | | | | | | | | | | | |
| 1323 | | | | | | General Statistics | | | | | | |
| 1324 | | | | | Number of Valid Data | 32 | | | | | Number of Detected Data | 30 |
| 1325 | | | | | Number of Distinct Detected Data | 28 | | | | | Number of Non-Detect Data | 2 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1326 | | | | | | | | | | | Percent Non-Detects | 6.25% |
| 1327 | | | | | | | | | | | | |
| 1328 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1329 | | | | | Minimum Detected | 4.6 | | | | | Minimum Detected | 1.526 |
| 1330 | | | | | Maximum Detected | 158 | | | | | Maximum Detected | 5.063 |
| 1331 | | | | | Mean of Detected | 21.49 | | | | | Mean of Detected | 2.693 |
| 1332 | | | | | SD of Detected | 28.68 | | | | | SD of Detected | 0.758 |
| 1333 | | | | | Minimum Non-Detect | 7 | | | | | Minimum Non-Detect | 1.946 |
| 1334 | | | | | Maximum Non-Detect | 9 | | | | | Maximum Non-Detect | 2.197 |
| 1335 | | | | | | | | | | | | |
| 1336 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 9 |
| 1337 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 23 |
| 1338 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 28.13% |
| 1339 | | | | | | | | | | | | |
| 1340 | | | | | **UCL Statistics** | | | | | | | |
| 1341 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 1342 | | | | | Shapiro Wilk Test Statistic | 0.516 | | | | | Shapiro Wilk Test Statistic | 0.904 |
| 1343 | | | | | 5% Shapiro Wilk Critical Value | 0.927 | | | | | 5% Shapiro Wilk Critical Value | 0.927 |
| 1344 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | | |
| 1345 | | | | | | | | | | | | |
| 1346 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1347 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1348 | | | | | Mean | 20.4 | | | | | Mean | 2.61 |
| 1349 | | | | | SD | 28.07 | | | | | SD | 0.802 |
| 1350 | | | | | 95% DL/2 (t) UCL | 28.81 | | | | | 95% H-Stat (DL/2) UCL | 25.21 |
| 1351 | | | | | | | | | | | | |
| 1352 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 1353 | | | | | Mean | 13.97 | | | | | Mean in Log Scale | 2.621 |
| 1354 | | | | | SD | 33.99 | | | | | SD in Log Scale | 0.787 |
| 1355 | | | | | 95% MLE (t) UCL | 24.16 | | | | | Mean in Original Scale | 20.45 |
| 1356 | | | | | 95% MLE (Tiku) UCL | 24.43 | | | | | SD in Original Scale | 28.04 |
| 1357 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 29.08 |
| 1358 | | | | | | | | | | | 95% BCA Bootstrap UCL | 35.1 |
| 1359 | | | | | | | | | | | | |
| 1360 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 1361 | | | | | k star (bias corrected) | 1.352 | | | | **Data do not follow a Discernable Distribution (0.05)** | | |
| 1362 | | | | | Theta Star | 15.89 | | | | | | |
| 1363 | | | | | nu star | 81.14 | | | | | | |
| 1364 | | | | | | | | | | | | |
| 1365 | | | | | A-D Test Statistic | 2.03 | | | | **Nonparametric Statistics** | | |
| 1366 | | | | | 5% A-D Critical Value | 0.764 | | | | | Kaplan-Meier (KM) Method | |
| 1367 | | | | | K-S Test Statistic | 0.764 | | | | | Mean | 20.54 |
| 1368 | | | | | 5% K-S Critical Value | 0.163 | | | | | SD | 27.56 |
| 1369 | | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 4.955 |
| 1370 | | | | | | | | | | | 95% KM (t) UCL | 28.94 |
| 1371 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 28.69 |
| 1372 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 28.93 |
| 1373 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 40.19 |
| 1374 | | | | | Maximum | 158 | | | | | 95% KM (BCA) UCL | 30.42 |
| 1375 | | | | | Mean | 20.17 | | | | | 95% KM (Percentile Bootstrap) UCL | 29.57 |
| 1376 | | | | | Median | 11.4 | | | | | 95% KM (Chebyshev) UCL | 42.13 |
| 1377 | | | | | SD | 28.23 | | | | | 97.5% KM (Chebyshev) UCL | 51.48 |
| 1378 | | | | | k star | 0.518 | | | | | 99% KM (Chebyshev) UCL | 69.84 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1379 | | | | | Theta star | 38.91 | | | | | | |
| 1380 | | | | | Nu star | 33.17 | Potential UCLs to Use | | | | | |
| 1381 | | | | | AppChi2 | 21 | | | | 95% KM (Chebyshev) UCL | | 42.13 |
| 1382 | | | | 95% Gamma Approximate UCL | | 31.85 | | | | | | |
| 1383 | | | | 95% Adjusted Gamma UCL | | 32.66 | | | | | | |
| 1384 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 1385 | | | | | | | | | | | | |
| 1386 | | | | | | | | | | | | |
| 1387 | Phenanthrene | | | | | | | | | | | |
| 1388 | | | | | | | | | | | | |
| 1389 | | | | | General Statistics | | | | | | | |
| 1390 | | | | Number of Valid Observations | | 32 | | | | Number of Distinct Observations | | 28 |
| 1391 | | | | | | | | | | | | |
| 1392 | | | | Raw Statistics | | | Log-transformed Statistics | | | | | |
| 1393 | | | | Minimum | | 0.061 | | | | Minimum of Log Data | | -2.797 |
| 1394 | | | | Maximum | | 13 | | | | Maximum of Log Data | | 2.565 |
| 1395 | | | | Mean | | 1.519 | | | | Mean of log Data | | -0.345 |
| 1396 | | | | Median | | 0.643 | | | | SD of log Data | | 1.277 |
| 1397 | | | | SD | | 2.387 | | | | | | |
| 1398 | | | | Coefficient of Variation | | 1.572 | | | | | | |
| 1399 | | | | Skewness | | 3.858 | | | | | | |
| 1400 | | | | | | | | | | | | |
| 1401 | | | | | Relevant UCL Statistics | | | | | | | |
| 1402 | | | | Normal Distribution Test | | | Lognormal Distribution Test | | | | | |
| 1403 | | | | Shapiro Wilk Test Statistic | | 0.57 | | | | Shapiro Wilk Test Statistic | | 0.977 |
| 1404 | | | | Shapiro Wilk Critical Value | | 0.93 | | | | Shapiro Wilk Critical Value | | 0.93 |
| 1405 | | | | Data not Normal at 5% Significance Level | | | Data appear Lognormal at 5% Significance Level | | | | | |
| 1406 | | | | | | | | | | | | |
| 1407 | | | | Assuming Normal Distribution | | | Assuming Lognormal Distribution | | | | | |
| 1408 | | | | 95% Student's-t UCL | | 2.234 | | | | 95% H-UCL | | 3.03 |
| 1409 | | | | 95% UCLs (Adjusted for Skewness) | | | | | | 95% Chebyshev (MVUE) UCL | | 3.373 |
| 1410 | | | | 95% Adjusted-CLT UCL | | 2.52 | | | | 97.5% Chebyshev (MVUE) UCL | | 4.169 |
| 1411 | | | | 95% Modified-t UCL | | 2.282 | | | | 99% Chebyshev (MVUE) UCL | | 5.733 |
| 1412 | | | | | | | | | | | | |
| 1413 | | | | Gamma Distribution Test | | | Data Distribution | | | | | |
| 1414 | | | | k star (bias corrected) | | 0.728 | Data appear Gamma Distributed at 5% Significance Level | | | | | |
| 1415 | | | | Theta Star | | 2.085 | | | | | | |
| 1416 | | | | MLE of Mean | | 1.519 | | | | | | |
| 1417 | | | | MLE of Standard Deviation | | 1.78 | | | | | | |
| 1418 | | | | nu star | | 46.62 | | | | | | |
| 1419 | | | | Approximate Chi Square Value (.05) | | 31.95 | Nonparametric Statistics | | | | | |
| 1420 | | | | Adjusted Level of Significance | | 0.0416 | | | | 95% CLT UCL | | 2.213 |
| 1421 | | | | Adjusted Chi Square Value | | 31.3 | | | | 95% Jackknife UCL | | 2.234 |
| 1422 | | | | | | | | | | 95% Standard Bootstrap UCL | | 2.209 |
| 1423 | | | | Anderson-Darling Test Statistic | | 0.689 | | | | 95% Bootstrap-t UCL | | 2.995 |
| 1424 | | | | Anderson-Darling 5% Critical Value | | 0.786 | | | | 95% Hall's Bootstrap UCL | | 5.04 |
| 1425 | | | | Kolmogorov-Smirnov Test Statistic | | 0.135 | | | | 95% Percentile Bootstrap UCL | | 2.29 |
| 1426 | | | | Kolmogorov-Smirnov 5% Critical Value | | 0.161 | | | | 95% BCA Bootstrap UCL | | 2.565 |
| 1427 | | | | Data appear Gamma Distributed at 5% Significance Level | | | | | | 95% Chebyshev(Mean, Sd) UCL | | 3.358 |
| 1428 | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 4.154 |
| 1429 | | | | Assuming Gamma Distribution | | | | | | 99% Chebyshev(Mean, Sd) UCL | | 5.717 |
| 1430 | | | | 95% Approximate Gamma UCL | | 2.216 | | | | | | |
| 1431 | | | | 95% Adjusted Gamma UCL | | 2.262 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1432 | | | | | | | | | | | | |
| 1433 | | | | **Potential UCL to Use** | | | | | | Use 95% Approximate Gamma UCL | | 2.216 |
| 1434 | | | | | | | | | | | | |
| 1435 | | | | | | | | | | | | |
| 1436 | **TEQ - Total** | | | | | | | | | | | |
| 1437 | | | | | | | | | | | | |
| 1438 | | | | | | **General Statistics** | | | | | | |
| 1439 | | | | | Number of Valid Observations | 6 | | | | | Number of Distinct Observations | 6 |
| 1440 | | | | | | | | | | | | |
| 1441 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1442 | | | | | Minimum | 0.0000088 | | | | | Minimum of Log Data | -11.64 |
| 1443 | | | | | Maximum | 0.0000671 | | | | | Maximum of Log Data | -9.609 |
| 1444 | | | | | Mean | 3.502E-05 | | | | | Mean of log Data | -10.43 |
| 1445 | | | | | Median | 3.315E-05 | | | | | SD of log Data | 0.691 |
| 1446 | | | | | SD | 1.975E-05 | | | | | | |
| 1447 | | | | | Coefficient of Variation | N/A | | | | | | |
| 1448 | | | | | Skewness | 0.555 | | | | | | |
| 1449 | | | | | | | | | | | | |
| 1450 | | | | | | | | | | | | |
| 1451 | | | | **Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!** | | | | | | | | |
| 1452 | | | | | | | | | | | | |
| 1453 | | | | **It is suggested to collect at least 8 to 10 observations using these statistical methods!** | | | | | | | | |
| 1454 | | | | **If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.** | | | | | | | | |
| 1455 | | | | | | | | | | | | |
| 1456 | | | | | | | | | | | | |
| 1457 | | | | **Warning: There are only 6 Values in this data** | | | | | | | | |
| 1458 | | | | **Note: It should be noted that even though bootstrap methods may be performed on this data set,** | | | | | | | | |
| 1459 | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | | |
| 1460 | | | | | | | | | | | | |
| 1461 | | | | **The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.** | | | | | | | | |
| 1462 | | | | | | | | | | | | |
| 1463 | | | | | | **Relevant UCL Statistics** | | | | | | |
| 1464 | | | | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | |
| 1465 | | | | | Shapiro Wilk Test Statistic | 0.978 | | | | | Shapiro Wilk Test Statistic | 0.935 |
| 1466 | | | | | Shapiro Wilk Critical Value | 0.788 | | | | | Shapiro Wilk Critical Value | 0.788 |
| 1467 | | | | **Data appear Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1468 | | | | | | | | | | | | |
| 1469 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1470 | | | | | 95% Student's-t UCL | 5.127E-05 | | | | | 95% H-UCL | 9.952E-05 |
| 1471 | | | | **95% UCLs (Adjusted for Skewness)** | | | | | | | 95% Chebyshev (MVUE) UCL | 7.998E-05 |
| 1472 | | | | | 95% Adjusted-CLT UCL | 5.023E-05 | | | | | 97.5% Chebyshev (MVUE) UCL | 9.904E-05 |
| 1473 | | | | | 95% Modified-t UCL | 5.157E-05 | | | | | 99% Chebyshev (MVUE) UCL | 0.0001365 |
| 1474 | | | | | | | | | | | | |
| 1475 | | | | **Gamma Distribution Test** | | | | | | **Data Distribution** | | |
| 1476 | | | | | k star (bias corrected) | 1.682 | | | | **Data appear Normal at 5% Significance Level** | | |
| 1477 | | | | | Theta Star | 2.081E-05 | | | | | | |
| 1478 | | | | | MLE of Mean | 3.502E-05 | | | | | | |
| 1479 | | | | | MLE of Standard Deviation | 2.7E-05 | | | | | | |
| 1480 | | | | | nu star | 20.19 | | | | | | |
| 1481 | | | | | Approximate Chi Square Value (.05) | 10.99 | | | | **Nonparametric Statistics** | | |
| 1482 | | | | | Adjusted Level of Significance | 0.0122 | | | | | 95% CLT UCL | 4.828E-05 |
| 1483 | | | | | Adjusted Chi Square Value | 8.648 | | | | | 95% Jackknife UCL | 5.127E-05 |
| 1484 | | | | | | | | | | | 95% Standard Bootstrap UCL | 4.73E-05 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1485 | | | | | Anderson-Darling Test Statistic | 0.213 | | | | | 95% Bootstrap-t UCL | 5.372E-05 |
| 1486 | | | | | Anderson-Darling 5% Critical Value | 0.701 | | | | | 95% Hall's Bootstrap UCL | 6.698E-05 |
| 1487 | | | | | Kolmogorov-Smirnov Test Statistic | 0.165 | | | | | 95% Percentile Bootstrap UCL | 4.727E-05 |
| 1488 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.334 | | | | | 95% BCA Bootstrap UCL | 4.878E-05 |
| 1489 | | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | 95% Chebyshev(Mean, Sd) UCL | 7.017E-05 |
| 1490 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 8.538E-05 |
| 1491 | | | | | **Assuming Gamma Distribution** | | | | | | 99% Chebyshev(Mean, Sd) UCL | 0.0001153 |
| 1492 | | | | | 95% Approximate Gamma UCL | 6.432E-05 | | | | | | |
| 1493 | | | | | 95% Adjusted Gamma UCL | 8.175E-05 | | | | | | |
| 1494 | | | | | | | | | | | | |
| 1495 | | | | | **Potential UCL to Use** | | | | | | Use 95% Student's-t UCL | 5.127E-05 |
| 1496 | | | | | | | | | | | | |
| 1497 | | | | | | | | | | | | |
| 1498 | **Thallium** | | | | | | | | | | | |
| 1499 | | | | | | | | | | | | |
| 1500 | | | | | **General Statistics** | | | | | | | |
| 1501 | | | | | Number of Valid Data | 32 | | | | | Number of Detected Data | 10 |
| 1502 | | | | | Number of Distinct Detected Data | 10 | | | | | Number of Non-Detect Data | 22 |
| 1503 | | | | | | | | | | | Percent Non-Detects | 68.75% |
| 1504 | | | | | | | | | | | | |
| 1505 | | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | |
| 1506 | | | | | Minimum Detected | 0.067 | | | | | Minimum Detected | -2.703 |
| 1507 | | | | | Maximum Detected | 1.2 | | | | | Maximum Detected | 0.182 |
| 1508 | | | | | Mean of Detected | 0.374 | | | | | Mean of Detected | -1.603 |
| 1509 | | | | | SD of Detected | 0.439 | | | | | SD of Detected | 1.134 |
| 1510 | | | | | Minimum Non-Detect | 0.29 | | | | | Minimum Non-Detect | -1.238 |
| 1511 | | | | | Maximum Non-Detect | 1.1 | | | | | Maximum Non-Detect | 0.0953 |
| 1512 | | | | | | | | | | | | |
| 1513 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | | Number treated as Non-Detect | 31 |
| 1514 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | | Number treated as Detected | 1 |
| 1515 | Observations < Largest ND are treated as NDs | | | | | | | | | | Single DL Non-Detect Percentage | 96.88% |
| 1516 | | | | | | | | | | | | |
| 1517 | | | | | **UCL Statistics** | | | | | | | |
| 1518 | | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | |
| 1519 | | | | | Shapiro Wilk Test Statistic | 0.702 | | | | | Shapiro Wilk Test Statistic | 0.803 |
| 1520 | | | | | 5% Shapiro Wilk Critical Value | 0.842 | | | | | 5% Shapiro Wilk Critical Value | 0.842 |
| 1521 | | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | |
| 1522 | | | | | | | | | | | | |
| 1523 | | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | |
| 1524 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1525 | | | | | Mean | 0.356 | | | | | Mean | -1.288 |
| 1526 | | | | | SD | 0.262 | | | | | SD | 0.747 |
| 1527 | | | | | 95% DL/2 (t) UCL | 0.434 | | | | | 95% H-Stat (DL/2) UCL | 0.84 |
| 1528 | | | | | | | | | | | | |
| 1529 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | | Log ROS Method | |
| 1530 | | | | | **MLE method failed to converge properly** | | | | | | Mean in Log Scale | -1.945 |
| 1531 | | | | | | | | | | | SD in Log Scale | 0.677 |
| 1532 | | | | | | | | | | | Mean in Original Scale | 0.203 |
| 1533 | | | | | | | | | | | SD in Original Scale | 0.265 |
| 1534 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.284 |
| 1535 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.309 |
| 1536 | | | | | | | | | | | | |
| 1537 | | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1538 | | | | | k star (bias corrected) | 0.724 | **Data do not follow a Discernable Distribution (0.05)** | | | | | |
| 1539 | | | | | Theta Star | 0.516 | | | | | | |
| 1540 | | | | | nu star | 14.48 | | | | | | |
| 1541 | | | | | | | | | | | | |
| 1542 | | | | | A-D Test Statistic | 1.198 | **Nonparametric Statistics** | | | | | |
| 1543 | | | | | 5% A-D Critical Value | 0.75 | | | | | Kaplan-Meier (KM) Method | |
| 1544 | | | | | K-S Test Statistic | 0.75 | | | | | Mean | 0.202 |
| 1545 | | | | | 5% K-S Critical Value | 0.274 | | | | | SD | 0.278 |
| 1546 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.0562 |
| 1547 | | | | | | | | | | | 95% KM (t) UCL | 0.297 |
| 1548 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 0.295 |
| 1549 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 0.295 |
| 1550 | | | | | Minimum | 0.067 | | | | | 95% KM (bootstrap t) UCL | 0.343 |
| 1551 | | | | | Maximum | 1.2 | | | | | 95% KM (BCA) UCL | 0.299 |
| 1552 | | | | | Mean | 0.374 | | | | | 95% KM (Percentile Bootstrap) UCL | 0.294 |
| 1553 | | | | | Median | 0.373 | | | | | 95% KM (Chebyshev) UCL | 0.447 |
| 1554 | | | | | SD | 0.236 | | | | | 97.5% KM (Chebyshev) UCL | 0.553 |
| 1555 | | | | | k star | 2.503 | | | | | 99% KM (Chebyshev) UCL | 0.762 |
| 1556 | | | | | Theta star | 0.149 | | | | | | |
| 1557 | | | | | Nu star | 160.2 | **Potential UCLs to Use** | | | | | |
| 1558 | | | | | AppChi2 | 132 | | | | | 95% KM (BCA) UCL | 0.299 |
| 1559 | | | | | 95% Gamma Approximate UCL | 0.454 | | | | | | |
| 1560 | | | | | 95% Adjusted Gamma UCL | 0.459 | | | | | | |
| 1561 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1562 | | | | | | | | | | | | |
| 1563 | | | | | | | | | | | | |
| 1564 | **Vanadium** | | | | | | | | | | | |
| 1565 | | | | | | | | | | | | |
| 1566 | | | | | **General Statistics** | | | | | | | |
| 1567 | | | | | Number of Valid Data | 32 | | | | | Number of Detected Data | 31 |
| 1568 | | | | | Number of Distinct Detected Data | 28 | | | | | Number of Non-Detect Data | 1 |
| 1569 | | | | | | | | | | | Percent Non-Detects | 3.13% |
| 1570 | | | | | | | | | | | | |
| 1571 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1572 | | | | | Minimum Detected | 8 | | | | | Minimum Detected | 2.079 |
| 1573 | | | | | Maximum Detected | 33.3 | | | | | Maximum Detected | 3.506 |
| 1574 | | | | | Mean of Detected | 15.8 | | | | | Mean of Detected | 2.702 |
| 1575 | | | | | SD of Detected | 5.738 | | | | | SD of Detected | 0.342 |
| 1576 | | | | | Minimum Non-Detect | 12 | | | | | Minimum Non-Detect | 2.485 |
| 1577 | | | | | Maximum Non-Detect | 12 | | | | | Maximum Non-Detect | 2.485 |
| 1578 | | | | | | | | | | | | |
| 1579 | | | | | | | | | | | | |
| 1580 | | | | | **UCL Statistics** | | | | | | | |
| 1581 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 1582 | | | | | Shapiro Wilk Test Statistic | 0.913 | | | | | Shapiro Wilk Test Statistic | 0.972 |
| 1583 | | | | | 5% Shapiro Wilk Critical Value | 0.929 | | | | | 5% Shapiro Wilk Critical Value | 0.929 |
| 1584 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1585 | | | | | | | | | | | | |
| 1586 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1587 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1588 | | | | | Mean | 15.49 | | | | | Mean | 2.673 |
| 1589 | | | | | SD | 5.905 | | | | | SD | 0.373 |
| 1590 | | | | | 95% DL/2 (t) UCL | 17.26 | | | | | 95% H-Stat (DL/2) UCL | 17.1 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1591 | | | | | | | | | | | | |
| 1592 | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | | Log ROS Method | |
| 1593 | | | | | Mean | 14.52 | | | | | Mean in Log Scale | 2.691 |
| 1594 | | | | | SD | 7.1 | | | | | SD in Log Scale | 0.343 |
| 1595 | | | | | 95% MLE (t) UCL | 16.65 | | | | | Mean in Original Scale | 15.63 |
| 1596 | | | | | 95% MLE (Tiku) UCL | 16.83 | | | | | SD in Original Scale | 5.724 |
| 1597 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 17.24 |
| 1598 | | | | | | | | | | | 95% BCA Bootstrap UCL | 17.44 |
| 1599 | | | | | | | | | | | | |
| 1600 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 1601 | | | | | k star (bias corrected) | 7.911 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 1602 | | | | | Theta Star | 1.997 | | | | | | |
| 1603 | | | | | nu star | 490.5 | | | | | | |
| 1604 | | | | | | | | | | | | |
| 1605 | | | | | A-D Test Statistic | 0.455 | | | | **Nonparametric Statistics** | | |
| 1606 | | | | | 5% A-D Critical Value | 0.746 | | | | | Kaplan-Meier (KM) Method | |
| 1607 | | | | | K-S Test Statistic | 0.746 | | | | | Mean | 15.63 |
| 1608 | | | | | 5% K-S Critical Value | 0.158 | | | | | SD | 5.639 |
| 1609 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | SE of Mean | 1.014 |
| 1610 | | | | | | | | | | | 95% KM (t) UCL | 17.35 |
| 1611 | | | | **Assuming Gamma Distribution** | | | | | | | 95% KM (z) UCL | 17.3 |
| 1612 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 17.35 |
| 1613 | | | | | Minimum | 8 | | | | | 95% KM (bootstrap t) UCL | 17.61 |
| 1614 | | | | | Maximum | 33.3 | | | | | 95% KM (BCA) UCL | 17.49 |
| 1615 | | | | | Mean | 15.65 | | | | | 95% KM (Percentile Bootstrap) UCL | 17.32 |
| 1616 | | | | | Median | 14.35 | | | | | 95% KM (Chebyshev) UCL | 20.05 |
| 1617 | | | | | SD | 5.712 | | | | | 97.5% KM (Chebyshev) UCL | 21.96 |
| 1618 | | | | | k star | 7.927 | | | | | 99% KM (Chebyshev) UCL | 25.72 |
| 1619 | | | | | Theta star | 1.974 | | | | | | |
| 1620 | | | | | Nu star | 507.4 | | | | **Potential UCLs to Use** | | |
| 1621 | | | | | AppChi2 | 456.1 | | | | | 95% KM (BCA) UCL | 17.49 |
| 1622 | | | | | 95% Gamma Approximate UCL | 17.4 | | | | | | |
| 1623 | | | | | 95% Adjusted Gamma UCL | 17.5 | | | | | | |
| 1624 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1625 | | | | | | | | | | | | |

# Surface Water

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | **General UCL Statistics for Data Sets with Non-Detects** | | | | | | | | |
| 2 | | **User Selected Options** | | | | | | | | | | |
| 3 | | | From File | C:\aa_Projects\Peterson\Unnamed Island\UCLs\SW conc_Crosstab.xls.wst | | | | | | | | |
| 4 | | | Full Precision | OFF | | | | | | | | |
| 5 | | | Confidence Coefficient | 95% | | | | | | | | |
| 6 | | | Number of Bootstrap Operations | 2000 | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | **1,4-Dichlorobenzene** | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | **General Statistics** | | | | | | |
| 12 | | | | | | Number of Valid Data | 15 | | Number of Detected Data | | | 0 |
| 13 | | | | | | Number of Distinct Detected Data | 0 | | Number of Non-Detect Data | | | 15 |
| 14 | | | | | | | | | Percent Non-Detects | | | 100.00% |
| 15 | | | | | | | | | | | | |
| 16 | | | | | | **Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!** | | | | | | |
| 17 | | | | | | **Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!** | | | | | | |
| 18 | | | | | | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | | | | | | **The data set for variable 1,4-Dichlorobenzene was not processed!** | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 24 | **4,4'-DDD** | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 26 | | | | | | **General Statistics** | | | | | | |
| 27 | | | | | | Number of Valid Data | 15 | | Number of Detected Data | | | 1 |
| 28 | | | | | | Number of Distinct Detected Data | 1 | | Number of Non-Detect Data | | | 14 |
| 29 | | | | | | | | | Percent Non-Detects | | | 93.33% |
| 30 | | | | | | | | | | | | |
| 31 | | | | | | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | |
| 32 | | | | | | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | |
| 33 | | | | | | | | | | | | |
| 34 | | | | | | **The data set for variable 4,4'-DDD was not processed!** | | | | | | |
| 35 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | |
| 38 | **4,4'-DDE** | | | | | | | | | | | |
| 39 | | | | | | | | | | | | |
| 40 | | | | | | **General Statistics** | | | | | | |
| 41 | | | | | | Number of Valid Data | 15 | | Number of Detected Data | | | 0 |
| 42 | | | | | | Number of Distinct Detected Data | 0 | | Number of Non-Detect Data | | | 15 |
| 43 | | | | | | | | | Percent Non-Detects | | | 100.00% |
| 44 | | | | | | | | | | | | |
| 45 | | | | | | **Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!** | | | | | | |
| 46 | | | | | | **Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!** | | | | | | |
| 47 | | | | | | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | |
| 48 | | | | | | | | | | | | |
| 49 | | | | | | **The data set for variable 4,4'-DDE was not processed!** | | | | | | |
| 50 | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | |
| 52 | | | | | | | | | | | | |
| 53 | **4,4'-DDT** | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 54 | | | | | | | | | | | | |
| 55 | | | | | | General Statistics | | | | | | |
| 56 | | | | | Number of Valid Data | 15 | | | | | Number of Detected Data | 1 |
| 57 | | | | | Number of Distinct Detected Data | 1 | | | | | Number of Non-Detect Data | 14 |
| 58 | | | | | | | | | | | Percent Non-Detects | 93.33% |
| 59 | | | | | | | | | | | | |
| 60 | | | | | Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set! | | | | | | | |
| 61 | It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 62 | | | | | | | | | | | | |
| 63 | | | | | The data set for variable 4,4'-DDT was not processed! | | | | | | | |
| 64 | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | |
| 66 | | | | | | | | | | | | |
| 67 | alpha-Chlordane | | | | | | | | | | | |
| 68 | | | | | | | | | | | | |
| 69 | | | | | | General Statistics | | | | | | |
| 70 | | | | | Number of Valid Data | 15 | | | | | Number of Detected Data | 1 |
| 71 | | | | | Number of Distinct Detected Data | 1 | | | | | Number of Non-Detect Data | 14 |
| 72 | | | | | | | | | | | Percent Non-Detects | 93.33% |
| 73 | | | | | | | | | | | | |
| 74 | | | | | Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set! | | | | | | | |
| 75 | It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 76 | | | | | | | | | | | | |
| 77 | | | | | The data set for variable alpha-Chlordane was not processed! | | | | | | | |
| 78 | | | | | | | | | | | | |
| 79 | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | |
| 81 | Aluminum | | | | | | | | | | | |
| 82 | | | | | | | | | | | | |
| 83 | | | | | | General Statistics | | | | | | |
| 84 | | | | | Number of Valid Data | 15 | | | | | Number of Detected Data | 11 |
| 85 | | | | | Number of Distinct Detected Data | 11 | | | | | Number of Non-Detect Data | 4 |
| 86 | | | | | | | | | | | Percent Non-Detects | 26.67% |
| 87 | | | | | | | | | | | | |
| 88 | | | | | Raw Statistics | | | | | | Log-transformed Statistics | |
| 89 | | | | | Minimum Detected | 24 | | | | | Minimum Detected | 3.178 |
| 90 | | | | | Maximum Detected | 4250 | | | | | Maximum Detected | 8.355 |
| 91 | | | | | Mean of Detected | 554.7 | | | | | Mean of Detected | 4.626 |
| 92 | | | | | SD of Detected | 1263 | | | | | SD of Detected | 1.73 |
| 93 | | | | | Minimum Non-Detect | 200 | | | | | Minimum Non-Detect | 5.298 |
| 94 | | | | | Maximum Non-Detect | 200 | | | | | Maximum Non-Detect | 5.298 |
| 95 | | | | | | | | | | | | |
| 96 | | | | | | | | | | | | |
| 97 | | | | | | UCL Statistics | | | | | | |
| 98 | | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | |
| 99 | | | | | Shapiro Wilk Test Statistic | 0.492 | | | | | Shapiro Wilk Test Statistic | 0.773 |
| 100 | | | | | 5% Shapiro Wilk Critical Value | 0.85 | | | | | 5% Shapiro Wilk Critical Value | 0.85 |
| 101 | | | | | Data not Normal at 5% Significance Level | | | | | | Data not Lognormal at 5% Significance Level | |
| 102 | | | | | | | | | | | | |
| 103 | | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | |
| 104 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 105 | | | | | Mean | 433.4 | | | | | Mean | 4.62 |
| 106 | | | | | SD | 1088 | | | | | SD | 1.462 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 107 | | | | | 95% DL/2 (t) UCL | 928.1 | | | | 95% H-Stat (DL/2) UCL | | 2588 |
| 108 | | | | | | | | | | | | |
| 109 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | Log ROS Method | | |
| 110 | | | | **MLE yields a negative mean** | | | | | | Mean in Log Scale | | 4.439 |
| 111 | | | | | | | | | | SD in Log Scale | | 1.561 |
| 112 | | | | | | | | | | Mean in Original Scale | | 425.1 |
| 113 | | | | | | | | | | SD in Original Scale | | 1091 |
| 114 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 934.8 |
| 115 | | | | | | | | | | 95% BCA Bootstrap UCL | | 1293 |
| 116 | | | | | | | | | | | | |
| 117 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 118 | | | | | k star (bias corrected) | 0.344 | | | | **Data do not follow a Discernable Distribution (0.05)** | | |
| 119 | | | | | Theta Star | 1610 | | | | | | |
| 120 | | | | | nu star | 7.578 | | | | | | |
| 121 | | | | | | | | | | | | |
| 122 | | | | | A-D Test Statistic | 1.636 | | | | **Nonparametric Statistics** | | |
| 123 | | | | | 5% A-D Critical Value | 0.802 | | | | Kaplan-Meier (KM) Method | | |
| 124 | | | | | K-S Test Statistic | 0.802 | | | | Mean | | 417.7 |
| 125 | | | | | 5% K-S Critical Value | 0.273 | | | | SD | | 1056 |
| 126 | | | | **Data not Gamma Distributed at 5% Significance Level** | | | | | | SE of Mean | | 286 |
| 127 | | | | | | | | | | 95% KM (t) UCL | | 921.5 |
| 128 | | | | **Assuming Gamma Distribution** | | | | | | 95% KM (z) UCL | | 888.2 |
| 129 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | | 914.9 |
| 130 | | | | | Minimum | 24 | | | | 95% KM (bootstrap t) UCL | | 3395 |
| 131 | | | | | Maximum | 4250 | | | | 95% KM (BCA) UCL | | 926.3 |
| 132 | | | | | Mean | 554.3 | | | | 95% KM (Percentile Bootstrap) UCL | | 946.4 |
| 133 | | | | | Median | 57.2 | | | | 95% KM (Chebyshev) UCL | | 1664 |
| 134 | | | | | SD | 1068 | | | | 97.5% KM (Chebyshev) UCL | | 2204 |
| 135 | | | | | k star | 0.453 | | | | 99% KM (Chebyshev) UCL | | 3264 |
| 136 | | | | | Theta star | 1225 | | | | | | |
| 137 | | | | | Nu star | 13.58 | | | | **Potential UCLs to Use** | | |
| 138 | | | | | AppChi2 | 6.282 | | | | 99% KM (Chebyshev) UCL | | 3264 |
| 139 | | | | | 95% Gamma Approximate UCL | 1198 | | | | | | |
| 140 | | | | | 95% Adjusted Gamma UCL | 1325 | | | | | | |
| 141 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 142 | | | | | | | | | | | | |
| 143 | | | | | | | | | | | | |
| 144 | **Aroclor-1260** | | | | | | | | | | | |
| 145 | | | | | | | | | | | | |
| 146 | | | | | | **General Statistics** | | | | | | |
| 147 | | | | | Number of Valid Data | 15 | | | | Number of Detected Data | | 0 |
| 148 | | | | | Number of Distinct Detected Data | 0 | | | | Number of Non-Detect Data | | 15 |
| 149 | | | | | | | | | | Percent Non-Detects | | 100.00% |
| 150 | | | | | | | | | | | | |
| 151 | | | | **Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!** | | | | | | | | |
| 152 | | | | **Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!** | | | | | | | | |
| 153 | | | | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | |
| 154 | | | | | | | | | | | | |
| 155 | | | | **The data set for variable Aroclor-1260 was not processed!** | | | | | | | | |
| 156 | | | | | | | | | | | | |
| 157 | | | | | | | | | | | | |
| 158 | | | | | | | | | | | | |
| 159 | **Arsenic** | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 160 | | | | | | | | | | | | |
| 161 | | | | | | General Statistics | | | | | | |
| 162 | | | | | Number of Valid Observations | 15 | | | | | Number of Distinct Observations | 13 |
| 163 | | | | | | | | | | | | |
| 164 | | | | Raw Statistics | | | | | | | Log-transformed Statistics | |
| 165 | | | | | Minimum | 0.446 | | | | | Minimum of Log Data | -0.807 |
| 166 | | | | | Maximum | 5.09 | | | | | Maximum of Log Data | 1.627 |
| 167 | | | | | Mean | 2.023 | | | | | Mean of log Data | 0.568 |
| 168 | | | | | Median | 1.88 | | | | | SD of log Data | 0.587 |
| 169 | | | | | SD | 1.045 | | | | | | |
| 170 | | | | | Coefficient of Variation | 0.516 | | | | | | |
| 171 | | | | | Skewness | 1.561 | | | | | | |
| 172 | | | | | | | | | | | | |
| 173 | | | | | | Relevant UCL Statistics | | | | | | |
| 174 | | | | Normal Distribution Test | | | | | | | Lognormal Distribution Test | |
| 175 | | | | | Shapiro Wilk Test Statistic | 0.801 | | | | | Shapiro Wilk Test Statistic | 0.824 |
| 176 | | | | | Shapiro Wilk Critical Value | 0.881 | | | | | Shapiro Wilk Critical Value | 0.881 |
| 177 | | | | Data not Normal at 5% Significance Level | | | | | | | Data not Lognormal at 5% Significance Level | |
| 178 | | | | | | | | | | | | |
| 179 | | | | Assuming Normal Distribution | | | | | | | Assuming Lognormal Distribution | |
| 180 | | | | | 95% Student's-t UCL | 2.498 | | | | | 95% H-UCL | 2.946 |
| 181 | | | | 95% UCLs (Adjusted for Skewness) | | | | | | | 95% Chebyshev (MVUE) UCL | 3.493 |
| 182 | | | | | 95% Adjusted-CLT UCL | 2.583 | | | | | 97.5% Chebyshev (MVUE) UCL | 4.108 |
| 183 | | | | | 95% Modified-t UCL | 2.516 | | | | | 99% Chebyshev (MVUE) UCL | 5.318 |
| 184 | | | | | | | | | | | | |
| 185 | | | | Gamma Distribution Test | | | | | | | Data Distribution | |
| 186 | | | | | k star (bias corrected) | 3.104 | | | | | Data do not follow a Discernable Distribution (0.05) | |
| 187 | | | | | Theta Star | 0.652 | | | | | | |
| 188 | | | | | MLE of Mean | 2.023 | | | | | | |
| 189 | | | | | MLE of Standard Deviation | 1.148 | | | | | | |
| 190 | | | | | nu star | 93.11 | | | | | | |
| 191 | | | | | Approximate Chi Square Value (.05) | 71.86 | | | | | Nonparametric Statistics | |
| 192 | | | | | Adjusted Level of Significance | 0.0324 | | | | | 95% CLT UCL | 2.467 |
| 193 | | | | | Adjusted Chi Square Value | 69.56 | | | | | 95% Jackknife UCL | 2.498 |
| 194 | | | | | | | | | | | 95% Standard Bootstrap UCL | 2.449 |
| 195 | | | | | Anderson-Darling Test Statistic | 1.087 | | | | | 95% Bootstrap-t UCL | 2.607 |
| 196 | | | | | Anderson-Darling 5% Critical Value | 0.741 | | | | | 95% Hall's Bootstrap UCL | 4.962 |
| 197 | | | | | Kolmogorov-Smirnov Test Statistic | 0.255 | | | | | 95% Percentile Bootstrap UCL | 2.478 |
| 198 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.223 | | | | | 95% BCA Bootstrap UCL | 2.578 |
| 199 | | | | Data not Gamma Distributed at 5% Significance Level | | | | | | | 95% Chebyshev(Mean, Sd) UCL | 3.199 |
| 200 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 3.708 |
| 201 | | | | Assuming Gamma Distribution | | | | | | | 99% Chebyshev(Mean, Sd) UCL | 4.707 |
| 202 | | | | | 95% Approximate Gamma UCL | 2.622 | | | | | | |
| 203 | | | | | 95% Adjusted Gamma UCL | 2.708 | | | | | | |
| 204 | | | | | | | | | | | | |
| 205 | | | | Potential UCL to Use | | | | | | | Use 95% Chebyshev (Mean, Sd) UCL | 3.199 |
| 206 | | | | | | | | | | | | |
| 207 | | | | | | | | | | | | |
| 208 | Benzene | | | | | | | | | | | |
| 209 | | | | | | | | | | | | |
| 210 | | | | | | General Statistics | | | | | | |
| 211 | | | | | Number of Valid Data | 15 | | | | | Number of Detected Data | 0 |
| 212 | | | | | Number of Distinct Detected Data | 0 | | | | | Number of Non-Detect Data | 15 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 213 | | | | | | | | | | Percent Non-Detects | | 100.00% |
| 214 | | | | | | | | | | | | |
| 215 | Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs! | | | | | | | | | | | |
| 216 | Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit! | | | | | | | | | | | |
| 217 | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 218 | | | | | | | | | | | | |
| 219 | The data set for variable Benzene was not processed! | | | | | | | | | | | |
| 220 | | | | | | | | | | | | |
| 221 | | | | | | | | | | | | |
| 222 | | | | | | | | | | | | |
| 223 | Benzo(a)pyrene | | | | | | | | | | | |
| 224 | | | | | | | | | | | | |
| 225 | General Statistics | | | | | | | | | | | |
| 226 | | | | | Number of Valid Data | 15 | | | | Number of Detected Data | | 3 |
| 227 | | | | | Number of Distinct Detected Data | 3 | | | | Number of Non-Detect Data | | 12 |
| 228 | | | | | | | | | | Percent Non-Detects | | 80.00% |
| 229 | | | | | | | | | | | | |
| 230 | Raw Statistics | | | | | | Log-transformed Statistics | | | | | |
| 231 | | | | | Minimum Detected | 0.11 | | | | Minimum Detected | | -2.207 |
| 232 | | | | | Maximum Detected | 0.15 | | | | Maximum Detected | | -1.897 |
| 233 | | | | | Mean of Detected | 0.127 | | | | Mean of Detected | | -2.075 |
| 234 | | | | | SD of Detected | 0.0208 | | | | SD of Detected | | 0.16 |
| 235 | | | | | Minimum Non-Detect | 0.1 | | | | Minimum Non-Detect | | -2.303 |
| 236 | | | | | Maximum Non-Detect | 0.1 | | | | Maximum Non-Detect | | -2.303 |
| 237 | | | | | | | | | | | | |
| 238 | | | | | | | | | | | | |
| 239 | Warning: There are only 3 Distinct Detected Values in this data set | | | | | | | | | | | |
| 240 | The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods. | | | | | | | | | | | |
| 241 | Those methods will return a 'N/A' value on your output display! | | | | | | | | | | | |
| 242 | | | | | | | | | | | | |
| 243 | It is necessary to have 4 or more Distinct Values for bootstrap methods. | | | | | | | | | | | |
| 244 | However, results obtained using 4 to 9 distinct values may not be reliable. | | | | | | | | | | | |
| 245 | It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates. | | | | | | | | | | | |
| 246 | | | | | | | | | | | | |
| 247 | | | | | | | | | | | | |
| 248 | UCL Statistics | | | | | | | | | | | |
| 249 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 250 | | | | | Shapiro Wilk Test Statistic | 0.923 | | | | Shapiro Wilk Test Statistic | | 0.94 |
| 251 | | | | | 5% Shapiro Wilk Critical Value | 0.767 | | | | 5% Shapiro Wilk Critical Value | | 0.767 |
| 252 | Data appear Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | | | | |
| 253 | | | | | | | | | | | | |
| 254 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 255 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 256 | | | | | Mean | 0.0653 | | | | Mean | | -2.812 |
| 257 | | | | | SD | 0.0327 | | | | SD | | 0.386 |
| 258 | | | | | 95% DL/2 (t) UCL | 0.0802 | | | | 95% H-Stat (DL/2) UCL | | 0.0783 |
| 259 | | | | | | | | | | | | |
| 260 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | Log ROS Method | | |
| 261 | | | | | Mean | 0.13 | | | | Mean in Log Scale | | -2.753 |
| 262 | | | | | SD | 0.017 | | | | SD in Log Scale | | 0.47 |
| 263 | | | | | 95% MLE (t) UCL | 0.137 | | | | Mean in Original Scale | | 0.0707 |
| 264 | | | | | 95% MLE (Tiku) UCL | 0.147 | | | | SD in Original Scale | | 0.0342 |
| 265 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 0.0849 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
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| 266 | | | | | | | | | | 95% BCA Bootstrap UCL | | 0.0869 |
| 267 | | | | | | | | | | | | |
| 268 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 269 | | | | | k star (bias corrected) | N/A | **Data appear Normal at 5% Significance Level** | | | | | |
| 270 | | | | | Theta Star | N/A | | | | | | |
| 271 | | | | | nu star | N/A | | | | | | |
| 272 | | | | | | | | | | | | |
| 273 | | | | | A-D Test Statistic | N/A | **Nonparametric Statistics** | | | | | |
| 274 | | | | | 5% A-D Critical Value | N/A | | | | Kaplan-Meier (KM) Method | | |
| 275 | | | | | K-S Test Statistic | N/A | | | | Mean | | 0.113 |
| 276 | | | | | 5% K-S Critical Value | N/A | | | | SD | | 0.0101 |
| 277 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | SE of Mean | | 0.0032 |
| 278 | | | | | | | | | | 95% KM (t) UCL | | 0.119 |
| 279 | **Assuming Gamma Distribution** | | | | | | | | | 95% KM (z) UCL | | 0.119 |
| 280 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | | 0.121 |
| 281 | | | | | Minimum | N/A | | | | 95% KM (bootstrap t) UCL | | 0.12 |
| 282 | | | | | Maximum | N/A | | | | 95% KM (BCA) UCL | | 0.15 |
| 283 | | | | | Mean | N/A | | | | 95% KM (Percentile Bootstrap) UCL | | 0.15 |
| 284 | | | | | Median | N/A | | | | 95% KM (Chebyshev) UCL | | 0.127 |
| 285 | | | | | SD | N/A | | | | 97.5% KM (Chebyshev) UCL | | 0.133 |
| 286 | | | | | k star | N/A | | | | 99% KM (Chebyshev) UCL | | 0.145 |
| 287 | | | | | Theta star | N/A | | | | | | |
| 288 | | | | | Nu star | N/A | **Potential UCLs to Use** | | | | | |
| 289 | | | | | AppChi2 | N/A | | | | 95% KM (t) UCL | | 0.119 |
| 290 | | | | | 95% Gamma Approximate UCL | N/A | | | | 95% KM (Percentile Bootstrap) UCL | | 0.15 |
| 291 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 292 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 293 | | | | | | | | | | | | |
| 294 | | | | | | | | | | | | |
| 295 | **Benzo(b)fluoranthene** | | | | | | | | | | | |
| 296 | | | | | | | | | | | | |
| 297 | | | | | **General Statistics** | | | | | | | |
| 298 | | | | | Number of Valid Data | 15 | | | | Number of Detected Data | | 1 |
| 299 | | | | | Number of Distinct Detected Data | 1 | | | | Number of Non-Detect Data | | 14 |
| 300 | | | | | | | | | | Percent Non-Detects | | 93.33% |
| 301 | | | | | | | | | | | | |
| 302 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 303 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 304 | | | | | | | | | | | | |
| 305 | **The data set for variable Benzo(b)fluoranthene was not processed!** | | | | | | | | | | | |
| 306 | | | | | | | | | | | | |
| 307 | | | | | | | | | | | | |
| 308 | | | | | | | | | | | | |
| 309 | **Benzo(g,h,i)perylene** | | | | | | | | | | | |
| 310 | | | | | | | | | | | | |
| 311 | | | | | **General Statistics** | | | | | | | |
| 312 | | | | | Number of Valid Data | 15 | | | | Number of Detected Data | | 1 |
| 313 | | | | | Number of Distinct Detected Data | 1 | | | | Number of Non-Detect Data | | 14 |
| 314 | | | | | | | | | | Percent Non-Detects | | 93.33% |
| 315 | | | | | | | | | | | | |
| 316 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 317 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 318 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 319 | The data set for variable Benzo(g,h,i)perylene was not processed! | | | | | | | | | | | |
| 320 | | | | | | | | | | | | |
| 321 | | | | | | | | | | | | |
| 322 | | | | | | | | | | | | |
| 323 | Benzo(k)fluoranthene | | | | | | | | | | | |
| 324 | | | | | | | | | | | | |
| 325 | General Statistics | | | | | | | | | | | |
| 326 | | | | | Number of Valid Data | 15 | | | Number of Detected Data | | | 0 |
| 327 | | | | | Number of Distinct Detected Data | 0 | | | Number of Non-Detect Data | | | 15 |
| 328 | | | | | | | | | Percent Non-Detects | | | 100.00% |
| 329 | | | | | | | | | | | | |
| 330 | Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs! | | | | | | | | | | | |
| 331 | Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit! | | | | | | | | | | | |
| 332 | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 333 | | | | | | | | | | | | |
| 334 | The data set for variable Benzo(k)fluoranthene was not processed! | | | | | | | | | | | |
| 335 | | | | | | | | | | | | |
| 336 | | | | | | | | | | | | |
| 337 | | | | | | | | | | | | |
| 338 | Benzo_a_anthracene | | | | | | | | | | | |
| 339 | | | | | | | | | | | | |
| 340 | General Statistics | | | | | | | | | | | |
| 341 | | | | | Number of Valid Data | 15 | | | Number of Detected Data | | | 2 |
| 342 | | | | | Number of Distinct Detected Data | 2 | | | Number of Non-Detect Data | | | 13 |
| 343 | | | | | | | | | Percent Non-Detects | | | 86.67% |
| 344 | | | | | | | | | | | | |
| 345 | Raw Statistics | | | | | | Log-transformed Statistics | | | | | |
| 346 | | | | | Minimum Detected | 0.12 | | | Minimum Detected | | | -2.12 |
| 347 | | | | | Maximum Detected | 0.14 | | | Maximum Detected | | | -1.966 |
| 348 | | | | | Mean of Detected | 0.13 | | | Mean of Detected | | | -2.043 |
| 349 | | | | | SD of Detected | 0.0141 | | | SD of Detected | | | 0.109 |
| 350 | | | | | Minimum Non-Detect | 0.1 | | | Minimum Non-Detect | | | -2.303 |
| 351 | | | | | Maximum Non-Detect | 0.1 | | | Maximum Non-Detect | | | -2.303 |
| 352 | | | | | | | | | | | | |
| 353 | | | | | | | | | | | | |
| 354 | Warning: Data set has only 2 Distinct Detected Values. | | | | | | | | | | | |
| 355 | This may not be adequate enough to compute meaningful and reliable test statistics and estimates. | | | | | | | | | | | |
| 356 | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 357 | | | | | | | | | | | | |
| 358 | Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations. | | | | | | | | | | | |
| 359 | | | | | | | | | | | | |
| 360 | The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods. | | | | | | | | | | | |
| 361 | Those methods will return a 'N/A' value on your output display! | | | | | | | | | | | |
| 362 | | | | | | | | | | | | |
| 363 | It is necessary to have 4 or more Distinct Values for bootstrap methods. | | | | | | | | | | | |
| 364 | However, results obtained using 4 to 9 distinct values may not be reliable. | | | | | | | | | | | |
| 365 | It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates. | | | | | | | | | | | |
| 366 | | | | | | | | | | | | |
| 367 | | | | | | | | | | | | |
| 368 | UCL Statistics | | | | | | | | | | | |
| 369 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 370 | | | | | Shapiro Wilk Test Statistic | N/A | | | Shapiro Wilk Test Statistic | | | N/A |
| 371 | | | | | 5% Shapiro Wilk Critical Value | N/A | | | 5% Shapiro Wilk Critical Value | | | N/A |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 372 | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | | | | | |
| 373 | | | | | | | | | | | | |
| 374 | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | | | | |
| 375 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 376 | | | | | Mean | 0.0607 | | | | | Mean | -2.869 |
| 377 | | | | | SD | 0.0284 | | | | | SD | 0.336 |
| 378 | | | | | 95% DL/2 (t) UCL | 0.0736 | | | | | 95% H-Stat (DL/2) UCL | 0.0662 |
| 379 | | | | | | | | | | | | |
| 380 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | | Log ROS Method | |
| 381 | **MLE method failed to converge properly** | | | | | | | | | | Mean in Log Scale | N/A |
| 382 | | | | | | | | | | | SD in Log Scale | N/A |
| 383 | | | | | | | | | | | Mean in Original Scale | N/A |
| 384 | | | | | | | | | | | SD in Original Scale | N/A |
| 385 | | | | | | | | | | | 95% Percentile Bootstrap UCL | N/A |
| 386 | | | | | | | | | | | 95% BCA Bootstrap UCL | N/A |
| 387 | | | | | | | | | | | | |
| 388 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 389 | | | | | k star (bias corrected) | N/A | **Data do not follow a Discernable Distribution (0.05)** | | | | | |
| 390 | | | | | Theta Star | N/A | | | | | | |
| 391 | | | | | nu star | N/A | | | | | | |
| 392 | | | | | | | | | | | | |
| 393 | | | | | A-D Test Statistic | N/A | **Nonparametric Statistics** | | | | | |
| 394 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 395 | | | | | K-S Test Statistic | N/A | | | | | Mean | 0.121 |
| 396 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 0.00499 |
| 397 | **Data not Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.00182 |
| 398 | | | | | | | | | | | 95% KM (t) UCL | 0.125 |
| 399 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 0.124 |
| 400 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | N/A |
| 401 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | N/A |
| 402 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | N/A |
| 403 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | N/A |
| 404 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 0.129 |
| 405 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 0.133 |
| 406 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 0.139 |
| 407 | | | | | Theta star | N/A | | | | | | |
| 408 | | | | | Nu star | N/A | **Potential UCLs to Use** | | | | | |
| 409 | | | | | AppChi2 | N/A | | | | | 95% KM (t) UCL | 0.125 |
| 410 | | | | | 95% Gamma Approximate UCL | N/A | | | | | 95% KM (% Bootstrap) UCL | N/A |
| 411 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 412 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 413 | | | | | | | | | | | | |
| 414 | | | | | | | | | | | | |
| 415 | **beta-BHC** | | | | | | | | | | | |
| 416 | | | | | | | | | | | | |
| 417 | **General Statistics** | | | | | | | | | | | |
| 418 | | | | | Number of Valid Data | 14 | | | | | Number of Detected Data | 0 |
| 419 | | | | | Number of Distinct Detected Data | 0 | | | | | Number of Non-Detect Data | 14 |
| 420 | | | | | | | | | | | Percent Non-Detects | 100.00% |
| 421 | | | | | | | | | | | | |
| 422 | **Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!** | | | | | | | | | | | |
| 423 | **Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!** | | | | | | | | | | | |
| 424 | **The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 425 | | | | | | | | | | | | |
| 426 | The data set for variable beta-BHC was not processed! | | | | | | | | | | | |
| 427 | | | | | | | | | | | | |
| 428 | | | | | | | | | | | | |
| 429 | | | | | | | | | | | | |
| 430 | bis(2-Ethylhexyl)phthalate | | | | | | | | | | | |
| 431 | | | | | | | | | | | | |
| 432 | General Statistics | | | | | | | | | | | |
| 433 | | | | | Number of Valid Data | 15 | | | Number of Detected Data | | | 2 |
| 434 | | | | | Number of Distinct Detected Data | 2 | | | Number of Non-Detect Data | | | 13 |
| 435 | | | | | | | | | Percent Non-Detects | | | 86.67% |
| 436 | | | | | | | | | | | | |
| 437 | Raw Statistics | | | | | | Log-transformed Statistics | | | | | |
| 438 | | | | | Minimum Detected | 1.3 | | | Minimum Detected | | | 0.262 |
| 439 | | | | | Maximum Detected | 1.9 | | | Maximum Detected | | | 0.642 |
| 440 | | | | | Mean of Detected | 1.6 | | | Mean of Detected | | | 0.452 |
| 441 | | | | | SD of Detected | 0.424 | | | SD of Detected | | | 0.268 |
| 442 | | | | | Minimum Non-Detect | 5 | | | Minimum Non-Detect | | | 1.609 |
| 443 | | | | | Maximum Non-Detect | 5 | | | Maximum Non-Detect | | | 1.609 |
| 444 | | | | | | | | | | | | |
| 445 | | | | | | | | | | | | |
| 446 | Warning: Data set has only 2 Distinct Detected Values. | | | | | | | | | | | |
| 447 | This may not be adequate enough to compute meaningful and reliable test statistics and estimates. | | | | | | | | | | | |
| 448 | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 449 | | | | | | | | | | | | |
| 450 | Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations. | | | | | | | | | | | |
| 451 | | | | | | | | | | | | |
| 452 | The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods. | | | | | | | | | | | |
| 453 | Those methods will return a 'N/A' value on your output display! | | | | | | | | | | | |
| 454 | | | | | | | | | | | | |
| 455 | It is necessary to have 4 or more Distinct Values for bootstrap methods. | | | | | | | | | | | |
| 456 | However, results obtained using 4 to 9 distinct values may not be reliable. | | | | | | | | | | | |
| 457 | It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates. | | | | | | | | | | | |
| 458 | | | | | | | | | | | | |
| 459 | | | | | | | | | | | | |
| 460 | UCL Statistics | | | | | | | | | | | |
| 461 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 462 | | | | | Shapiro Wilk Test Statistic | N/A | | | Shapiro Wilk Test Statistic | | | N/A |
| 463 | | | | | 5% Shapiro Wilk Critical Value | N/A | | | 5% Shapiro Wilk Critical Value | | | N/A |
| 464 | Data not Normal at 5% Significance Level | | | | | | Data not Lognormal at 5% Significance Level | | | | | |
| 465 | | | | | | | | | | | | |
| 466 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 467 | | | | | DL/2 Substitution Method | | | | DL/2 Substitution Method | | | |
| 468 | | | | | Mean | 2.38 | | | Mean | | | 0.854 |
| 469 | | | | | SD | 0.336 | | | SD | | | 0.178 |
| 470 | | | | | 95% DL/2 (t) UCL | 2.533 | | | 95% H-Stat (DL/2) UCL | | | 3.557 |
| 471 | | | | | | | | | | | | |
| 472 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | Log ROS Method | | | |
| 473 | MLE method failed to converge properly | | | | | | | | Mean in Log Scale | | | N/A |
| 474 | | | | | | | | | SD in Log Scale | | | N/A |
| 475 | | | | | | | | | Mean in Original Scale | | | N/A |
| 476 | | | | | | | | | SD in Original Scale | | | N/A |
| 477 | | | | | | | | | 95% Percentile Bootstrap UCL | | | N/A |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 478 | | | | | | | | | | 95% BCA Bootstrap UCL | | N/A |
| 479 | | | | | | | | | | | | |
| 480 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 481 | | | | | k star (bias corrected) | N/A | Data do not follow a Discernable Distribution (0.05) | | | | | |
| 482 | | | | | Theta Star | N/A | | | | | | |
| 483 | | | | | nu star | N/A | | | | | | |
| 484 | | | | | | | | | | | | |
| 485 | | | | | A-D Test Statistic | N/A | Nonparametric Statistics | | | | | |
| 486 | | | | | 5% A-D Critical Value | N/A | | | | Kaplan-Meier (KM) Method | | |
| 487 | | | | | K-S Test Statistic | N/A | | | | Mean | | 1.6 |
| 488 | | | | | 5% K-S Critical Value | N/A | | | | SD | | 0.3 |
| 489 | Data not Gamma Distributed at 5% Significance Level | | | | | | | | | SE of Mean | | 0.3 |
| 490 | | | | | | | | | | 95% KM (t) UCL | | 2.128 |
| 491 | Assuming Gamma Distribution | | | | | | | | | 95% KM (z) UCL | | 2.093 |
| 492 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | | N/A |
| 493 | | | | | Minimum | N/A | | | | 95% KM (bootstrap t) UCL | | N/A |
| 494 | | | | | Maximum | N/A | | | | 95% KM (BCA) UCL | | N/A |
| 495 | | | | | Mean | N/A | | | | 95% KM (Percentile Bootstrap) UCL | | N/A |
| 496 | | | | | Median | N/A | | | | 95% KM (Chebyshev) UCL | | 2.908 |
| 497 | | | | | SD | N/A | | | | 97.5% KM (Chebyshev) UCL | | 3.473 |
| 498 | | | | | k star | N/A | | | | 99% KM (Chebyshev) UCL | | 4.585 |
| 499 | | | | | Theta star | N/A | | | | | | |
| 500 | | | | | Nu star | N/A | Potential UCLs to Use | | | | | |
| 501 | | | | | AppChi2 | N/A | | | | 95% KM (t) UCL | | 2.128 |
| 502 | | | | | 95% Gamma Approximate UCL | N/A | | | | 95% KM (% Bootstrap) UCL | | N/A |
| 503 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 504 | Warning: Recommended UCL exceeds the maximum observation | | | | | | | | | | | |
| 505 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 506 | | | | | | | | | | | | |
| 507 | | | | | | | | | | | | |
| 508 | Bromodichloromethane | | | | | | | | | | | |
| 509 | | | | | | | | | | | | |
| 510 | General Statistics | | | | | | | | | | | |
| 511 | | | | | Number of Valid Data | 15 | | | | Number of Detected Data | | 0 |
| 512 | | | | | Number of Distinct Detected Data | 0 | | | | Number of Non-Detect Data | | 15 |
| 513 | | | | | | | | | | Percent Non-Detects | | 100.00% |
| 514 | | | | | | | | | | | | |
| 515 | Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs! | | | | | | | | | | | |
| 516 | Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit! | | | | | | | | | | | |
| 517 | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 518 | | | | | | | | | | | | |
| 519 | The data set for variable Bromodichloromethane was not processed! | | | | | | | | | | | |
| 520 | | | | | | | | | | | | |
| 521 | | | | | | | | | | | | |
| 522 | | | | | | | | | | | | |
| 523 | Cadmium | | | | | | | | | | | |
| 524 | | | | | | | | | | | | |
| 525 | General Statistics | | | | | | | | | | | |
| 526 | | | | | Number of Valid Data | 15 | | | | Number of Detected Data | | 5 |
| 527 | | | | | Number of Distinct Detected Data | 5 | | | | Number of Non-Detect Data | | 10 |
| 528 | | | | | | | | | | Percent Non-Detects | | 66.67% |
| 529 | | | | | | | | | | | | |
| 530 | Raw Statistics | | | | | | Log-transformed Statistics | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 531 | | | | | Minimum Detected | 0.37 | | | | | Minimum Detected | -0.994 |
| 532 | | | | | Maximum Detected | 4.7 | | | | | Maximum Detected | 1.548 |
| 533 | | | | | Mean of Detected | 1.802 | | | | | Mean of Detected | 0.198 |
| 534 | | | | | SD of Detected | 1.764 | | | | | SD of Detected | 1.002 |
| 535 | | | | | Minimum Non-Detect | 0.2 | | | | | Minimum Non-Detect | -1.609 |
| 536 | | | | | Maximum Non-Detect | 0.2 | | | | | Maximum Non-Detect | -1.609 |
| 537 | | | | | | | | | | | | |
| 538 | | | | | | | | | | | | |
| 539 | | | | | **Warning: There are only 5 Detected Values in this data** | | | | | | | |
| 540 | | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | |
| 541 | | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | |
| 542 | | | | | | | | | | | | |
| 543 | | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | |
| 544 | | | | | | | | | | | | |
| 545 | | | | | | | | | | | | |
| 546 | | | | | **UCL Statistics** | | | | | | | |
| 547 | | | | | **Normal Distribution Test with Detected Values Only** | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 548 | | | | | Shapiro Wilk Test Statistic | 0.851 | | | | Shapiro Wilk Test Statistic | | 0.983 |
| 549 | | | | | 5% Shapiro Wilk Critical Value | 0.762 | | | | 5% Shapiro Wilk Critical Value | | 0.762 |
| 550 | | | | | **Data appear Normal at 5% Significance Level** | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 551 | | | | | | | | | | | | |
| 552 | | | | | **Assuming Normal Distribution** | | | | | **Assuming Lognormal Distribution** | | |
| 553 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 554 | | | | | Mean | 0.667 | | | | Mean | | -1.469 |
| 555 | | | | | SD | 1.257 | | | | SD | | 1.333 |
| 556 | | | | | 95% DL/2 (t) UCL | 1.239 | | | | 95% H-Stat (DL/2) UCL | | 0.695 |
| 557 | | | | | | | | | | | | |
| 558 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 559 | | | | | **MLE yields a negative mean** | | | | | Mean in Log Scale | | -2.387 |
| 560 | | | | | | | | | | SD in Log Scale | | 2.295 |
| 561 | | | | | | | | | | Mean in Original Scale | | 0.636 |
| 562 | | | | | | | | | | SD in Original Scale | | 1.273 |
| 563 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 1.243 |
| 564 | | | | | | | | | | 95% BCA Bootstrap UCL | | 1.517 |
| 565 | | | | | | | | | | | | |
| 566 | | | | | **Gamma Distribution Test with Detected Values Only** | | | | | **Data Distribution Test with Detected Values Only** | | |
| 567 | | | | | k star (bias corrected) | 0.703 | | | | **Data appear Normal at 5% Significance Level** | | |
| 568 | | | | | Theta Star | 2.565 | | | | | | |
| 569 | | | | | nu star | 7.027 | | | | | | |
| 570 | | | | | | | | | | | | |
| 571 | | | | | A-D Test Statistic | 0.239 | | | | **Nonparametric Statistics** | | |
| 572 | | | | | 5% A-D Critical Value | 0.687 | | | | Kaplan-Meier (KM) Method | | |
| 573 | | | | | K-S Test Statistic | 0.687 | | | | Mean | | 0.847 |
| 574 | | | | | 5% K-S Critical Value | 0.362 | | | | SD | | 1.134 |
| 575 | | | | | **Data appear Gamma Distributed at 5% Significance Level** | | | | | SE of Mean | | 0.327 |
| 576 | | | | | | | | | | 95% KM (t) UCL | | 1.424 |
| 577 | | | | | **Assuming Gamma Distribution** | | | | | 95% KM (z) UCL | | 1.386 |
| 578 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | | 1.318 |
| 579 | | | | | Minimum | 1E-09 | | | | 95% KM (bootstrap t) UCL | | 2.069 |
| 580 | | | | | Maximum | 11.94 | | | | 95% KM (BCA) UCL | | 2.367 |
| 581 | | | | | Mean | 4.078 | | | | 95% KM (Percentile Bootstrap) UCL | | 1.8 |
| 582 | | | | | Median | 2.786 | | | | 95% KM (Chebyshev) UCL | | 2.274 |
| 583 | | | | | SD | 3.809 | | | | 97.5% KM (Chebyshev) UCL | | 2.891 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 584 | | | | | k star | 0.334 | | | | 99% KM (Chebyshev) UCL | | 4.104 |
| 585 | | | | | Theta star | 12.22 | | | | | | |
| 586 | | | | | Nu star | 10.01 | **Potential UCLs to Use** | | | | | |
| 587 | | | | | AppChi2 | 3.95 | | | | 95% KM (t) UCL | | 1.424 |
| 588 | | | | 95% Gamma Approximate UCL | | 10.34 | | | | 95% KM (Percentile Bootstrap) UCL | | 1.8 |
| 589 | | | | 95% Adjusted Gamma UCL | | 11.69 | | | | | | |
| 590 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 591 | | | | | | | | | | | | |
| 592 | | | | | | | | | | | | |
| 593 | **Chromium** | | | | | | | | | | | |
| 594 | | | | | | | | | | | | |
| 595 | | | | | **General Statistics** | | | | | | | |
| 596 | | | | Number of Valid Data | | 15 | | | | Number of Detected Data | | 6 |
| 597 | | | | Number of Distinct Detected Data | | 6 | | | | Number of Non-Detect Data | | 9 |
| 598 | | | | | | | | | | Percent Non-Detects | | 60.00% |
| 599 | | | | | | | | | | | | |
| 600 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 601 | | | | Minimum Detected | | 1.6 | | | | Minimum Detected | | 0.47 |
| 602 | | | | Maximum Detected | | 58.7 | | | | Maximum Detected | | 4.072 |
| 603 | | | | Mean of Detected | | 13.68 | | | | Mean of Detected | | 1.74 |
| 604 | | | | SD of Detected | | 22.37 | | | | SD of Detected | | 1.341 |
| 605 | | | | Minimum Non-Detect | | 0.4 | | | | Minimum Non-Detect | | -0.916 |
| 606 | | | | Maximum Non-Detect | | 0.4 | | | | Maximum Non-Detect | | -0.916 |
| 607 | | | | | | | | | | | | |
| 608 | | | | | | | | | | | | |
| 609 | | | | | **Warning: There are only 6 Detected Values in this data** | | | | | | | |
| 610 | | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | |
| 611 | | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | |
| 612 | | | | | | | | | | | | |
| 613 | | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | |
| 614 | | | | | | | | | | | | |
| 615 | | | | | | | | | | | | |
| 616 | | | | | **UCL Statistics** | | | | | | | |
| 617 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 618 | | | | Shapiro Wilk Test Statistic | | 0.627 | | | | Shapiro Wilk Test Statistic | | 0.894 |
| 619 | | | | 5% Shapiro Wilk Critical Value | | 0.788 | | | | 5% Shapiro Wilk Critical Value | | 0.788 |
| 620 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 621 | | | | | | | | | | | | |
| 622 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 623 | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | | |
| 624 | | | | Mean | | 5.593 | | | | Mean | | -0.27 |
| 625 | | | | SD | | 15.02 | | | | SD | | 1.878 |
| 626 | | | | 95% DL/2 (t) UCL | | 12.42 | | | | 95% H-Stat (DL/2) UCL | | 7.252 |
| 627 | | | | | | | | | | | | |
| 628 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | Log ROS Method | | |
| 629 | | | | **MLE yields a negative mean** | | | | | | Mean in Log Scale | | -1.01 |
| 630 | | | | | | | | | | SD in Log Scale | | 2.759 |
| 631 | | | | | | | | | | Mean in Original Scale | | 5.558 |
| 632 | | | | | | | | | | SD in Original Scale | | 15.03 |
| 633 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 13.13 |
| 634 | | | | | | | | | | 95% BCA Bootstrap UCL | | 17.53 |
| 635 | | | | | | | | | | | | |
| 636 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 637 | | | | | k star (bias corrected) | 0.457 | Data appear Gamma Distributed at 5% Significance Level | | | | | |
| 638 | | | | | Theta Star | 29.96 | | | | | | |
| 639 | | | | | nu star | 5.48 | | | | | | |
| 640 | | | | | | | | | | | | |
| 641 | | | | | A-D Test Statistic | 0.633 | Nonparametric Statistics | | | | | |
| 642 | | | | | 5% A-D Critical Value | 0.724 | | | | | Kaplan-Meier (KM) Method | |
| 643 | | | | | K-S Test Statistic | 0.724 | | | | | Mean | 6.433 |
| 644 | | | | | 5% K-S Critical Value | 0.345 | | | | | SD | 14.21 |
| 645 | Data appear Gamma Distributed at 5% Significance Level | | | | | | | | | | SE of Mean | 4.019 |
| 646 | | | | | | | | | | | 95% KM (t) UCL | 13.51 |
| 647 | | | Assuming Gamma Distribution | | | | | | | | 95% KM (z) UCL | 13.04 |
| 648 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 12.85 |
| 649 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 77.27 |
| 650 | | | | | Maximum | 118.5 | | | | | 95% KM (BCA) UCL | 14.78 |
| 651 | | | | | Mean | 29.77 | | | | | 95% KM (Percentile Bootstrap) UCL | 13.88 |
| 652 | | | | | Median | 11.9 | | | | | 95% KM (Chebyshev) UCL | 23.95 |
| 653 | | | | | SD | 37.53 | | | | | 97.5% KM (Chebyshev) UCL | 31.53 |
| 654 | | | | | k star | 0.199 | | | | | 99% KM (Chebyshev) UCL | 46.42 |
| 655 | | | | | Theta star | 149.2 | | | | | | |
| 656 | | | | | Nu star | 5.984 | Potential UCLs to Use | | | | | |
| 657 | | | | | AppChi2 | 1.632 | | | | | 95% KM (t) UCL | 13.51 |
| 658 | | | | | 95% Gamma Approximate UCL | 109.2 | | | | | | |
| 659 | | | | | 95% Adjusted Gamma UCL | 130.1 | | | | | | |
| 660 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 661 | | | | | | | | | | | | |
| 662 | | | | | | | | | | | | |
| 663 | Chrysene | | | | | | | | | | | |
| 664 | | | | | | | | | | | | |
| 665 | | | | | General Statistics | | | | | | | |
| 666 | | | | | Number of Valid Data | 15 | | | | | Number of Detected Data | 2 |
| 667 | | | | | Number of Distinct Detected Data | 2 | | | | | Number of Non-Detect Data | 13 |
| 668 | | | | | | | | | | | Percent Non-Detects | 86.67% |
| 669 | | | | | | | | | | | | |
| 670 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 671 | | | | | Minimum Detected | 0.13 | | | | | Minimum Detected | -2.04 |
| 672 | | | | | Maximum Detected | 0.16 | | | | | Maximum Detected | -1.833 |
| 673 | | | | | Mean of Detected | 0.145 | | | | | Mean of Detected | -1.936 |
| 674 | | | | | SD of Detected | 0.0212 | | | | | SD of Detected | 0.147 |
| 675 | | | | | Minimum Non-Detect | 0.1 | | | | | Minimum Non-Detect | -2.303 |
| 676 | | | | | Maximum Non-Detect | 0.1 | | | | | Maximum Non-Detect | -2.303 |
| 677 | | | | | | | | | | | | |
| 678 | | | | | | | | | | | | |
| 679 | Warning: Data set has only 2 Distinct Detected Values. | | | | | | | | | | | |
| 680 | This may not be adequate enough to compute meaningful and reliable test statistics and estimates. | | | | | | | | | | | |
| 681 | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 682 | | | | | | | | | | | | |
| 683 | Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations. | | | | | | | | | | | |
| 684 | | | | | | | | | | | | |
| 685 | The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods. | | | | | | | | | | | |
| 686 | Those methods will return a 'N/A' value on your output display! | | | | | | | | | | | |
| 687 | | | | | | | | | | | | |
| 688 | It is necessary to have 4 or more Distinct Values for bootstrap methods. | | | | | | | | | | | |
| 689 | However, results obtained using 4 to 9 distinct values may not be reliable. | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 690 | It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates. | | | | | | | | | | | |
| 691 | | | | | | | | | | | | |
| 692 | | | | | | | | | | | | |
| 693 | UCL Statistics | | | | | | | | | | | |
| 694 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 695 | | | | | Shapiro Wilk Test Statistic | N/A | | | | Shapiro Wilk Test Statistic | | N/A |
| 696 | | | | | 5% Shapiro Wilk Critical Value | N/A | | | | 5% Shapiro Wilk Critical Value | | N/A |
| 697 | Data not Normal at 5% Significance Level | | | | | | Data not Lognormal at 5% Significance Level | | | | | |
| 698 | | | | | | | | | | | | |
| 699 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 700 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 701 | | | | | Mean | 0.0627 | | | | Mean | | -2.854 |
| 702 | | | | | SD | 0.0339 | | | | SD | | 0.375 |
| 703 | | | | | 95% DL/2 (t) UCL | 0.0781 | | | | 95% H-Stat (DL/2) UCL | | 0.0678 |
| 704 | | | | | | | | | | | | |
| 705 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 706 | MLE method failed to converge properly | | | | | | | | | Mean in Log Scale | | N/A |
| 707 | | | | | | | | | | SD in Log Scale | | N/A |
| 708 | | | | | | | | | | Mean in Original Scale | | N/A |
| 709 | | | | | | | | | | SD in Original Scale | | N/A |
| 710 | | | | | | | | | | 95% Percentile Bootstrap UCL | | N/A |
| 711 | | | | | | | | | | 95% BCA Bootstrap UCL | | N/A |
| 712 | | | | | | | | | | | | |
| 713 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 714 | | | | | k star (bias corrected) | N/A | Data do not follow a Discernable Distribution (0.05) | | | | | |
| 715 | | | | | Theta Star | N/A | | | | | | |
| 716 | | | | | nu star | N/A | | | | | | |
| 717 | | | | | | | | | | | | |
| 718 | | | | | A-D Test Statistic | N/A | Nonparametric Statistics | | | | | |
| 719 | | | | | 5% A-D Critical Value | N/A | | | | Kaplan-Meier (KM) Method | | |
| 720 | | | | | K-S Test Statistic | N/A | | | | Mean | | 0.132 |
| 721 | | | | | 5% K-S Critical Value | N/A | | | | SD | | 0.00748 |
| 722 | Data not Gamma Distributed at 5% Significance Level | | | | | | | | | SE of Mean | | 0.00273 |
| 723 | | | | | | | | | | 95% KM (t) UCL | | 0.137 |
| 724 | Assuming Gamma Distribution | | | | | | | | | 95% KM (z) UCL | | 0.136 |
| 725 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | | N/A |
| 726 | | | | | Minimum | N/A | | | | 95% KM (bootstrap t) UCL | | N/A |
| 727 | | | | | Maximum | N/A | | | | 95% KM (BCA) UCL | | N/A |
| 728 | | | | | Mean | N/A | | | | 95% KM (Percentile Bootstrap) UCL | | N/A |
| 729 | | | | | Median | N/A | | | | 95% KM (Chebyshev) UCL | | 0.144 |
| 730 | | | | | SD | N/A | | | | 97.5% KM (Chebyshev) UCL | | 0.149 |
| 731 | | | | | k star | N/A | | | | 99% KM (Chebyshev) UCL | | 0.159 |
| 732 | | | | | Theta star | N/A | | | | | | |
| 733 | | | | | Nu star | N/A | Potential UCLs to Use | | | | | |
| 734 | | | | | AppChi2 | N/A | | | | 95% KM (t) UCL | | 0.137 |
| 735 | | | | | 95% Gamma Approximate UCL | N/A | | | | 95% KM (% Bootstrap) UCL | | N/A |
| 736 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 737 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 738 | | | | | | | | | | | | |
| 739 | | | | | | | | | | | | |
| 740 | Cobalt | | | | | | | | | | | |
| 741 | | | | | | | | | | | | |
| 742 | General Statistics | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 743 | | | | | Number of Valid Data | 15 | | | | Number of Detected Data | | 0 |
| 744 | | | | | Number of Distinct Detected Data | 0 | | | | Number of Non-Detect Data | | 15 |
| 745 | | | | | | | | | | Percent Non-Detects | | 100.00% |
| 746 | | | | | | | | | | | | |
| 747 | Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs! | | | | | | | | | | | |
| 748 | Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit! | | | | | | | | | | | |
| 749 | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 750 | | | | | | | | | | | | |
| 751 | The data set for variable Cobalt was not processed! | | | | | | | | | | | |
| 752 | | | | | | | | | | | | |
| 753 | | | | | | | | | | | | |
| 754 | | | | | | | | | | | | |
| 755 | Copper | | | | | | | | | | | |
| 756 | | | | | | | | | | | | |
| 757 | General Statistics | | | | | | | | | | | |
| 758 | | | | | Number of Valid Data | 15 | | | | Number of Detected Data | | 1 |
| 759 | | | | | Number of Distinct Detected Data | 1 | | | | Number of Non-Detect Data | | 14 |
| 760 | | | | | | | | | | Percent Non-Detects | | 93.33% |
| 761 | | | | | | | | | | | | |
| 762 | Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set! | | | | | | | | | | | |
| 763 | It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 764 | | | | | | | | | | | | |
| 765 | The data set for variable Copper was not processed! | | | | | | | | | | | |
| 766 | | | | | | | | | | | | |
| 767 | | | | | | | | | | | | |
| 768 | | | | | | | | | | | | |
| 769 | Cyanide | | | | | | | | | | | |
| 770 | | | | | | | | | | | | |
| 771 | General Statistics | | | | | | | | | | | |
| 772 | | | | | Number of Valid Data | 15 | | | | Number of Detected Data | | 2 |
| 773 | | | | | Number of Distinct Detected Data | 2 | | | | Number of Non-Detect Data | | 13 |
| 774 | | | | | | | | | | Percent Non-Detects | | 86.67% |
| 775 | | | | | | | | | | | | |
| 776 | Raw Statistics | | | | | | Log-transformed Statistics | | | | | |
| 777 | | | | | Minimum Detected | 3.2 | | | | Minimum Detected | | 1.163 |
| 778 | | | | | Maximum Detected | 4.8 | | | | Maximum Detected | | 1.569 |
| 779 | | | | | Mean of Detected | 4 | | | | Mean of Detected | | 1.366 |
| 780 | | | | | SD of Detected | 1.131 | | | | SD of Detected | | 0.287 |
| 781 | | | | | Minimum Non-Detect | 3 | | | | Minimum Non-Detect | | 1.099 |
| 782 | | | | | Maximum Non-Detect | 4 | | | | Maximum Non-Detect | | 1.386 |
| 783 | | | | | | | | | | | | |
| 784 | Note: Data have multiple DLs - Use of KM Method is recommended | | | | | | | | | Number treated as Non-Detect | | 14 |
| 785 | For all methods (except KM, DL/2, and ROS Methods), | | | | | | | | | Number treated as Detected | | 1 |
| 786 | Observations < Largest ND are treated as NDs | | | | | | | | | Single DL Non-Detect Percentage | | 93.33% |
| 787 | | | | | | | | | | | | |
| 788 | Warning: Data set has only 2 Distinct Detected Values. | | | | | | | | | | | |
| 789 | This may not be adequate enough to compute meaningful and reliable test statistics and estimates. | | | | | | | | | | | |
| 790 | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 791 | | | | | | | | | | | | |
| 792 | Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations. | | | | | | | | | | | |
| 793 | | | | | | | | | | | | |
| 794 | The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods. | | | | | | | | | | | |
| 795 | Those methods will return a 'N/A' value on your output display! | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 796 | | | | | | | | | | | | |
| 797 | It is necessary to have 4 or more Distinct Values for bootstrap methods. | | | | | | | | | | | |
| 798 | However, results obtained using 4 to 9 distinct values may not be reliable. | | | | | | | | | | | |
| 799 | It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates. | | | | | | | | | | | |
| 800 | | | | | | | | | | | | |
| 801 | | | | | | | | | | | | |
| 802 | UCL Statistics | | | | | | | | | | | |
| 803 | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | | | | |
| 804 | | | | | Shapiro Wilk Test Statistic | N/A | | | | Shapiro Wilk Test Statistic | | N/A |
| 805 | | | | | 5% Shapiro Wilk Critical Value | N/A | | | | 5% Shapiro Wilk Critical Value | | N/A |
| 806 | Data not Normal at 5% Significance Level | | | | | | Data not Lognormal at 5% Significance Level | | | | | |
| 807 | | | | | | | | | | | | |
| 808 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 809 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 810 | | | | | Mean | 2.033 | | | | Mean | | 0.649 |
| 811 | | | | | SD | 0.887 | | | | SD | | 0.331 |
| 812 | | | | | 95% DL/2 (t) UCL | 2.437 | | | | 95% H-Stat (DL/2) UCL | | 2.393 |
| 813 | | | | | | | | | | | | |
| 814 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 815 | MLE method failed to converge properly | | | | | | | | | Mean in Log Scale | | N/A |
| 816 | | | | | | | | | | SD in Log Scale | | N/A |
| 817 | | | | | | | | | | Mean in Original Scale | | N/A |
| 818 | | | | | | | | | | SD in Original Scale | | N/A |
| 819 | | | | | | | | | | 95% Percentile Bootstrap UCL | | N/A |
| 820 | | | | | | | | | | 95% BCA Bootstrap UCL | | N/A |
| 821 | | | | | | | | | | | | |
| 822 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 823 | | | | | k star (bias corrected) | N/A | Data do not follow a Discernable Distribution (0.05) | | | | | |
| 824 | | | | | Theta Star | N/A | | | | | | |
| 825 | | | | | nu star | N/A | | | | | | |
| 826 | | | | | | | | | | | | |
| 827 | | | | | A-D Test Statistic | N/A | Nonparametric Statistics | | | | | |
| 828 | | | | | 5% A-D Critical Value | N/A | | | | Kaplan-Meier (KM) Method | | |
| 829 | | | | | K-S Test Statistic | N/A | | | | Mean | | 3.307 |
| 830 | | | | | 5% K-S Critical Value | N/A | | | | SD | | 0.399 |
| 831 | Data not Gamma Distributed at 5% Significance Level | | | | | | | | | SE of Mean | | 0.146 |
| 832 | | | | | | | | | | 95% KM (t) UCL | | 3.563 |
| 833 | Assuming Gamma Distribution | | | | | | | | | 95% KM (z) UCL | | 3.546 |
| 834 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | 95% KM (jackknife) UCL | | 4.383 |
| 835 | | | | | Minimum | N/A | | | | 95% KM (bootstrap t) UCL | | N/A |
| 836 | | | | | Maximum | N/A | | | | 95% KM (BCA) UCL | | N/A |
| 837 | | | | | Mean | N/A | | | | 95% KM (Percentile Bootstrap) UCL | | N/A |
| 838 | | | | | Median | N/A | | | | 95% KM (Chebyshev) UCL | | 3.942 |
| 839 | | | | | SD | N/A | | | | 97.5% KM (Chebyshev) UCL | | 4.217 |
| 840 | | | | | k star | N/A | | | | 99% KM (Chebyshev) UCL | | 4.757 |
| 841 | | | | | Theta star | N/A | | | | | | |
| 842 | | | | | Nu star | N/A | Potential UCLs to Use | | | | | |
| 843 | | | | | AppChi2 | N/A | | | | 95% KM (t) UCL | | 3.563 |
| 844 | | | | | 95% Gamma Approximate UCL | N/A | | | | 95% KM (% Bootstrap) UCL | | N/A |
| 845 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 846 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 847 | | | | | | | | | | | | |
| 848 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 849 | Dieldrin | | | | | | | | | | | |
| 850 | | | | | | | | | | | | |
| 851 | | | | | General Statistics | | | | | | | |
| 852 | | | | | Number of Valid Data | 15 | | | | Number of Detected Data | | 0 |
| 853 | | | | | Number of Distinct Detected Data | 0 | | | | Number of Non-Detect Data | | 15 |
| 854 | | | | | | | | | | Percent Non-Detects | | 100.00% |
| 855 | | | | | | | | | | | | |
| 856 | | | | | Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs! | | | | | | | |
| 857 | | | | | Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit! | | | | | | | |
| 858 | | | | | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | |
| 859 | | | | | | | | | | | | |
| 860 | | | | | The data set for variable Dieldrin was not processed! | | | | | | | |
| 861 | | | | | | | | | | | | |
| 862 | | | | | | | | | | | | |
| 863 | | | | | | | | | | | | |
| 864 | Gamma-Chlordane | | | | | | | | | | | |
| 865 | | | | | | | | | | | | |
| 866 | | | | | General Statistics | | | | | | | |
| 867 | | | | | Number of Valid Data | 15 | | | | Number of Detected Data | | 3 |
| 868 | | | | | Number of Distinct Detected Data | 3 | | | | Number of Non-Detect Data | | 12 |
| 869 | | | | | | | | | | Percent Non-Detects | | 80.00% |
| 870 | | | | | | | | | | | | |
| 871 | | | | | Raw Statistics | | | | | Log-transformed Statistics | | |
| 872 | | | | | Minimum Detected | 0.0027 | | | | Minimum Detected | | -5.915 |
| 873 | | | | | Maximum Detected | 0.0094 | | | | Maximum Detected | | -4.667 |
| 874 | | | | | Mean of Detected | 0.0056 | | | | Mean of Detected | | -5.314 |
| 875 | | | | | SD of Detected | 0.00344 | | | | SD of Detected | | 0.625 |
| 876 | | | | | Minimum Non-Detect | 0.0025 | | | | Minimum Non-Detect | | -5.991 |
| 877 | | | | | Maximum Non-Detect | 0.0025 | | | | Maximum Non-Detect | | -5.991 |
| 878 | | | | | | | | | | | | |
| 879 | | | | | | | | | | | | |
| 880 | | | | | Warning: There are only 3 Distinct Detected Values in this data set | | | | | | | |
| 881 | | | | | The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods. | | | | | | | |
| 882 | | | | | Those methods will return a 'N/A' value on your output display! | | | | | | | |
| 883 | | | | | | | | | | | | |
| 884 | | | | | It is necessary to have 4 or more Distinct Values for bootstrap methods. | | | | | | | |
| 885 | | | | | However, results obtained using 4 to 9 distinct values may not be reliable. | | | | | | | |
| 886 | | | | | It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates. | | | | | | | |
| 887 | | | | | | | | | | | | |
| 888 | | | | | | | | | | | | |
| 889 | | | | | UCL Statistics | | | | | | | |
| 890 | | | | | Normal Distribution Test with Detected Values Only | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 891 | | | | | Shapiro Wilk Test Statistic | 0.949 | | | | Shapiro Wilk Test Statistic | | 0.996 |
| 892 | | | | | 5% Shapiro Wilk Critical Value | 0.767 | | | | 5% Shapiro Wilk Critical Value | | 0.767 |
| 893 | | | | | Data appear Normal at 5% Significance Level | | | | | Data appear Lognormal at 5% Significance Level | | |
| 894 | | | | | | | | | | | | |
| 895 | | | | | Assuming Normal Distribution | | | | | Assuming Lognormal Distribution | | |
| 896 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 897 | | | | | Mean | 0.00212 | | | | Mean | | -6.41 |
| 898 | | | | | SD | 0.00222 | | | | SD | | 0.615 |
| 899 | | | | | 95% DL/2 (t) UCL | 0.00313 | | | | 95% H-Stat (DL/2) UCL | | 0.00225 |
| 900 | | | | | | | | | | | | |
| 901 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 902 | MLE yields a negative mean | | | | | | | | | | Mean in Log Scale | -7.984 |
| 903 | | | | | | | | | | | SD in Log Scale | 1.852 |
| 904 | | | | | | | | | | | Mean in Original Scale | 0.0014 |
| 905 | | | | | | | | | | | SD in Original Scale | 0.00256 |
| 906 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.00255 |
| 907 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.00304 |
| 908 | | | | | | | | | | | | |
| 909 | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | | | | |
| 910 | | | | | k star (bias corrected) | N/A | Data appear Normal at 5% Significance Level | | | | | |
| 911 | | | | | Theta Star | N/A | | | | | | |
| 912 | | | | | nu star | N/A | | | | | | |
| 913 | | | | | | | | | | | | |
| 914 | | | | | A-D Test Statistic | N/A | Nonparametric Statistics | | | | | |
| 915 | | | | | 5% A-D Critical Value | N/A | | | | | Kaplan-Meier (KM) Method | |
| 916 | | | | | K-S Test Statistic | N/A | | | | | Mean | 0.00328 |
| 917 | | | | | 5% K-S Critical Value | N/A | | | | | SD | 0.00171 |
| 918 | Data not Gamma Distributed at 5% Significance Level | | | | | | | | | | SE of Mean | 0.0005406 |
| 919 | | | | | | | | | | | 95% KM (t) UCL | 0.00423 |
| 920 | Assuming Gamma Distribution | | | | | | | | | | 95% KM (z) UCL | 0.00417 |
| 921 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.00468 |
| 922 | | | | | Minimum | N/A | | | | | 95% KM (bootstrap t) UCL | 0.00414 |
| 923 | | | | | Maximum | N/A | | | | | 95% KM (BCA) UCL | 0.0094 |
| 924 | | | | | Mean | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0094 |
| 925 | | | | | Median | N/A | | | | | 95% KM (Chebyshev) UCL | 0.00564 |
| 926 | | | | | SD | N/A | | | | | 97.5% KM (Chebyshev) UCL | 0.00666 |
| 927 | | | | | k star | N/A | | | | | 99% KM (Chebyshev) UCL | 0.00866 |
| 928 | | | | | Theta star | N/A | | | | | | |
| 929 | | | | | Nu star | N/A | Potential UCLs to Use | | | | | |
| 930 | | | | | AppChi2 | N/A | | | | | 95% KM (t) UCL | 0.00423 |
| 931 | | | | | 95% Gamma Approximate UCL | N/A | | | | | 95% KM (Percentile Bootstrap) UCL | 0.0094 |
| 932 | | | | | 95% Adjusted Gamma UCL | N/A | | | | | | |
| 933 | Note: DL/2 is not a recommended method. | | | | | | | | | | | |
| 934 | | | | | | | | | | | | |
| 935 | | | | | | | | | | | | |
| 936 | Heptachlor Epoxide | | | | | | | | | | | |
| 937 | | | | | | | | | | | | |
| 938 | General Statistics | | | | | | | | | | | |
| 939 | | | | | Number of Valid Data | 15 | | | | | Number of Detected Data | 1 |
| 940 | | | | | Number of Distinct Detected Data | 1 | | | | | Number of Non-Detect Data | 14 |
| 941 | | | | | | | | | | | Percent Non-Detects | 93.33% |
| 942 | | | | | | | | | | | | |
| 943 | Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set! | | | | | | | | | | | |
| 944 | It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 945 | | | | | | | | | | | | |
| 946 | The data set for variable Heptachlor Epoxide was not processed! | | | | | | | | | | | |
| 947 | | | | | | | | | | | | |
| 948 | | | | | | | | | | | | |
| 949 | | | | | | | | | | | | |
| 950 | Indeno(1,2,3-cd)pyrene | | | | | | | | | | | |
| 951 | | | | | | | | | | | | |
| 952 | General Statistics | | | | | | | | | | | |
| 953 | | | | | Number of Valid Data | 15 | | | | | Number of Detected Data | 1 |
| 954 | | | | | Number of Distinct Detected Data | 1 | | | | | Number of Non-Detect Data | 14 |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 955 | | | | | | | | | | Percent Non-Detects | | 93.33% |
| 956 | | | | | | | | | | | | |
| 957 | Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set! | | | | | | | | | | | |
| 958 | It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 959 | | | | | | | | | | | | |
| 960 | The data set for variable Indeno(1,2,3-cd)pyrene was not processed! | | | | | | | | | | | |
| 961 | | | | | | | | | | | | |
| 962 | | | | | | | | | | | | |
| 963 | | | | | | | | | | | | |
| 964 | Iron | | | | | | | | | | | |
| 965 | | | | | | | | | | | | |
| 966 | General Statistics | | | | | | | | | | | |
| 967 | Number of Valid Observations | | | | | 15 | Number of Distinct Observations | | | | | 15 |
| 968 | | | | | | | | | | | | |
| 969 | Raw Statistics | | | | | | Log-transformed Statistics | | | | | |
| 970 | Minimum | | | | | 866 | Minimum of Log Data | | | | | 6.764 |
| 971 | Maximum | | | | | 21200 | Maximum of Log Data | | | | | 9.962 |
| 972 | Mean | | | | | 4318 | Mean of log Data | | | | | 7.86 |
| 973 | Median | | | | | 1460 | SD of log Data | | | | | 0.976 |
| 974 | SD | | | | | 5391 | | | | | | |
| 975 | Coefficient of Variation | | | | | 1.249 | | | | | | |
| 976 | Skewness | | | | | 2.481 | | | | | | |
| 977 | | | | | | | | | | | | |
| 978 | Relevant UCL Statistics | | | | | | | | | | | |
| 979 | Normal Distribution Test | | | | | | Lognormal Distribution Test | | | | | |
| 980 | Shapiro Wilk Test Statistic | | | | | 0.661 | Shapiro Wilk Test Statistic | | | | | 0.865 |
| 981 | Shapiro Wilk Critical Value | | | | | 0.881 | Shapiro Wilk Critical Value | | | | | 0.881 |
| 982 | Data not Normal at 5% Significance Level | | | | | | Data not Lognormal at 5% Significance Level | | | | | |
| 983 | | | | | | | | | | | | |
| 984 | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | | | | |
| 985 | 95% Student's-t UCL | | | | | 6770 | 95% H-UCL | | | | | 8460 |
| 986 | 95% UCLs (Adjusted for Skewness) | | | | | | 95% Chebyshev (MVUE) UCL | | | | | 8784 |
| 987 | 95% Adjusted-CLT UCL | | | | | 7561 | 97.5% Chebyshev (MVUE) UCL | | | | | 10855 |
| 988 | 95% Modified-t UCL | | | | | 6919 | 99% Chebyshev (MVUE) UCL | | | | | 14924 |
| 989 | | | | | | | | | | | | |
| 990 | Gamma Distribution Test | | | | | | Data Distribution | | | | | |
| 991 | k star (bias corrected) | | | | | 0.938 | Data do not follow a Discernable Distribution (0.05) | | | | | |
| 992 | Theta Star | | | | | 4605 | | | | | | |
| 993 | MLE of Mean | | | | | 4318 | | | | | | |
| 994 | MLE of Standard Deviation | | | | | 4459 | | | | | | |
| 995 | nu star | | | | | 28.13 | | | | | | |
| 996 | Approximate Chi Square Value (.05) | | | | | 17.03 | Nonparametric Statistics | | | | | |
| 997 | Adjusted Level of Significance | | | | | 0.0324 | 95% CLT UCL | | | | | 6608 |
| 998 | Adjusted Chi Square Value | | | | | 15.97 | 95% Jackknife UCL | | | | | 6770 |
| 999 | | | | | | | 95% Standard Bootstrap UCL | | | | | 6529 |
| 1000 | Anderson-Darling Test Statistic | | | | | 1.185 | 95% Bootstrap-t UCL | | | | | 9422 |
| 1001 | Anderson-Darling 5% Critical Value | | | | | 0.761 | 95% Hall's Bootstrap UCL | | | | | 15306 |
| 1002 | Kolmogorov-Smirnov Test Statistic | | | | | 0.294 | 95% Percentile Bootstrap UCL | | | | | 6840 |
| 1003 | Kolmogorov-Smirnov 5% Critical Value | | | | | 0.227 | 95% BCA Bootstrap UCL | | | | | 7795 |
| 1004 | Data not Gamma Distributed at 5% Significance Level | | | | | | 95% Chebyshev(Mean, Sd) UCL | | | | | 10386 |
| 1005 | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | | | | | 13011 |
| 1006 | Assuming Gamma Distribution | | | | | | 99% Chebyshev(Mean, Sd) UCL | | | | | 18169 |
| 1007 | 95% Approximate Gamma UCL | | | | | 7133 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1008 | | | | 95% Adjusted Gamma UCL | | 7605 | | | | | | |
| 1009 | | | | | | | | | | | | |
| 1010 | | | | **Potential UCL to Use** | | | | | | Use 95% Chebyshev (Mean, Sd) UCL | | 10386 |
| 1011 | | | | | | | | | | | | |
| 1012 | | | | | | | | | | | | |
| 1013 | **Lead** | | | | | | | | | | | |
| 1014 | | | | | | | | | | | | |
| 1015 | | | | | **General Statistics** | | | | | | | |
| 1016 | | | | | Number of Valid Data | 15 | | | | Number of Detected Data | | 8 |
| 1017 | | | | | Number of Distinct Detected Data | 8 | | | | Number of Non-Detect Data | | 7 |
| 1018 | | | | | | | | | | Percent Non-Detects | | 46.67% |
| 1019 | | | | | | | | | | | | |
| 1020 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1021 | | | | | Minimum Detected | 1.5 | | | | Minimum Detected | | 0.405 |
| 1022 | | | | | Maximum Detected | 82.6 | | | | Maximum Detected | | 4.414 |
| 1023 | | | | | Mean of Detected | 18.08 | | | | Mean of Detected | | 2.133 |
| 1024 | | | | | SD of Detected | 26.9 | | | | SD of Detected | | 1.307 |
| 1025 | | | | | Minimum Non-Detect | 2 | | | | Minimum Non-Detect | | 0.693 |
| 1026 | | | | | Maximum Non-Detect | 2 | | | | Maximum Non-Detect | | 0.693 |
| 1027 | | | | | | | | | | | | |
| 1028 | | | | | | | | | | | | |
| 1029 | | | | | **Warning: There are only 8 Detected Values in this data** | | | | | | | |
| 1030 | | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | |
| 1031 | | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | |
| 1032 | | | | | | | | | | | | |
| 1033 | | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | |
| 1034 | | | | | | | | | | | | |
| 1035 | | | | | | | | | | | | |
| 1036 | | | | | **UCL Statistics** | | | | | | | |
| 1037 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 1038 | | | | | Shapiro Wilk Test Statistic | 0.638 | | | | Shapiro Wilk Test Statistic | | 0.957 |
| 1039 | | | | | 5% Shapiro Wilk Critical Value | 0.818 | | | | 5% Shapiro Wilk Critical Value | | 0.818 |
| 1040 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1041 | | | | | | | | | | | | |
| 1042 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1043 | | | | | DL/2 Substitution Method | | | | | DL/2 Substitution Method | | |
| 1044 | | | | | Mean | 10.11 | | | | Mean | | 1.137 |
| 1045 | | | | | SD | 20.97 | | | | SD | | 1.438 |
| 1046 | | | | | 95% DL/2 (t) UCL | 19.64 | | | | 95% H-Stat (DL/2) UCL | | 9.827 |
| 1047 | | | | | | | | | | | | |
| 1048 | | | | | Maximum Likelihood Estimate(MLE) Method | N/A | | | | Log ROS Method | | |
| 1049 | | | | **MLE yields a negative mean** | | | | | | Mean in Log Scale | | 0.997 |
| 1050 | | | | | | | | | | SD in Log Scale | | 1.674 |
| 1051 | | | | | | | | | | Mean in Original Scale | | 10.11 |
| 1052 | | | | | | | | | | SD in Original Scale | | 20.97 |
| 1053 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 20.22 |
| 1054 | | | | | | | | | | 95% BCA Bootstrap UCL | | 25.95 |
| 1055 | | | | | | | | | | | | |
| 1056 | | | | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | |
| 1057 | | | | | k star (bias corrected) | 0.572 | | | | **Data appear Gamma Distributed at 5% Significance Level** | | |
| 1058 | | | | | Theta Star | 31.61 | | | | | | |
| 1059 | | | | | nu star | 9.148 | | | | | | |
| 1060 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1061 | | | | | A-D Test Statistic | 0.438 | **Nonparametric Statistics** | | | | | |
| 1062 | | | | | 5% A-D Critical Value | 0.744 | | | | | Kaplan-Meier (KM) Method | |
| 1063 | | | | | K-S Test Statistic | 0.744 | | | | | Mean | 10.34 |
| 1064 | | | | | 5% K-S Critical Value | 0.304 | | | | | SD | 20.15 |
| 1065 | **Data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | SE of Mean | 5.563 |
| 1066 | | | | | | | | | | | 95% KM (t) UCL | 20.14 |
| 1067 | | | **Assuming Gamma Distribution** | | | | | | | | 95% KM (z) UCL | 19.49 |
| 1068 | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | | 95% KM (jackknife) UCL | 19.49 |
| 1069 | | | | | Minimum | 1E-09 | | | | | 95% KM (bootstrap t) UCL | 39.64 |
| 1070 | | | | | Maximum | 82.6 | | | | | 95% KM (BCA) UCL | 20.92 |
| 1071 | | | | | Mean | 19.13 | | | | | 95% KM (Percentile Bootstrap) UCL | 20.41 |
| 1072 | | | | | Median | 14.3 | | | | | 95% KM (Chebyshev) UCL | 34.59 |
| 1073 | | | | | SD | 23.85 | | | | | 97.5% KM (Chebyshev) UCL | 45.08 |
| 1074 | | | | | k star | 0.209 | | | | | 99% KM (Chebyshev) UCL | 65.69 |
| 1075 | | | | | Theta star | 91.63 | | | | | | |
| 1076 | | | | | Nu star | 6.264 | **Potential UCLs to Use** | | | | | |
| 1077 | | | | | AppChi2 | 1.776 | | | | | 95% KM (BCA) UCL | 20.92 |
| 1078 | | | | | 95% Gamma Approximate UCL | 67.47 | | | | | | |
| 1079 | | | | | 95% Adjusted Gamma UCL | 79.96 | | | | | | |
| 1080 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1081 | | | | | | | | | | | | |
| 1082 | | | | | | | | | | | | |
| 1083 | **Manganese** | | | | | | | | | | | |
| 1084 | | | | | | | | | | | | |
| 1085 | | | | | **General Statistics** | | | | | | | |
| 1086 | | | | | Number of Valid Observations | 15 | | | | | Number of Distinct Observations | 15 |
| 1087 | | | | | | | | | | | | |
| 1088 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1089 | | | | | Minimum | 267 | | | | | Minimum of Log Data | 5.587 |
| 1090 | | | | | Maximum | 1160 | | | | | Maximum of Log Data | 7.056 |
| 1091 | | | | | Mean | 466.9 | | | | | Mean of log Data | 6.064 |
| 1092 | | | | | Median | 385 | | | | | SD of log Data | 0.386 |
| 1093 | | | | | SD | 233.2 | | | | | | |
| 1094 | | | | | Coefficient of Variation | 0.499 | | | | | | |
| 1095 | | | | | Skewness | 2.299 | | | | | | |
| 1096 | | | | | | | | | | | | |
| 1097 | | | | | **Relevant UCL Statistics** | | | | | | | |
| 1098 | | | | **Normal Distribution Test** | | | | | | **Lognormal Distribution Test** | | |
| 1099 | | | | | Shapiro Wilk Test Statistic | 0.712 | | | | | Shapiro Wilk Test Statistic | 0.863 |
| 1100 | | | | | Shapiro Wilk Critical Value | 0.881 | | | | | Shapiro Wilk Critical Value | 0.881 |
| 1101 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data not Lognormal at 5% Significance Level** | | |
| 1102 | | | | | | | | | | | | |
| 1103 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1104 | | | | | 95% Student's-t UCL | 573 | | | | | 95% H-UCL | 567 |
| 1105 | | | | **95% UCLs (Adjusted for Skewness)** | | | | | | | 95% Chebyshev (MVUE) UCL | 665 |
| 1106 | | | | | 95% Adjusted-CLT UCL | 604.2 | | | | | 97.5% Chebyshev (MVUE) UCL | 753.2 |
| 1107 | | | | | 95% Modified-t UCL | 578.9 | | | | | 99% Chebyshev (MVUE) UCL | 926.5 |
| 1108 | | | | | | | | | | | | |
| 1109 | | | | **Gamma Distribution Test** | | | | | | **Data Distribution** | | |
| 1110 | | | | | k star (bias corrected) | 5.07 | | | | **Data do not follow a Discernable Distribution (0.05)** | | |
| 1111 | | | | | Theta Star | 92.11 | | | | | | |
| 1112 | | | | | MLE of Mean | 466.9 | | | | | | |
| 1113 | | | | | MLE of Standard Deviation | 207.4 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1114 | | | | | nu star | 152.1 | | | | | | |
| 1115 | | | | | Approximate Chi Square Value (.05) | 124.6 | | | | Nonparametric Statistics | | |
| 1116 | | | | | Adjusted Level of Significance | 0.0324 | | | | | 95% CLT UCL | 566 |
| 1117 | | | | | Adjusted Chi Square Value | 121.5 | | | | | 95% Jackknife UCL | 573 |
| 1118 | | | | | | | | | | | 95% Standard Bootstrap UCL | 561.5 |
| 1119 | | | | | Anderson-Darling Test Statistic | 1.104 | | | | | 95% Bootstrap-t UCL | 734.1 |
| 1120 | | | | | Anderson-Darling 5% Critical Value | 0.738 | | | | | 95% Hall's Bootstrap UCL | 1055 |
| 1121 | | | | | Kolmogorov-Smirnov Test Statistic | 0.236 | | | | | 95% Percentile Bootstrap UCL | 566.7 |
| 1122 | | | | | Kolmogorov-Smirnov 5% Critical Value | 0.222 | | | | | 95% BCA Bootstrap UCL | 613.7 |
| 1123 | | | | Data not Gamma Distributed at 5% Significance Level | | | | | | | 95% Chebyshev(Mean, Sd) UCL | 729.4 |
| 1124 | | | | | | | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 842.9 |
| 1125 | | | | Assuming Gamma Distribution | | | | | | | 99% Chebyshev(Mean, Sd) UCL | 1066 |
| 1126 | | | | | 95% Approximate Gamma UCL | 570 | | | | | | |
| 1127 | | | | | 95% Adjusted Gamma UCL | 584.4 | | | | | | |
| 1128 | | | | | | | | | | | | |
| 1129 | | | | Potential UCL to Use | | | | | | | Use 95% Student's-t UCL | 573 |
| 1130 | | | | | | | | | | | or 95% Modified-t UCL | 578.9 |
| 1131 | | | | | | | | | | | | |
| 1132 | | | | | | | | | | | | |
| 1133 | Mercury | | | | | | | | | | | |
| 1134 | | | | | | | | | | | | |
| 1135 | | | | | General Statistics | | | | | | | |
| 1136 | | | | | Number of Valid Data | 15 | | | | | Number of Detected Data | 0 |
| 1137 | | | | | Number of Distinct Detected Data | 0 | | | | | Number of Non-Detect Data | 15 |
| 1138 | | | | | | | | | | | Percent Non-Detects | 100.00% |
| 1139 | | | | | | | | | | | | |
| 1140 | | | | Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs! | | | | | | | | |
| 1141 | | | | Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit! | | | | | | | | |
| 1142 | | | | The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | |
| 1143 | | | | | | | | | | | | |
| 1144 | | | | The data set for variable Mercury was not processed! | | | | | | | | |
| 1145 | | | | | | | | | | | | |
| 1146 | | | | | | | | | | | | |
| 1147 | | | | | | | | | | | | |
| 1148 | Naphthalene | | | | | | | | | | | |
| 1149 | | | | | | | | | | | | |
| 1150 | | | | | General Statistics | | | | | | | |
| 1151 | | | | | Number of Valid Data | 15 | | | | | Number of Detected Data | 1 |
| 1152 | | | | | Number of Distinct Detected Data | 1 | | | | | Number of Non-Detect Data | 14 |
| 1153 | | | | | | | | | | | Percent Non-Detects | 93.33% |
| 1154 | | | | | | | | | | | | |
| 1155 | | | | Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set! | | | | | | | | |
| 1156 | It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | |
| 1157 | | | | | | | | | | | | |
| 1158 | | | | The data set for variable Naphthalene was not processed! | | | | | | | | |
| 1159 | | | | | | | | | | | | |
| 1160 | | | | | | | | | | | | |
| 1161 | | | | | | | | | | | | |
| 1162 | Phenanthrene | | | | | | | | | | | |
| 1163 | | | | | | | | | | | | |
| 1164 | | | | | General Statistics | | | | | | | |
| 1165 | | | | | Number of Valid Data | 15 | | | | | Number of Detected Data | 5 |
| 1166 | | | | | Number of Distinct Detected Data | 4 | | | | | Number of Non-Detect Data | 10 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1167 | | | | | | | | | | | Percent Non-Detects | 66.67% |
| 1168 | | | | | | | | | | | | |
| 1169 | | | | Raw Statistics | | | | | | Log-transformed Statistics | | |
| 1170 | | | | | Minimum Detected | 0.11 | | | | | Minimum Detected | -2.207 |
| 1171 | | | | | Maximum Detected | 0.21 | | | | | Maximum Detected | -1.561 |
| 1172 | | | | | Mean of Detected | 0.16 | | | | | Mean of Detected | -1.862 |
| 1173 | | | | | SD of Detected | 0.043 | | | | | SD of Detected | 0.272 |
| 1174 | | | | | Minimum Non-Detect | 0.1 | | | | | Minimum Non-Detect | -2.303 |
| 1175 | | | | | Maximum Non-Detect | 0.1 | | | | | Maximum Non-Detect | -2.303 |
| 1176 | | | | | | | | | | | | |
| 1177 | | | | | | | | | | | | |
| 1178 | | | | Warning: There are only 4 Distinct Detected Values in this data | | | | | | | | |
| 1179 | | | | Note: It should be noted that even though bootstrap may be performed on this data set | | | | | | | | |
| 1180 | | | | the resulting calculations may not be reliable enough to draw conclusions | | | | | | | | |
| 1181 | | | | | | | | | | | | |
| 1182 | | | | It is recommended to have 10-15 or more distinct observations for accurate and meaningful results. | | | | | | | | |
| 1183 | | | | | | | | | | | | |
| 1184 | | | | | | | | | | | | |
| 1185 | | | | UCL Statistics | | | | | | | | |
| 1186 | | | | Normal Distribution Test with Detected Values Only | | | | | | Lognormal Distribution Test with Detected Values Only | | |
| 1187 | | | | | Shapiro Wilk Test Statistic | 0.885 | | | | | Shapiro Wilk Test Statistic | 0.9 |
| 1188 | | | | | 5% Shapiro Wilk Critical Value | 0.762 | | | | | 5% Shapiro Wilk Critical Value | 0.762 |
| 1189 | | | | Data appear Normal at 5% Significance Level | | | | | | Data appear Lognormal at 5% Significance Level | | |
| 1190 | | | | | | | | | | | | |
| 1191 | | | | Assuming Normal Distribution | | | | | | Assuming Lognormal Distribution | | |
| 1192 | | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | |
| 1193 | | | | | Mean | 0.0867 | | | | | Mean | -2.618 |
| 1194 | | | | | SD | 0.0584 | | | | | SD | 0.572 |
| 1195 | | | | | 95% DL/2 (t) UCL | 0.113 | | | | | 95% H-Stat (DL/2) UCL | 0.0998 |
| 1196 | | | | | | | | | | | | |
| 1197 | | | | | Maximum Likelihood Estimate(MLE) Method | | | | | | Log ROS Method | |
| 1198 | | | | | Mean | 0.0656 | | | | | Mean in Log Scale | -2.525 |
| 1199 | | | | | SD | 0.0845 | | | | | SD in Log Scale | 0.591 |
| 1200 | | | | | 95% MLE (t) UCL | 0.104 | | | | | Mean in Original Scale | 0.094 |
| 1201 | | | | | 95% MLE (Tiku) UCL | 0.127 | | | | | SD in Original Scale | 0.0562 |
| 1202 | | | | | | | | | | | 95% Percentile Bootstrap UCL | 0.118 |
| 1203 | | | | | | | | | | | 95% BCA Bootstrap UCL | 0.121 |
| 1204 | | | | | | | | | | | | |
| 1205 | | | | Gamma Distribution Test with Detected Values Only | | | | | | Data Distribution Test with Detected Values Only | | |
| 1206 | | | | | k star (bias corrected) | 7.017 | | | | Data appear Normal at 5% Significance Level | | |
| 1207 | | | | | Theta Star | 0.0228 | | | | | | |
| 1208 | | | | | nu star | 70.17 | | | | | | |
| 1209 | | | | | | | | | | | | |
| 1210 | | | | | A-D Test Statistic | 0.417 | | | | Nonparametric Statistics | | |
| 1211 | | | | | 5% A-D Critical Value | 0.679 | | | | | Kaplan-Meier (KM) Method | |
| 1212 | | | | | K-S Test Statistic | 0.679 | | | | | Mean | 0.127 |
| 1213 | | | | | 5% K-S Critical Value | 0.357 | | | | | SD | 0.0324 |
| 1214 | | | | Data appear Gamma Distributed at 5% Significance Level | | | | | | | SE of Mean | 0.00935 |
| 1215 | | | | | | | | | | | 95% KM (t) UCL | 0.143 |
| 1216 | | | | Assuming Gamma Distribution | | | | | | | 95% KM (z) UCL | 0.142 |
| 1217 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 0.147 |
| 1218 | | | | | Minimum | 0.102 | | | | | 95% KM (bootstrap t) UCL | 0.148 |
| 1219 | | | | | Maximum | 0.265 | | | | | 95% KM (BCA) UCL | 0.165 |

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| 1220 | | | | | Mean | 0.188 | | | | 95% KM (Percentile Bootstrap) UCL | | 0.158 |
| 1221 | | | | | Median | 0.2 | | | | 95% KM (Chebyshev) UCL | | 0.167 |
| 1222 | | | | | SD | 0.052 | | | | 97.5% KM (Chebyshev) UCL | | 0.185 |
| 1223 | | | | | k star | 10.18 | | | | 99% KM (Chebyshev) UCL | | 0.22 |
| 1224 | | | | | Theta star | 0.0184 | | | | | | |
| 1225 | | | | | Nu star | 305.4 | | | | **Potential UCLs to Use** | | |
| 1226 | | | | | AppChi2 | 265.9 | | | | 95% KM (t) UCL | | 0.143 |
| 1227 | | | | 95% Gamma Approximate UCL | | 0.215 | | | | 95% KM (Percentile Bootstrap) UCL | | 0.158 |
| 1228 | | | | 95% Adjusted Gamma UCL | | 0.219 | | | | | | |
| 1229 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1230 | | | | | | | | | | | | |
| 1231 | | | | | | | | | | | | |
| 1232 | **Vanadium** | | | | | | | | | | | |
| 1233 | | | | | | | | | | | | |
| 1234 | | | | | **General Statistics** | | | | | | | |
| 1235 | | | | Number of Valid Data | | 15 | | | | Number of Detected Data | | 8 |
| 1236 | | | | Number of Distinct Detected Data | | 8 | | | | Number of Non-Detect Data | | 7 |
| 1237 | | | | | | | | | | Percent Non-Detects | | 46.67% |
| 1238 | | | | | | | | | | | | |
| 1239 | | | | **Raw Statistics** | | | | | | **Log-transformed Statistics** | | |
| 1240 | | | | Minimum Detected | | 0.31 | | | | Minimum Detected | | -1.171 |
| 1241 | | | | Maximum Detected | | 9.8 | | | | Maximum Detected | | 2.282 |
| 1242 | | | | Mean of Detected | | 2.075 | | | | Mean of Detected | | 0.0751 |
| 1243 | | | | SD of Detected | | 3.191 | | | | SD of Detected | | 1.097 |
| 1244 | | | | Minimum Non-Detect | | 0.7 | | | | Minimum Non-Detect | | -0.357 |
| 1245 | | | | Maximum Non-Detect | | 0.7 | | | | Maximum Non-Detect | | -0.357 |
| 1246 | | | | | | | | | | | | |
| 1247 | | | | | | | | | | | | |
| 1248 | | | | | **Warning: There are only 8 Detected Values in this data** | | | | | | | |
| 1249 | | | | | **Note: It should be noted that even though bootstrap may be performed on this data set** | | | | | | | |
| 1250 | | | | | **the resulting calculations may not be reliable enough to draw conclusions** | | | | | | | |
| 1251 | | | | | | | | | | | | |
| 1252 | | | | | **It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.** | | | | | | | |
| 1253 | | | | | | | | | | | | |
| 1254 | | | | | | | | | | | | |
| 1255 | | | | | **UCL Statistics** | | | | | | | |
| 1256 | | | | **Normal Distribution Test with Detected Values Only** | | | | | | **Lognormal Distribution Test with Detected Values Only** | | |
| 1257 | | | | Shapiro Wilk Test Statistic | | 0.593 | | | | Shapiro Wilk Test Statistic | | 0.908 |
| 1258 | | | | 5% Shapiro Wilk Critical Value | | 0.818 | | | | 5% Shapiro Wilk Critical Value | | 0.818 |
| 1259 | | | | **Data not Normal at 5% Significance Level** | | | | | | **Data appear Lognormal at 5% Significance Level** | | |
| 1260 | | | | | | | | | | | | |
| 1261 | | | | **Assuming Normal Distribution** | | | | | | **Assuming Lognormal Distribution** | | |
| 1262 | | | | DL/2 Substitution Method | | | | | | DL/2 Substitution Method | | |
| 1263 | | | | Mean | | 1.27 | | | | Mean | | -0.45 |
| 1264 | | | | SD | | 2.426 | | | | SD | | 0.969 |
| 1265 | | | | 95% DL/2 (t) UCL | | 2.373 | | | | 95% H-Stat (DL/2) UCL | | 1.218 |
| 1266 | | | | | | | | | | | | |
| 1267 | | | | Maximum Likelihood Estimate(MLE) Method | | N/A | | | | Log ROS Method | | |
| 1268 | | | | **MLE yields a negative mean** | | | | | | Mean in Log Scale | | -0.428 |
| 1269 | | | | | | | | | | SD in Log Scale | | 1.039 |
| 1270 | | | | | | | | | | Mean in Original Scale | | 1.306 |
| 1271 | | | | | | | | | | SD in Original Scale | | 2.416 |
| 1272 | | | | | | | | | | 95% Percentile Bootstrap UCL | | 2.444 |

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| 1273 | | | | | | | | | | | 95% BCA Bootstrap UCL | 3.113 |
| 1274 | | | | | | | | | | | | |
| 1275 | **Gamma Distribution Test with Detected Values Only** | | | | | | **Data Distribution Test with Detected Values Only** | | | | | |
| 1276 | | | | | k star (bias corrected) | 0.642 | **Data Follow Appr. Gamma Distribution at 5% Significance Level** | | | | | |
| 1277 | | | | | Theta Star | 3.233 | | | | | | |
| 1278 | | | | | nu star | 10.27 | | | | | | |
| 1279 | | | | | | | | | | | | |
| 1280 | | | | | A-D Test Statistic | 0.752 | **Nonparametric Statistics** | | | | | |
| 1281 | | | | | 5% A-D Critical Value | 0.74 | | | | | Kaplan-Meier (KM) Method | |
| 1282 | | | | | K-S Test Statistic | 0.74 | | | | | Mean | 1.323 |
| 1283 | | | | | 5% K-S Critical Value | 0.303 | | | | | SD | 2.325 |
| 1284 | **Data follow Appr. Gamma Distribution at 5% Significance Level** | | | | | | | | | | SE of Mean | 0.643 |
| 1285 | | | | | | | | | | | 95% KM (t) UCL | 2.456 |
| 1286 | **Assuming Gamma Distribution** | | | | | | | | | | 95% KM (z) UCL | 2.381 |
| 1287 | | | | | Gamma ROS Statistics using Extrapolated Data | | | | | | 95% KM (jackknife) UCL | 2.422 |
| 1288 | | | | | Minimum | 0.31 | | | | | 95% KM (bootstrap t) UCL | 6.68 |
| 1289 | | | | | Maximum | 9.8 | | | | | 95% KM (BCA) UCL | 2.555 |
| 1290 | | | | | Mean | 2.34 | | | | | 95% KM (Percentile Bootstrap) UCL | 2.529 |
| 1291 | | | | | Median | 1.6 | | | | | 95% KM (Chebyshev) UCL | 4.126 |
| 1292 | | | | | SD | 2.545 | | | | | 97.5% KM (Chebyshev) UCL | 5.339 |
| 1293 | | | | | k star | 1.01 | | | | | 99% KM (Chebyshev) UCL | 7.722 |
| 1294 | | | | | Theta star | 2.316 | | | | | | |
| 1295 | | | | | Nu star | 30.3 | **Potential UCLs to Use** | | | | | |
| 1296 | | | | | AppChi2 | 18.73 | | | | | 95% KM (BCA) UCL | 2.555 |
| 1297 | | | | | 95% Gamma Approximate UCL | 3.785 | | | | | | |
| 1298 | | | | | 95% Adjusted Gamma UCL | 4.025 | | | | | | |
| 1299 | **Note: DL/2 is not a recommended method.** | | | | | | | | | | | |
| 1300 | | | | | | | | | | | | |

# APPENDIX D

# LEAD EVALUATION

## 1.0 Introduction

This technical memorandum presents an evaluation of potential risks associated with exposure of human receptors to lead in surface soil, subsurface soil, sediment, and groundwater at the Unnamed Island portion of the Peterson Puritan Operable Unit 2 (OU2) Superfund Site located in Cumberland and Lincoln, Rhode Island. This technical memorandum is included as Appendix D to the Supplemental Baseline Human Health Risk Assessment (HHRA) for the Unnamed Island. The Baseline HHRA for the remainder of the site was finalized in April 2009 (ARCADIS, 2009).

The lead evaluation consists of a separate evaluation for each medium and each exposure scenario applicable to the Unnamed Island. Although lead was identified as a contaminant of potential concern (COPC) in leachate and surface water, these exposure pathways are not quantitatively evaluated because uncertainty in assigning a dermal absorption fraction for lead precludes quantification of potential risks associated with the dermal exposure route (USEPA, 2003a; 2004; 2007).

## 2.0 Methodology

Risks associated with exposure to lead in various site-related media were evaluated using USEPA's Adult Lead Model (ALM). Specifically, the ALM was used to evaluate potential lead risks for non-residential scenarios (i.e., recreational users and construction workers). Parameter values used in the ALM are largely based on the USEPA's recommended default values. The dose equations and modeling approaches are consistent with USEPA guidance (2003a; 2007; 2009).

Incidental ingestion of lead in soil is generally the primary exposure pathway of concern for risk assessments. However, the models can also quantify cumulative doses and risk attributed to other sources of exposure, such as the ingestion of shallow groundwater during excavation activities. Because lead is ubiquitous in the environment, predicted blood lead levels (PbB) associated with exposure to site-related sources of lead are added to an assumed age-specific baseline PbB that reflects exposure to non-site-related sources of lead. Four different exposure scenarios (current and future) were evaluated using the ALM, including exposure of recreational users (adults and older children, age 6 to 12 years), construction workers, and adolescent trespassers (age 9 to 18 years).

In the ALM, potential health risks associated with lead exposure are evaluated by comparing the estimated PbB to the target PbB of 10 micrograms per deciliter (µg/dL) (Centers for Disease Control [CDC], 1991). The target PbB is based on potentially adverse neurological effects in children (CDC, 1991). Therefore, lead risk is evaluated based on the probability that PbB among a receptor population will exceed 10 µg/dL. This is sometimes referred to as the "P10 statistic." Consistent with USEPA guidance (USEPA, 2003b), this lead evaluation focuses on determining if P10 equals or exceeds 5 percent, which is equivalent to calculating the 95$^{th}$ percentile of the probability distribution of PbB among a receptor population.

Due to recent scientific evidence that has demonstrated adverse health effects at blood lead concentrations below 10 µg/dL down to 5 µg/dL and possibly below, an additional assessment has been performed using a target PbB of 5 µg/dL (EPA, 2009) and determining whether the "P5 statistic" equals or exceeds 5 percent. The Office of Superfund Remediation and Technology Innovation (OSRTI) is developing a new soil lead policy to address this new information. Until that soil lead policy is finalized, EPA Region 1 is assessing lead exposures using both 10 µg/dL and 5 µg/dL as target PbB values.

The USEPA employs a simplifying assumption to estimate the probability distribution of PbBs. The model first generates a point estimate of the central tendency of the PbB distribution, and it is assumed that the value represents the geometric mean PbB among a receptor population that is exposed to the same levels of lead in the environment. Epidemiological data on PbBs among various populations suggests that the distribution is roughly lognormal in shape (USEPA, 2003a). USEPA applies the assumption of lognormality using the following equation:

$$PbB_{0.95} = PbB_{GM} \times GSD^{1.645}$$

$PbB_{0.95}$ = 95th percentile of the distribution of PbBs (μg/dL)
$PbB_{GM}$ = geometric mean (or 50th percentile) of the lognormal distribution of PbBs (μg/dL)
GSD = geometric standard deviation of the lognormal distribution of PbBs (unitless)

## 3.0 Adult Lead Model for Non-Residential Receptor Populations

The USEPA's ALM is used to evaluate risks to non-residential receptor populations (USEPA, 2007). The following equation is used in the ALM to estimate quasi-steady state PbBs:

$$PbB_{GM} = PbB_0 + \frac{PbS \times BKSF \times IR \times AF \times EF}{AT}$$

$PbB_{GM}$ = geometric mean (or 50th percentile) of the lognormal distribution of PbBs in adult workers (μg/dL)
$PbB_0$ = baseline PbB due to exposure to non-site-related sources of lead (μg/dL)
PbS = soil lead concentration (milligrams per kilogram [mg/kg])
BKSF = biokinetic slope factor (μg/dL per micrograms per day)
IR = soil ingestion rate (grams per day [g/day])
AF = gastrointestinal absorption fraction for lead in soil (unitless)
EF = exposure frequency (days per year or days per week)
AT = averaging time (years)

The receptor of concern in the ALM is the fetus of an adult worker. The USEPA assumes a linear relationship between PbB in the adult woman and the fetus. Therefore, the geometric mean PbB in the fetus is equal to $PbB_{GM}$ multiplied by a constant, R. USEPA guidance (2003b) indicates that the ALM may also be used to assess older children and adolescents with appropriate adjustments. A time-weighted approach was used to evaluate potential risks for recreational users and trespassers consistent with USEPA guidance (2003b).

## 3.1 Adult Lead Model Parameter Values

Table 1a presents the central tendency parameter values used to evaluate lead risks for the following receptors based on a target PbB of 10 μg/dL:

- Future construction worker (risks presented in Table 1b)
- Future adult recreational user (risks presented in Table 1c)
- Future older child recreational user (risks presented in Table 1d)
- Current adolescent trespasser (risks presented in Table 1e)

Tables 1f through 1i present the receptor-specific evaluations using a PbB of 5 μg/dL for the construction worker, adult recreational user, older child recreational user and current adolescent trespasser, respectively.

Baseline Blood Lead Concentration ($PbB_0$)

The baseline PbB is intended to represent the best estimate of a reasonable central value of PbB in women of child-bearing age who are not exposed to lead-contaminated non-residential soil or dust at the site. The USEPA (2009) recommends a default baseline concentration of 1.0 μg/dL based on national survey data gathered between 1999 and 2004 for women 17 to 45 years of age.

Geometric Standard Deviation

The USEPA recommends a default geometric standard deviation (GSD) of 1.8 that has been used in the ALM Model (USEPA, 2009).

Biokinetic Slope Factor

The Biokinetic Slope Factor (BKSF) represents the increase in typical adult PbB due to average daily lead uptake. The USEPA (2003b) recommends a default value of 0.4 μg lead/dL blood per μg lead absorbed per day for the BKSF. This value is based on empirical data on the relationship between tap-water lead concentrations and PbBs for a sample group of adult males. This default value was used for all exposure pathways in this evaluation.

Soil Ingestion Rate ($IR_S$)

Consistent with USEPA guidance (2003a; 2007), a soil ingestion rate of 50 mg/day was used to evaluate potential risks for the adult recreational user, older child recreational user, and adolescent trespasser. This value represents the central tendency ingestion rate for soil non-contact-intensive activities (including soil-derived indoor dust) (USEPA, 2007). A soil ingestion rate of 330 mg/day was used to evaluate potential lead exposures for the construction worker.

Exposure Frequency and Averaging Time

Exposure frequencies used in this lead evaluation were consistent with values used in the supplemental HHRA. Consistent with USEPA guidance (2003b), a time-weighted average approach was used to evaluate potential risks for recreational users and trespassers.

Lead Absorption Fraction

This evaluation used a lead absorption fraction of 0.12, which is the default value recommended by the USEPA (2003b). This value is based on experimental studies of the bioavailability of ingested lead in adults with considerations for the following three major sources of variability: 1) effect of food on lead bioavailability, 2) nonlinearity in PbB, and 3) effect of lead form and particle size on bioavailability. The value assumes a relative bioavailability of 0.6 for lead in site-related media as compared to soluble lead, and also assumes an absorption fraction (AF) of 0.2 for soluble lead. Thus, the final AF is 0.12 (i.e., AF = 0.6 x 0.2 = 0.12).

Fetal/Maternal Blood Lead Concentration ($R_{fetal/maternal}$)

This evaluation used a fetal/maternal blood lead ratio of 0.9 for adult receptors, which is the default value recommended by the USEPA (2003b) based on studies that have explored the relationship between umbilical cord and maternal PbBs. Because the older child recreational user and adolescent trespasser are not of child-bearing age, the fetal/maternal PbB ratio for these receptors was set equal to 1.

## 3.2 Exposure Point Concentrations

The exposure point concentrations (EPCs) used in the lead evaluation are arithmetic means based on site-related data. Media were evaluated separately (i.e., medium-specific arithmetic means were used as the EPCs). One-half the laboratory detection limit was used as a surrogate for non-detects in calculating arithmetic mean lead concentrations. Appendix A presents the sample groupings used to calculate EPCs for each exposure scenario evaluated using the ALM.

## 3.3 Adult Lead Model Results

Tables 1b and 1f present the modeling results for the construction worker. Exposure of construction workers to shallow groundwater (incidental ingestion during intrusive activities) results in a P10 and a P5 of less than 1 percent, which are well below the threshold of 5 percent. However, exposure of construction workers to soils results in a P10 of 23.8 percent and a P5 of 68 percent, which are both above the 5 percent threshold.

Tables 1c and 1g present the modeling results for the adult recreational user. Exposure of adult recreational users to soils and sediment results in P10s and P5s of less than 5 percent.

Table 1d and 1h present the modeling results for the older child recreational user. Because this receptor is not of child-bearing age, the ALM was only used to estimate the geometric mean of PbB for the exposed individual. Exposure of older child recreational users to soil and sediment results in PbBs of less than 10 µg/dL and 5 µg/dL.

Table 1e and 1i present the modeling results for the adolescent trespasser. Similar to the older child recreational user, the ALM was only used to estimate the geometric mean of PbB for the exposed individual. Exposure of the adolescent trespasser to soil and sediment results in PbBs of less than 10 µg/dL and 5 µg/dL.

# 4.0 Summary and Conclusions

The lead evaluation identified the construction worker scenario as having estimated lead risks above the USEPA target. Estimated lead risks for future recreational users and current trespassers were less than the USEPA targets.

References:

ARCADIS. 2009. *Baseline Human Health Risk Assessment, Peterson Puritan Site – Operable Unit 2, Cumberland and Lincoln, Rhode Island.* April 2009.

CDC. 1991. Preventing Lead Poisoning in Young Children. http://www.cdc.gov/nceh/lead/publications/books/plpyc/contents.htm.

USEPA. 2003a. Recommendations of the Technical Review Workgroup for Lead for an Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil. Technical Review Workgroup for Lead, Washington DC. EPA-540-R-03-001.

USEPA. 2003b. Assessing Intermittent or Variable Exposures at Lead Sites. OSWER Directive #9285.7-76. November 2003.

USEPA. 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. EPA/540/R/99/005. July 2004.

USEPA. 2007. Frequent Questions from Risk Assessors on the ALM. Available at http://www.epa.gov/superfund/programs/lead/almfaq.htm#shortest. Updated August 2, 2007.

USEPA. 2009. Update of the Adult Lead Methodology's Default Baseline Blood Lead Concentration and Geometric Standard Deviation Parameters. OSWER 9200.2-82. June 2009. Available at: http://www.epa.gov/superfund/health/contaminants/lead/products.htm#almupdate.

**Table 1a. Summary of Parameter Values Used in the Adult Lead Model (ALM) for Evaluation of Non-Residential Lead Risks Associated with Site-Related Soil, Sediment, and Groundwater**
**Baseline Human Health Risk Assessment**
**Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island**

| Exposure Variable | Description | Units | Receptor Scenarios | | | |
|---|---|---|---|---|---|---|
| | | | Construction Worker [1] | Adult Recreational User [2] | Older Child Recreational User [2,3] | Adolescent Trespasser [2,4] |
| | | | Table 1b | Table 1c | Table 1d | Table 1e |
| PbS | Lead concentration in medium of interest | ppm | Site-specific | Site-specific | Site-specific | Site-specific |
| $R_{fetal/maternal}$ | Fetal/maternal PbB ratio | -- | 0.9 [a] | 0.9 [a] | 1.0 [b] | 1.0 [b] |
| $BKSF_S$ | Biokinetic Slope Factor (soil, sediment, and food) | µg/dL per µg/day | 0.4 [a] | 0.4 [a] | 0.4 [a] | 0.4 [a] |
| $BKSF_W$ | Biokinetic Slope Factor (groundwater) | µg/dL per µg/day | 0.4 [a] | NA | NA | NA |
| $GSD_i$ | Geometric standard deviation PbB | -- | 1.8 [c] | 1.8 [c] | 1.8 [c] | 1.8 [c] |
| $PbB_0$ | Baseline PbB | µg/dL | 1.0 [c] | 1.0 [c] | 1.0 [c] | 1.0 [c] |
| $IR_S$ | Soil/sediment ingestion rate (including soil-derived indoor dust) | g/day | 0.33 [o] | 0.05 [d] | 0.05 [d] | 0.05 [d] |
| $IR_f$ | Food ingestion rate (fish) | g/day | NA | NA | NA | NA |
| $IR_w$ | Shallow groundwater ingestion rate | L/day | 0.05 [m] | NA | NA | NA |
| $AF_{S, D, W}$ | Absorption fraction, Pb in soil, dust, sediment, and groundwater | -- | 0.12 [a] | 0.12 [a] | 0.12 [a] | 0.12 [a] |
| $AF_f$ | Absorption fraction, Pb in food | -- | NA | NA | NA | NA |
| $EF_{S, D, W}$ | Exposure frequency, Pb pathway | days/yr | 62 [h] | 2 [g] | 2 [g] | 2 [g] |
| $AT_{S, D, W}$ | Averaging time, Pb pathway | days/yr | 84 [l] | 7 [n] | 7 [n] | 7 [n] |

Notes:
[1] Lead exposures for these receptors were evaluated individually for each applicable subarea. Consistent with the ALM guidance (USEPA, 2003a; 2007), the arithmetic mean of lead concentrations
[2] A time-weighted approach was used to evaluate potential lead risks for these receptors in the ALM, consistent with Example 6 in Appendix A in USEPA (2003b).
[3] Older child = 6 - 12 years of age
[4] Adolescent = 9 - 18 years of age
[5] Consistent with USEPA (2003a; 2004; 2007) guidance, dermal exposures to lead in aqueous and non-aqueous media were not quantitatively evaluated with the ALM due to the uncertainty in
[a] Default value (USEPA, 2003a).
[b] Fetal/maternal PbB ratio does not apply because receptor is assumed to be an older child (6-12 years) or adolescent (9-18 years); risks to fetus of pregnant women are evaluated in adult receptor
[c] Updated default value for women 17-45 years of age (USEPA, 2009).
[d] Default CTE value for soil ingestion (USEPA, 2003a; 2007). Value for commercial worker assumes non-contact-intensive activities.
[e] CTE fish ingestion rate based on the 50th percentile for Maine anglers (Ebert et al., 1993. Estimating Consumption of Freshwater Fish among Maine Anglers. *North American Journal of Fisheries Management* 13:737-745.). Assumes 100% of fish consumed are from on-site sources.

**Table 1a. Summary of Parameter Values Used in the Adult Lead Model (ALM) for Evaluation of Non-Residential Lead Risks Associated with Site-Related Soil, Sediment, and Groundwater**
**Baseline Human Health Risk Assessment**
**Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island**

Notes (continued):

[f] Value considered protective for bioavailable fraction of lead in fish (USEPA, 2007).
[g] Reflects the same CTE value used in baseline human health risk assessment (2 days per week for approximately 6 months). Applying the time-weighted approach consistent with note [2] above, the resulting exposure frequency is set equal to 2 days/week.
[h] Same CTE value used in baseline human health risk assessment (5 days per week for approximately 12 weeks).
[i] Default central tendency estimate of exposure frequency for commercial/industrial workers from USEPA (2007).
[j] Fish ingestion rate reflects a longterm average daily intake assuming 100% of fish are obtained from the site; therefore, EF is 365 days/year.
[k] Averaging time appropriate for chronic exposure scenario (USEPA, 2003a; 2007).
[l] Averaging time is based on EF to avoid diluting exposures over the entire year (7 days per week x 12 weeks/year = 84 days/year).
[m] Default surface water contact rate for recreational swimmers (USEPA, 1989). Assumed to provide a conservative estimate of incidental ingestion by construction workers exposed to shallow groundwater.
[n] Applying the time-weighted approach consistent with note [2] above, the resulting averaging time is set equal to 7 days/week.
[o] Same CTE value used in baseline human health risk assessment.
µg/dL = micrograms per deciliter
g/day = grams per day
L/day = liters per day
NA = not applicable

References:

USEPA, 2009. Update of the Adult Lead Methodology's Default Baseline Blood Lead Concentration and Geometric Standard Deviation Parameter. OSWER Dir #9200.2-82. June 2009.
USEPA. 2007. Frequent Questions from Risk Assessors on the ALM. Accessed on-line 4/23/08 at http://www.epa.gov/superfund/health/contaminants/lead/almfaq.htm. Updated August 2, 2007.
USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.
USEPA. 2003a. Recommendations of the Technical Review Workgroup for Lead for an Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil. EPA-540-R-03-001. January 2003.
USEPA. 2003b. Assessing Intermittent or Variable Exposures at Lead Sites. OSWER Directive #9285.7-76. EPA-540-R-03-008. November 2003.
USEPA. 2002. Blood Lead Concentrations of U.S. Adult Females: Summary Statistics From Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NHANES III). OSWER #9285.7-52. March 2002.
USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

**Table 1b. Adult Lead Model (ALM) for Evaluation of Lead Risks for Construction Workers Exposed to Site-Related Soil and Shallow Groundwater**
**Baseline Human Health Risk Assessment**
**Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island**

**Calculations of Blood Lead Concentrations (PbBs)**

| Exposure Variable | Description | Units | Construction Workers | |
|---|---|---|---|---|
| | | | Site-Wide Shallow Groundwater [1] | Unnamed Island Surface and Subsurface Soil [1] |
| PbS | Lead concentration in medium of interest (arithmetic mean) [a] | ppm | 0.0097 | 540 |
| $R_{fetal/maternal}$ | Fetal/maternal PbB ratio | -- | 0.9 | 0.9 |
| BKSF | Biokinetic Slope Factor | µg/dL per µg/day | 0.4 | 0.4 |
| $GSD_i$ | Geometric standard deviation PbB | -- | 1.8 | 1.8 |
| $PbB_0$ | Baseline PbB | µg/dL | 1.0 | 1.0 |
| $IR_{S,W}$ | Ingestion rate (soil, groundwater) | g/day | 0.050 | 0.330 |
| AF | Absorption fraction (Pb in soil, dust, and groundwater) | -- | 0.12 | 0.12 |
| EF | Exposure frequency, Pb pathway | days/yr | 62 | 62 |
| AT | Averaging time, Pb pathway | days/yr | 84 | 84 |
| **$PbB_{adult}$** | **PbB of adult worker, geometric mean** | **µg/dL** | **1.0** | **7.3** |
| $PbB_{fetal, 0.95}$ | 95th percentile PbB among fetuses of adult workers | µg/dL | 2.4 | 17.3 |
| $PbB_t$ | Target PbB level of concern | µg/dL | 10.0 | 10.0 |
| **$P(PbB_{fetal} > PbB_t)$** | **Probability that fetal PbB > $PbB_t$, assuming lognormal distribution** | **%** | **0.0021%** | **23.8%** |

Notes:
ALM Version date 5/19/05
[1] Future scenario, as indicated in Table 1 of the baseline HHRA.
[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

**Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil**

**Table 1c. Adult Lead Model (ALM) for Evaluation of Lead Risks for Adult Recreational Users Exposed to Site-Related Soil and Sediment**
**Baseline Human Health Risk Assessment**
**Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island**

**Calculations of Blood Lead Concentrations (PbBs)**

| Exposure Variable | Description | Units | Adult Recreational Users | |
|---|---|---|---|---|
| | | | Unnamed Island Surface and Subsurface Soil [1] | Unnamed Island Sediment [1,2] |
| PbS | Lead concentration in media of interest (arithmetic mean) [a] | mg/kg or ppm | 540 | 260 |
| $R_{fetal/maternal}$ | Fetal/maternal PbB ratio | -- | 0.9 | 0.9 |
| BKSF | Biokinetic Slope Factor | µg/dL per µg/day | 0.4 | 0.4 |
| $GSD_i$ | Geometric standard deviation PbB | -- | 1.8 | 1.8 |
| $PbB_0$ | Baseline PbB | µg/dL | 1.0 | 1.0 |
| $IR_S$ | Soil/sediment ingestion rate (including soil-derived indoor dust) | g/day | 0.050 | 0.050 |
| AF | Absorption fraction (Pb in soil, dust, and sediment) | -- | 0.12 | 0.12 |
| EF | Exposure frequency, Pb pathway | days/week | 2 | 2 |
| AT | Averaging time, Pb pathway | days/week | 7 | 7 |
| **$PbB_{adult}$** | **PbB of adult recreational user, geometric mean** | **µg/dL** | **1.4** | **1.2** |
| $PbB_{fetal,\ 0.95}$ | 95th percentile PbB among fetuses of adults | µg/dL | 3.2 | 2.8 |
| $PbB_t$ | Target PbB level of concern | µg/dL | 10.0 | 10.0 |
| **$P(PbB_{fetal} > PbB_t)$** | **Probability that fetal PbB > $PbB_t$, assuming lognormal distribution** | **%** | **0.018%** | **0.0067%** |

Notes:
ALM Version date 5/19/05
[1] Future scenario, as indicated in Table 1 of the baseline HHRA.
[2] Sediment data represent those collected from the Unnamed Island ponds.
[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

**Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil**

**Table 1d. Adult Lead Model (ALM) for Evaluation of Lead Risks for Older Child Recreational Users Exposed to Site-Related Soil and Sediment**
**Baseline Human Health Risk Assessment**
**Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island**

**Calculations of Blood Lead Concentrations (PbBs)**

| Exposure Variable | Description | Units | Older Child Recreational Users | |
|---|---|---|---|---|
| | | | Unnamed Island Surface and Subsurface Soil [1] | Unnamed Island Sediment [1,2] |
| PbS | Lead concentration in media of interest (arithmetic mean) [a] | mg/kg or ppm | 540 | 260 |
| $R_{fetal/maternal}$ | Fetal/maternal PbB ratio | -- | 1.0 | 1.0 |
| BKSF | Biokinetic Slope Factor | µg/dL per µg/day | 0.4 | 0.4 |
| $GSD_i$ | Geometric standard deviation PbB | -- | 1.8 | 1.8 |
| $PbB_0$ | Baseline PbB | µg/dL | 1.0 | 1.0 |
| $IR_S$ | Soil/sediment ingestion rate (including soil-derived indoor dust) | g/day | 0.050 | 0.050 |
| AF | Absorption fraction (Pb in soil, dust, and sediment) | -- | 0.12 | 0.12 |
| EF | Exposure frequency, Pb pathway | days/week | 2 | 2 |
| AT | Averaging time, Pb pathway | days/week | 7 | 7 |
| **$PbB_{adult}$** | **PbB of older child recreational user, geometric mean** | **µg/dL** | **1.4** | **1.2** |
| $PbB_{fetal,\ 0.95}$ | 95th percentile PbB among fetuses of adults | µg/dL | -- | -- |
| $PbB_t$ | Target PbB level of concern | µg/dL | 10.0 | 10.0 |
| **$P(PbB_{fetal} > PbB_t)$** | **Probability that fetal PbB > $PbB_t$, assuming lognormal distribution** | **%** | **--** | **--** |

Notes:
ALM Version date 5/19/05
[1] Future scenario, as indicated in Table 1 of the baseline HHRA.
[2] Sediment data represent those collected from the Unnamed Island ponds.
[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

**Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil**

**Table 1e. Adult Lead Model (ALM) for Evaluation of Lead Risks for Adolescent Trespassers Exposed to Site-Related Soil and Sediment**
**Baseline Human Health Risk Assessment**
**Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island**

**Calculations of Blood Lead Concentrations (PbBs)**

| Exposure Variable | Description | Units | Adolescent Trespassers | |
|---|---|---|---|---|
| | | | Unnamed Island Surface Soil [1] | Unnamed Island Sediment [1,2] |
| PbS | Lead concentration in media of interest (arithmetic mean) [a] | mg/kg or ppm | 360 | 260 |
| $R_{fetal/maternal}$ | Fetal/maternal PbB ratio | -- | 1.0 | 1.0 |
| BKSF | Biokinetic Slope Factor | µg/dL per µg/day | 0.4 | 0.4 |
| $GSD_i$ | Geometric standard deviation PbB | -- | 1.8 | 1.8 |
| $PbB_0$ | Baseline PbB | µg/dL | 1.0 | 1.0 |
| $IR_S$ | Soil/sediment ingestion rate (including soil-derived indoor dust) | g/day | 0.050 | 0.050 |
| AF | Absorption fraction (Pb in soil, dust, and sediment) | -- | 0.12 | 0.12 |
| EF | Exposure frequency, Pb pathway | days/week | 2 | 2 |
| AT | Averaging time, Pb pathway | days/week | 7 | 7 |
| **$PbB_{adult}$** | **PbB of adolescent trespasser, geometric mean** | **µg/dL** | **1.2** | **1.2** |
| $PbB_{fetal, 0.95}$ | 95th percentile PbB among fetuses of adults | µg/dL | -- | -- |
| $PbB_t$ | Target PbB level of concern | µg/dL | 10.0 | 10.0 |
| **$P(PbB_{fetal} > PbB_t)$** | **Probability that fetal PbB > $PbB_t$, assuming lognormal distribution** | **%** | **--** | **--** |

Notes:
ALM Version date 5/19/05
[1] Current scenario, as indicated in Table 1 of the baseline HHRA.
[2] Sediment data represent those collected from the Unnamed Island ponds.
[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

**Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil**

**Table 1f. Adult Lead Model (ALM) for Evaluation of Lead Risks for Construction Workers Exposed to Site-Related Soil and Shallow Groundwater (PbB of 5 ug/dL)**
**Baseline Human Health Risk Assessment**
**Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island**

**Calculations of Blood Lead Concentrations (PbBs)**

| Exposure Variable | Description | Units | Construction Workers | |
|---|---|---|---|---|
| | | | Site-Wide Shallow Groundwater [1] | Unnamed Island Surface and Subsurface Soil [1] |
| PbS | Lead concentration in medium of interest (arithmetic mean) [a] | ppm | 0.0097 | 540 |
| $R_{fetal/maternal}$ | Fetal/maternal PbB ratio | -- | 0.9 | 0.9 |
| BKSF | Biokinetic Slope Factor | µg/dL per µg/day | 0.4 | 0.4 |
| $GSD_i$ | Geometric standard deviation PbB | -- | 1.8 | 1.8 |
| $PbB_0$ | Baseline PbB | µg/dL | 1.0 | 1.0 |
| $IR_{S,W}$ | Ingestion rate (soil, groundwater) | g/day | 0.050 | 0.330 |
| AF | Absorption fraction (Pb in soil, dust, and groundwater) | -- | 0.12 | 0.12 |
| EF | Exposure frequency, Pb pathway | days/yr | 62 | 62 |
| AT | Averaging time, Pb pathway | days/yr | 84 | 84 |
| **$PbB_{adult}$** | **PbB of adult worker, geometric mean** | **µg/dL** | **1.0** | **7.3** |
| $PbB_{fetal, 0.95}$ | 95th percentile PbB among fetuses of adult workers | µg/dL | 2.4 | 17.3 |
| $PbB_t$ | Target PbB level of concern | µg/dL | 5.0 | 5.0 |
| **$P(PbB_{fetal} > PbB_t)$** | **Probability that fetal PbB > $PbB_t$, assuming lognormal distribution** | **%** | **0.1765%** | **68.0%** |

Notes:
ALM Version date 5/19/05
[1] Future scenario, as indicated in Table 1 of the baseline HHRA.
[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

**Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil**

**Table 1g. Adult Lead Model (ALM) for Evaluation of Lead Risks for Adult Recreational Users Exposed to Site-Related Soil and Sediment (PbB of 5 ug/dL)**
**Baseline Human Health Risk Assessment**
**Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island**

**Calculations of Blood Lead Concentrations (PbBs)**

| Exposure Variable | Description | Units | Adult Recreational Users | |
|---|---|---|---|---|
| | | | Unnamed Island Surface and Subsurface Soil [1] | Unnamed Island Sediment [1,2] |
| PbS | Lead concentration in media of interest (arithmetic mean) [a] | mg/kg or ppm | 540 | 260 |
| $R_{fetal/maternal}$ | Fetal/maternal PbB ratio | -- | 0.9 | 0.9 |
| BKSF | Biokinetic Slope Factor | µg/dL per µg/day | 0.4 | 0.4 |
| $GSD_i$ | Geometric standard deviation PbB | -- | 1.8 | 1.8 |
| $PbB_0$ | Baseline PbB | µg/dL | 1.0 | 1.0 |
| $IR_S$ | Soil/sediment ingestion rate (including soil-derived indoor dust) | g/day | 0.050 | 0.050 |
| AF | Absorption fraction (Pb in soil, dust, and sediment) | -- | 0.12 | 0.12 |
| EF | Exposure frequency, Pb pathway | days/week | 2 | 2 |
| AT | Averaging time, Pb pathway | days/week | 7 | 7 |
| **$PbB_{adult}$** | **PbB of adult recreational user, geometric mean** | **µg/dL** | **1.4** | **1.2** |
| $PbB_{fetal, 0.95}$ | 95th percentile PbB among fetuses of adults | µg/dL | 3.2 | 2.8 |
| $PbB_t$ | Target PbB level of concern | µg/dL | 5.0 | 5.0 |
| **$P(PbB_{fetal} > PbB_t)$** | **Probability that fetal PbB > $PbB_t$, assuming lognormal distribution** | **%** | **0.862%** | **0.4167%** |

Notes:
ALM Version date 5/19/05
[1] Future scenario, as indicated in Table 1 of the baseline HHRA.
[2] Sediment data represent those collected from the Unnamed Island ponds.
[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

**Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil**

**Table 1h. Adult Lead Model (ALM) for Evaluation of Lead Risks for Older Child Recreational Users Exposed to Site-Related Soil and Sediment (PbB of 5 ug/dL)**
**Baseline Human Health Risk Assessment**
**Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island**

**Calculations of Blood Lead Concentrations (PbBs)**

| Exposure Variable | Description | Units | Older Child Recreational Users | |
|---|---|---|---|---|
| | | | Unnamed Island Surface and Subsurface Soil [1] | Unnamed Island Sediment [1,2] |
| PbS | Lead concentration in media of interest (arithmetic mean) [a] | mg/kg or ppm | 540 | 260 |
| $R_{fetal/maternal}$ | Fetal/maternal PbB ratio | -- | 1.0 | 1.0 |
| BKSF | Biokinetic Slope Factor | µg/dL per µg/day | 0.4 | 0.4 |
| $GSD_i$ | Geometric standard deviation PbB | -- | 1.8 | 1.8 |
| $PbB_0$ | Baseline PbB | µg/dL | 1.0 | 1.0 |
| $IR_S$ | Soil/sediment ingestion rate (including soil-derived indoor dust) | g/day | 0.050 | 0.050 |
| AF | Absorption fraction (Pb in soil, dust, and sediment) | -- | 0.12 | 0.12 |
| EF | Exposure frequency, Pb pathway | days/week | 2 | 2 |
| AT | Averaging time, Pb pathway | days/week | 7 | 7 |
| **$PbB_{adult}$** | **PbB of older child recreational user, geometric mean** | **µg/dL** | **1.4** | **1.2** |
| $PbB_{fetal, 0.95}$ | 95th percentile PbB among fetuses of adults | µg/dL | -- | -- |
| $PbB_t$ | Target PbB level of concern | µg/dL | 5.0 | 5.0 |
| **$P(PbB_{fetal} > PbB_t)$** | **Probability that fetal PbB > $PbB_t$, assuming lognormal distribution** | **%** | **--** | **--** |

Notes:
ALM Version date 5/19/05
[1] Future scenario, as indicated in Table 1 of the baseline HHRA.
[2] Sediment data represent those collected from the Unnamed Island ponds.
[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

**Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil**

**Table 1i. Adult Lead Model (ALM) for Evaluation of Lead Risks for Adolescent Trespassers Exposed to Site-Related Soil and Sediment (PbB of 5 ug/dL)**
**Baseline Human Health Risk Assessment**
**Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island**

**Calculations of Blood Lead Concentrations (PbBs)**

| Exposure Variable | Description | Units | Adolescent Trespassers | |
|---|---|---|---|---|
| | | | Unnamed Island Surface Soil [1] | Unnamed Island Sediment [1,2] |
| PbS | Lead concentration in media of interest (arithmetic mean) [a] | mg/kg or ppm | 360 | 260 |
| $R_{fetal/maternal}$ | Fetal/maternal PbB ratio | -- | 1.0 | 1.0 |
| BKSF | Biokinetic Slope Factor | µg/dL per µg/day | 0.4 | 0.4 |
| $GSD_i$ | Geometric standard deviation PbB | -- | 1.8 | 1.8 |
| $PbB_0$ | Baseline PbB | µg/dL | 1.0 | 1.0 |
| $IR_S$ | Soil/sediment ingestion rate (including soil-derived indoor dust) | g/day | 0.050 | 0.050 |
| AF | Absorption fraction (Pb in soil, dust, and sediment) | -- | 0.12 | 0.12 |
| EF | Exposure frequency, Pb pathway | days/week | 2 | 2 |
| AT | Averaging time, Pb pathway | days/week | 7 | 7 |
| **$PbB_{adult}$** | **PbB of adolescent trespasser, geometric mean** | **µg/dL** | **1.2** | **1.2** |
| $PbB_{fetal, 0.95}$ | 95th percentile PbB among fetuses of adults | µg/dL | -- | -- |
| $PbB_t$ | Target PbB level of concern | µg/dL | 5.0 | 5.0 |
| **$P(PbB_{fetal} > PbB_t)$** | **Probability that fetal PbB > $PbB_t$, assuming lognormal distribution** | **%** | **--** | **--** |

Notes:
ALM Version date 5/19/05
[1] Current scenario, as indicated in Table 1 of the baseline HHRA.
[2] Sediment data represent those collected from the Unnamed Island ponds.
[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

**Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil**

# APPENDIX E

# DERMAL CALCULATIONS

## TABLE 1. DERMAL SCREENING - GROUNDWATER INORGANICS

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | Conc ug/L | Conc mg/cm3 | Kp (cm/hr) | Isc cm | IR $cm^3$/day | ABSGI | A $cm^2$ | t_event hr/event | EV event/day | DA_event mg/cm2-evt | Derm/Drink Kp | Chem Assess |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Future | Const. Worker - Adult | Unnamed Island Shallow Groundwater | Antimony | 2.0E+00 | 2.0E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.15 | 2100 | 0.2 | 1 | **4.1E-10** | **0%** | N |
| | | | Arsenic | 4.1E+00 | 4.1E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.95 | 2100 | 0.2 | 1 | **8.3E-10** | **0%** | N |
| | | | Barium | 6.7E+02 | 6.7E-04 | 1.0E-03 | 1.0E-03 | 2000 | 0.07 | 2100 | 0.2 | 1 | **1.3E-07** | **0%** | N |
| | | | Cadmium | 8.3E+00 | 8.3E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.025 | 2100 | 0.2 | 1 | **1.7E-09** | **1%** | N |
| | | | Chromium | 5.1E+00 | 5.1E-06 | 2.0E-03 | 1.0E-03 | 2000 | 0.025 | 2100 | 0.2 | 1 | **2.0E-09** | **2%** | N |
| | | | Cobalt | 1.3E+01 | 1.3E-05 | 4.0E-04 | 1.0E-03 | 2000 | 0.97 | 2100 | 0.2 | 1 | **1.0E-09** | **0%** | N |
| | | | Iron | 4.3E+04 | 4.3E-02 | 1.0E-03 | 1.0E-03 | 2000 | 0.5 | 2100 | 0.2 | 1 | **8.5E-06** | **0%** | N |
| | | | Lead | N/A | N/A | 1.0E-04 | 1.0E-03 | 2000 | 0.5 | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Manganese | 1.1E+03 | 1.1E-03 | 1.0E-03 | 1.0E-03 | 2000 | 0.06 | 2100 | 0.2 | 1 | **2.2E-07** | **0%** | N |
| | | | Nickel | 4.1E+01 | 4.1E-05 | 2.0E-04 | 1.0E-03 | 2000 | 0.04 | 2100 | 0.2 | 1 | **1.7E-09** | **0%** | N |
| | | | Thallium | 5.8E+00 | 5.8E-06 | 1.0E-03 | 1.0E-03 | 2000 | 1 | 2100 | 0.2 | 1 | **1.2E-09** | **0%** | N |
| | | | Vanadium | 1.8E+00 | 1.8E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.026 | 2100 | 0.2 | 1 | **3.7E-10** | **1%** | N |
| | | | Zinc | 1.3E+03 | 1.3E-03 | 6.0E-04 | 1.0E-03 | 2000 | 0.5 | 2100 | 0.2 | 1 | **1.5E-07** | **0%** | N |

**DERMAL ABSORPTION CALCULATION EXAMPLE**

**Note: This EPA spreadsheet utilized as basis for Appendix E calculations.**

FOR INORGANIC CHEMICALS IN WATER (latest version 04/01)

Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media

Enter the Following Exposure Conditions: for site specific conditions, change values for A through AT (Given are default values from Table 8-6)

| | | | |
|---|---|---|---|
| Concentration (mg/L*L/1000 cm3): | Conc = | 0.001 | mg/cm3 (default value for purpose of illustration) |
| Input site specific concentrations in Column marked "Conc" | | = 1 mg/L (1 ppm) | = 1 ug/cm3 = 1000 ppb |
| Area exposed (cm2): | SA= | 18000 | cm2 |
| Event time (hr/event): | t_event = | 0.58 | hr/event (35 minutes/event) |
| Event frequency (events/day): | EV = | 1 | event/day |
| Exposure frequency (days/year): | EF = | 350 | days/yr |
| Exposure duration (years): | ED = | 30 | years |
| Body weight (kg): | BW = | 70 | kg |
| Averaging time (days): | AT = | 25550 | days |
| for carcinogenic effects, AT=70 years (25,550 days) | | | |
| for noncarcinogenic effects, AT=ED (in days) | | | |

Default conditions for screening purposes:

Compare Dermal to Drinking: Adults showering for 35 minutes/day, compared to drinking 2L water/day

Dermal (mg/day) = DA_event * A * EV
Drinking (mg/day) = Conc * IR * ABSIG

| | | | |
|---|---|---|---|
| IR: Ingestion rate of drinking water | IR = | 2000 | (cm3/day = L/day * 1000 cm3/L) |
| ABSIG: Absorption fraction in GI tract | Chemical specific | | |
| Condition for screening: "Y" when Dermal is 10% of Drinking | | | |

Compare Dermal to Total dose exposed during adult showering assuming 5 gal/min of water flow rate

Total dose (mg/day) = Q * T_event * EV

| | | | |
|---|---|---|---|
| Q: Shower flow rate (5-15 gal/min; here using 5 gal/min) | Q = | 1135500 | (cm3/hr = gal/min * 3.785 gal/l * 60 min/hr *1000 cm3/hr) |

Refer to Appendix A for equations to evaluate DA_event and DAD

| CHEMICAL | Kp (cm/hr) | Source of Kp (exp or default) | Conc (mg/cm3) | DA_event (mg/cm2-event) | DAD (mg/kg-day) | ABSGI (chemical specific) | Screening | Chemicals to be assessed | Derm/ Total Dose |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 1.0E-03 | default | 1.0E-03 | 5.8E-07 | 6.2E-05 | 15% | 3.50% | N | 0.00% |

## TABLE 2.RME. DERMALLY ABSORBED DOSE CALCULATIONS - GROUNDWATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | Conc ug/L | Conc mg/cm3 | CAS No. | MWT | logKow | Kp (cm/hr) predicted | Isc cm | IR $cm^3$/day | ABSGI | B | tau (hr) | FA for tau>3 | log(Ds/lsc) | Dsc/lsc | Dsc | b | c | t_star1 B>0.6 | t_star3 B<=0.6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Future | Const. Worker - Adult | Unnamed Island Shallow Groundwater | | | | | | | | | | | | | | | | | | | | |
| | | | Atrazine | 3.2E+00 | 3.2E-06 | 1912249 | 215.7 | 2.61 | 5.2E-03 | 1.0E-03 | 2000 | 1 | 0.030 | **1.70** | 1.0 | -4.01E+00 | 9.82E-05 | **9.82E-08** | 3.2E-01 | 3.5E-01 | N/A | 4.07 |
| | | | Benzo(a)anthracene | 4.5E-02 | 4.5E-08 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.7E-02 | 1.7E-08 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | bis(2-Ethylhexyl)phthalat | 2.8E+00 | 2.8E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Dibenzofuran | 2.8E-01 | 2.8E-07 | 132649 | 222.3 | 4.39 | 7.3E-02 | 1.0E-03 | 2000 | 1 | 0.420 | **1.85** | 1.0 | -4.04E+00 | 9.02E-05 | **9.02E-08** | 6.3E-01 | 6.6E-01 | N/A | 4.44 |
| | | | Naphthalene | 9.2E-01 | 9.2E-07 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | N-Nitrosodiphenylamine | 4.7E+00 | 4.7E-06 | 86306 | 198.2 | 3.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.079 | **1.35** | 1.0 | -3.91E+00 | 1.23E-04 | **1.23E-07** | 3.5E-01 | 3.9E-01 | N/A | 3.25 |
| | | | Phenanthrene | 2.7E-01 | 2.7E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.8E+00 | 1.8E-06 | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | 3.9E+00 | 3.9E-06 | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Chlorobenzene | 1.2E+01 | 1.2E-05 | 108907 | 112.6 | 2.84 | 2.8E-02 | 1.0E-03 | 2000 | 1 | 0.115 | **0.45** | 1.0 | -3.43E+00 | 3.71E-04 | **3.71E-07** | 3.8E-01 | 4.1E-01 | N/A | 1.08 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Aroclor-1242 | 2.8E-01 | 2.8E-07 | ####### | 327.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **7.13** | 1.0 | -4.63E+00 | 2.34E-05 | **2.34E-08** | N/A | N/A | N/A | 17.11 |
| | | | Aroclor-1254 | 4.3E+00 | 4.3E-06 | ####### | 327.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **7.13** | 1.0 | -4.63E+00 | 2.34E-05 | **2.34E-08** | N/A | N/A | N/A | 17.11 |

## TABLE 2.RME. DERMALLY ABSORBED DOSE CALCULATIONS - GROUNDWATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | t_star (hr) | A $cm^2$ | t_event hr/event | EV event/day | DA_event mg/cm2-evt | Derm/Drink Kp | Chem Assess |
|---|---|---|---|---|---|---|---|---|---|---|
| Future | Const. Worker - Adult | Unnamed Island Shallow Groundwater | | | | | | | | |
| | | | Atrazine | 4.07 | 2100 | 0.2 | 1 | **2.7E-08** | **1%** | N |
| | | | Benzo(a)anthracene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 2100 | 0.2 | 1 | **2.8E-07** | **10%** | Y |
| | | | Dibenzofuran | 4.44 | 2100 | 0.2 | 1 | **3.5E-08** | **13%** | Y |
| | | | Naphthalene | 1.32 | 2100 | 0.2 | 1 | **3.9E-08** | **4%** | N |
| | | | N-Nitrosodiphenylamine | 3.25 | 2100 | 0.2 | 1 | **9.8E-08** | **2%** | N |
| | | | Phenanthrene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 2100 | 0.2 | 1 | **8.0E-08** | **5%** | N |
| | | | Benzene | 0.69 | 2100 | 0.2 | 1 | **3.8E-08** | **1%** | N |
| | | | Chlorobenzene | 1.08 | 2100 | 0.2 | 1 | **2.8E-07** | **2%** | N |
| | | | | | | | | | | |
| | | | Aroclor-1242 | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Aroclor-1254 | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |

## TABLE 2.CT. DERMALLY ABSORBED DOSE CALCULATIONS - GROUNDWATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | Conc ug/L | Conc mg/cm3 | CAS No. | MWT | logKow | Kp (cm/hr) predicted | Isc cm | IR $cm^3$/day | ABSGI | B | tau (hr) | FA for tau>3 | log(Ds/lsc) | Dsc/lsc | Dsc | b | c | t_star1 B>0.6 | t_star3 B<=0.6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Future | Const. Worker - Adult | Unnamed Island Shallow Groundwater | | | | | | | | | | | | | | | | | | | | |
| | | | Atrazine | 1.1E+00 | 1.1E-06 | 1912249 | 215.7 | 2.61 | 5.2E-03 | 1.0E-03 | 2000 | 1 | 0.030 | **1.70** | 1.0 | -4.01E+00 | 9.82E-05 | **9.82E-08** | 3.2E-01 | 3.5E-01 | N/A | 4.07 |
| | | | Benzo(a)anthracene | 4.5E-02 | 4.5E-08 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.7E-02 | 1.7E-08 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | bis(2-Ethylhexyl)phthalat | 2.8E+00 | 2.8E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Dibenzofuran | 2.8E-01 | 2.8E-07 | 132649 | 222.3 | 4.39 | 7.3E-02 | 1.0E-03 | 2000 | 1 | 0.420 | **1.85** | 1.0 | -4.04E+00 | 9.02E-05 | **9.02E-08** | 6.3E-01 | 6.6E-01 | N/A | 4.44 |
| | | | Naphthalene | 9.2E-01 | 9.2E-07 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | N-Nitrosodiphenylamine | 4.7E+00 | 4.7E-06 | 86306 | 198.2 | 3.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.079 | **1.35** | 1.0 | -3.91E+00 | 1.23E-04 | **1.23E-07** | 3.5E-01 | 3.9E-01 | N/A | 3.25 |
| | | | Phenanthrene | 2.7E-01 | 2.7E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.8E+00 | 1.8E-06 | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | 3.9E+00 | 3.9E-06 | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Chlorobenzene | 1.2E+01 | 1.2E-05 | 108907 | 112.6 | 2.84 | 2.8E-02 | 1.0E-03 | 2000 | 1 | 0.115 | **0.45** | 1.0 | -3.43E+00 | 3.71E-04 | **3.71E-07** | 3.8E-01 | 4.1E-01 | N/A | 1.08 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Aroclor-1242 | 7.2E-02 | 7.2E-08 | ####### | 327.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **7.13** | 1.0 | -4.63E+00 | 2.34E-05 | **2.34E-08** | N/A | N/A | N/A | 17.11 |
| | | | Aroclor-1254 | 4.1E-01 | 4.1E-07 | ####### | 327.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **7.13** | 1.0 | -4.63E+00 | 2.34E-05 | **2.34E-08** | N/A | N/A | N/A | 17.11 |

## TABLE 2.CT. DERMALLY ABSORBED DOSE CALCULATIONS - GROUNDWATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | t_star (hr) | A $cm^2$ | t_event hr/event | EV event/day | DA_event mg/cm2-evt | Derm/Drink Kp | Chem Assess |
|---|---|---|---|---|---|---|---|---|---|---|
| Future | Const. Worker - Adult | Unnamed Island Shallow Groundwater | Atrazine | 4.07 | 2100 | 0.2 | 1 | **9.0E-09** | **1%** | N |
| | | | Benzo(a)anthracene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 2100 | 0.2 | 1 | **2.8E-07** | **10%** | Y |
| | | | Dibenzofuran | 4.44 | 2100 | 0.2 | 1 | **3.5E-08** | **13%** | Y |
| | | | Naphthalene | 1.32 | 2100 | 0.2 | 1 | **3.9E-08** | **4%** | N |
| | | | N-Nitrosodiphenylamine | 3.25 | 2100 | 0.2 | 1 | **9.8E-08** | **2%** | N |
| | | | Phenanthrene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 2100 | 0.2 | 1 | **8.0E-08** | **5%** | N |
| | | | Benzene | 0.69 | 2100 | 0.2 | 1 | **3.8E-08** | **1%** | N |
| | | | Chlorobenzene | 1.08 | 2100 | 0.2 | 1 | **2.8E-07** | **2%** | N |
| | | | | | | | | | | |
| | | | Aroclor-1242 | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Aroclor-1254 | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |

## DERMAL ABSORPTION CALCULATION EXAMPLE

**Note: This EPA spreadsheet utilized as basis for Appendix E calculations.**

FOR ORGANIC CHEMICALS IN WATER (updated on 11/99)

Worksheet to Calculate Dermal Absorption of Organic Chemicals from Aqueous Media (updated 11/99)

Enter the Following Exposure Conditions: for site specific conditions, change values in Cells G5-G18

| | | | |
|---|---|---|---|
| Concentration (mg/L*L/1000 cm3): | Conc = | 1.0E-03 | mg/cm3 (default value for purpose of illustration) |
| Input site specific concentrations in Column marked "Conc" | | = 1 mg/L (1 ppm) | = 1 ug/cm3 = 1000 ppb |
| Area exposed (cm2): | A = | 5672.0 | cm2 |
| Event time (hr/event): | t_event = | 0.5 | hr/event (35 minutes/event) |
| Event frequency (events/day): | EV = | 1.0 | event/day |
| Exposure frequency (days/year): | EF = | 26.0 | days/yr |
| Exposure duration (years): | ED = | 7.0 | years |
| Body weight (kg): | BW = | 70.0 | kg |
| Averaging time (days): | AT = | 2555.0 | days |
| for carcinogenic effects, AT=70 years (25,550 days) | | | |
| for noncarcinogenic effects, AT=ED (in days) | | | |
| Skin thickness (assumed to be 10 um): | lsc = | 1.0E-03 | cm |

Default conditions for screening purposes:

Compare Dermal to Drinking: Adults showering for 35 minutes/day, compared to drinking 2L water/day

| | | | |
|---|---|---|---|
| Dermal (mg/day) = DA_event * A * EV | IR = | 2000.0 | (cm3/day = L/day * 1000 cm3/L) |
| Drinking (mg/day) = Conc * IR * ABSIG | ABSGI = | 1.0 | (assumed 100% GI absorption) |

IR: Ingestion rate of drinking water
ABSIG: Absorption fraction in GI tract

Refer to Appendix A for equations to evaluate DA_event and DAD

(*): outside of the Effective Prediction Domain (EPD) determined by the Flynn's measured Kp data

95% LCI and UCI are evaluated by Dr. Paul Pinsky in NCEA using SAS

| | CHEMICAL | CAS No. | MWT | logKow | Kp 95% LCI | Kp (cm/hr) predicted | Kp (cm/hr) measured | Kp 95% UCI | Chemicals outside EPD (*) | Derm/ Drink Kp | Chem Assess | B | tau (hr) | t_star (hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 118 | Heptachlor | 76448 | 373.5 | 4.27 | 3.4E-04 | 8.6E-03 | | 2.2E-01 | | **14%** | Y | 0.1 | **12.99** | 31.16 |

| FA for tau>3 | Conc (mg/cm3) | DA_event (mg/cm2-evt) | DAD (mg/kg-day) | log(Ds/lsc) | Dsc/lsc | Dsc | b | c | t_star1 B>0.6 | t_star3 B<=0.6 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.8 | 1.4E-09 | **6.8E-11** | **3.9E-10** | -4.89E+00 | 1.28E-05 | **1.28E-08** | 3.4E-01 | 3.8E-01 | #NUM! | 31.16 |

Table 3.RME. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - GROUNDWATER

| Timeframe | Receptor | Exposure Point | Chemical of Potential Concern | Media | Dermal Absorption Fraction (soil) | FA | Kp | | T(event) | | Tau | | T* | | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Value | Units | Value | Units | Value | Units | Value | Units | Value |
| Future | Const. Worker - Adult | Unnamed Island Shallow Groundwater | | | | | | | | | | | | | |
| | | | Atrazine | Groundwater | -- | 1 | 5.2E-03 | cm/hr | 0.2 | hr/event | 1.70 | hr | 4.07 | hr | 0.0296 |
| | | | Benzo(a)anthracene | Groundwater | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Groundwater | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Groundwater | -- | 0.8 | 2.5E-02 | cm/hr | 0.2 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Dibenzofuran | Groundwater | -- | 1 | 7.3E-02 | cm/hr | 0.2 | hr/event | 1.85 | hr | 4.44 | hr | 0.4204 |
| | | | Naphthalene | Groundwater | -- | 1 | 4.7E-02 | cm/hr | 0.2 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |
| | | | N-Nitrosodiphenylamine | Groundwater | -- | 1 | 1.5E-02 | cm/hr | 0.2 | hr/event | 1.35 | hr | 3.25 | hr | 0.0788 |
| | | | Phenanthrene | Groundwater | -- | 1 | NA | cm/hr | 0.2 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Groundwater | -- | 1 | 4.2E-02 | cm/hr | 0.2 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Groundwater | -- | 1 | 1.5E-02 | cm/hr | 0.2 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Chlorobenzene | Groundwater | -- | 1 | 2.8E-02 | cm/hr | 0.2 | hr/event | 0.45 | hr | 1.08 | hr | 0.1152 |
| | | | | | | | | | | | | | | | |
| | | | Aroclor-1242 | Groundwater | -- | 1 | NA | cm/hr | 0.2 | hr/event | 7.13 | hr | N/A | hr | N/A |
| | | | Aroclor-1254 | Groundwater | -- | 1 | NA | cm/hr | 0.2 | hr/event | 7.13 | hr | N/A | hr | N/A |

FA = Fraction Absorbed Water
Kp = Dermal Permeability Coefficient of Compound in Water

T(event) = Event Duration
Tau = Lag Time

T* = Time to Reach Steady-State
B = Dimensionless Ratio of the Permeability Coefficient of a Compound Through the Stratum Corneum Relative to its Permeability Coefficient Across the Viable Epidermis

Table 3.CT. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - GROUNDWATER

| Timeframe | Receptor | Exposure Point | Chemical of Potential Concern | Media | Dermal Absorption Fraction (soil) | FA | Kp | | T(event) | | Tau | | T* | | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Value | Units | Value | Units | Value | Units | Value | Units | Value |
| Future | Const. Worker - Adult | Unnamed Island Shallow Groundwater | | | | | | | | | | | | | |
| | | | Atrazine | Groundwater | -- | 1 | 5.2E-03 | cm/hr | 0.2 | hr/event | 1.70 | hr | 4.07 | hr | 0.0296 |
| | | | Benzo(a)anthracene | Groundwater | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Groundwater | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Groundwater | -- | 0.8 | 2.5E-02 | cm/hr | 0.2 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Dibenzofuran | Groundwater | -- | 1 | 7.3E-02 | cm/hr | 0.2 | hr/event | 1.85 | hr | 4.44 | hr | 0.4204 |
| | | | Naphthalene | Groundwater | -- | 1 | 4.7E-02 | cm/hr | 0.2 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |
| | | | N-Nitrosodiphenylamine | Groundwater | -- | 1 | 1.5E-02 | cm/hr | 0.2 | hr/event | 1.35 | hr | 3.25 | hr | 0.0788 |
| | | | Phenanthrene | Groundwater | -- | 1 | NA | cm/hr | 0.2 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Groundwater | -- | 1 | 4.2E-02 | cm/hr | 0.2 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Groundwater | -- | 1 | 1.5E-02 | cm/hr | 0.2 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Chlorobenzene | Groundwater | -- | 1 | 2.8E-02 | cm/hr | 0.2 | hr/event | 0.45 | hr | 1.08 | hr | 0.1152 |
| | | | | | | | | | | | | | | | |
| | | | Aroclor-1242 | Groundwater | -- | 1 | NA | cm/hr | 0.2 | hr/event | 7.13 | hr | N/A | hr | N/A |
| | | | Aroclor-1254 | Groundwater | -- | 1 | NA | cm/hr | 0.2 | hr/event | 7.13 | hr | N/A | hr | N/A |

FA = Fraction Absorbed Water
Kp = Dermal PeCTability Coefficient of Compound in Water

T(event) = Event Duration
Tau = Lag Time

T* = Time to Reach Steady-State
B = Dimensionless Ratio of the PeCTability Coefficient of a Compound Through the Stratum Corneum Relative to its PeCTability Coefficient Across the Viable Epidermis

## TABLE 4. DERMAL SCREENING - SURFACE WATER INORGANICS

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | Conc ug/L | Conc mg/cm3 | Kp (cm/hr) | Isc cm | IR $cm^3$/day | ABSGI | A $cm^2$ | t_event hr/event | EV event/day | DA_event mg/cm2-evt | Derm/Drink Kp | Chem Assess |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Current | Trespasser - Adolescent wader | Leachate - Unnamed Island | Aluminum | 1.4E+02 | 1.4E-04 | 1.0E-03 | 1.0E-03 | 2000 | 0.01 | 3700 | 1 | 1 | **1.4E-07** | **19%** | Y |
| | | | Antimony | 2.0E+00 | 2.0E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.15 | 3700 | 1 | 1 | **2.0E-09** | **1%** | N |
| | | | Arsenic | 4.1E+00 | 4.1E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.95 | 3700 | 1 | 1 | **4.1E-09** | **0%** | N |
| | | | Barium | 6.7E+02 | 6.7E-04 | 1.0E-03 | 1.0E-03 | 2000 | 0.07 | 3700 | 1 | 1 | **6.7E-07** | **3%** | N |
| | | | Beryllium | 1.8E-01 | 1.8E-07 | 1.0E-03 | 1.0E-03 | 2000 | 0.007 | 3700 | 1 | 1 | **1.8E-10** | **26%** | Y |
| | | | Cadmium | 8.3E+00 | 8.3E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.025 | 3700 | 1 | 1 | **8.3E-09** | **7%** | N |
| | | | Chromium | 5.1E+00 | 5.1E-06 | 2.0E-03 | 1.0E-03 | 2000 | 0.025 | 3700 | 1 | 1 | **1.0E-08** | **15%** | Y |
| | | | Cobalt | 1.3E+01 | 1.3E-05 | 4.0E-04 | 1.0E-03 | 2000 | 0.97 | 3700 | 1 | 1 | **5.0E-09** | **0%** | N |
| | | | Copper | 1.9E+01 | 1.9E-05 | 1.0E-03 | 1.0E-03 | 2000 | 0.57 | 3700 | 1 | 1 | **1.9E-08** | **0%** | N |
| | | | Cyanide | ND | N/A | 1.0E-03 | 1.0E-03 | 2000 | 0.47 | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Iron | 4.3E+04 | 4.3E-02 | 1.0E-03 | 1.0E-03 | 2000 | 0.5 | 3700 | 1 | 1 | **4.3E-05** | **0%** | N |
| | | | Lead | N/A | N/A | 1.0E-04 | 1.0E-03 | 2000 | 0.5 | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Manganese | 1.1E+03 | 1.1E-03 | 1.0E-03 | 1.0E-03 | 2000 | 0.06 | 3700 | 1 | 1 | **1.1E-06** | **3%** | N |
| | | | Mercury | 3.2E-02 | 3.2E-08 | 1.0E-03 | 1.0E-03 | 2000 | 0.07 | 3700 | 1 | 1 | **3.2E-11** | **3%** | N |
| | | | Nickel | 4.1E+01 | 4.1E-05 | 2.0E-04 | 1.0E-03 | 2000 | 0.04 | 3700 | 1 | 1 | **8.3E-09** | **1%** | N |
| | | | Silver | 1.5E+00 | 1.5E-06 | 6.0E-04 | 1.0E-03 | 2000 | 0.04 | 3700 | 1 | 1 | **9.0E-10** | **3%** | N |
| | | | Thallium | 5.8E+00 | 5.8E-06 | 1.0E-03 | 1.0E-03 | 2000 | 1 | 3700 | 1 | 1 | **5.8E-09** | **0%** | N |
| | | | Vanadium | 1.8E+00 | 1.8E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.026 | 3700 | 1 | 1 | **1.8E-09** | **7%** | N |
| | | | Zinc | 1.3E+03 | 1.3E-03 | 6.0E-04 | 1.0E-03 | 2000 | 0.5 | 3700 | 1 | 1 | **7.6E-07** | **0%** | N |
| Current | Trespasser - Adolescent wader | Unnamed Island Ponds | Aluminum | 3.3E+03 | 3.3E-03 | 1.0E-03 | 1.0E-03 | 2000 | 0.01 | 7600 | 1 | 1 | **3.3E-06** | **38%** | Y |
| | | | Arsenic | 3.2E+00 | 3.2E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.95 | 7600 | 1 | 1 | **3.2E-09** | **0%** | N |
| | | | Cadmium | 1.4E+00 | 1.4E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.025 | 7600 | 1 | 1 | **1.4E-09** | **15%** | Y |
| | | | Chromium | 1.4E+01 | 1.4E-05 | 2.0E-03 | 1.0E-03 | 2000 | 0.025 | 7600 | 1 | 1 | **2.7E-08** | **30%** | Y |
| | | | Cobalt | ND | N/A | 4.0E-04 | 1.0E-03 | 2000 | 0.97 | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Copper | 7.0E+01 | 7.0E-05 | 1.0E-03 | 1.0E-03 | 2000 | 0.57 | 7600 | 1 | 1 | **7.0E-08** | **1%** | N |
| | | | Cyanide | 3.6E+00 | 3.6E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.47 | 7600 | 1 | 1 | **3.6E-09** | **1%** | N |
| | | | Iron | 1.0E+04 | 1.0E-02 | 1.0E-03 | 1.0E-03 | 2000 | 0.5 | 7600 | 1 | 1 | **1.0E-05** | **1%** | N |
| | | | Lead | N/A | N/A | 1.0E-04 | 1.0E-03 | 2000 | 0.5 | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Manganese | 5.8E+02 | 5.8E-04 | 1.0E-03 | 1.0E-03 | 2000 | 0.06 | 7600 | 1 | 1 | **5.8E-07** | **6%** | N |
| | | | Mercury | ND | N/A | 1.0E-03 | 1.0E-03 | 2000 | 0.07 | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Vanadium | 2.6E+00 | 2.6E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.026 | 7600 | 1 | 1 | **2.6E-09** | **15%** | Y |
| Future | Trespasser - Adult wader | Leachate - Unnamed Island | Aluminum | 1.4E+02 | 1.4E-04 | 1.0E-03 | 1.0E-03 | 2000 | 0.01 | 4500 | 1 | 1 | **1.4E-07** | **23%** | Y |
| | | | Antimony | 2.0E+00 | 2.0E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.15 | 4500 | 1 | 1 | **2.0E-09** | **2%** | N |
| | | | Arsenic | 4.1E+00 | 4.1E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.95 | 4500 | 1 | 1 | **4.1E-09** | **0%** | N |
| | | | Barium | 6.7E+02 | 6.7E-04 | 1.0E-03 | 1.0E-03 | 2000 | 0.07 | 4500 | 1 | 1 | **6.7E-07** | **3%** | N |
| | | | Beryllium | 1.8E-01 | 1.8E-07 | 1.0E-03 | 1.0E-03 | 2000 | 0.007 | 4500 | 1 | 1 | **1.8E-10** | **32%** | Y |
| | | | Cadmium | 8.3E+00 | 8.3E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.025 | 4500 | 1 | 1 | **8.3E-09** | **9%** | N |
| | | | Chromium | 5.1E+00 | 5.1E-06 | 2.0E-03 | 1.0E-03 | 2000 | 0.025 | 4500 | 1 | 1 | **1.0E-08** | **18%** | Y |
| | | | Cobalt | 1.3E+01 | 1.3E-05 | 4.0E-04 | 1.0E-03 | 2000 | 0.97 | 4500 | 1 | 1 | **5.0E-09** | **0%** | N |
| | | | Copper | 1.9E+01 | 1.9E-05 | 1.0E-03 | 1.0E-03 | 2000 | 0.57 | 4500 | 1 | 1 | **1.9E-08** | **0%** | N |
| | | | Cyanide | ND | N/A | 1.0E-03 | 1.0E-03 | 2000 | 0.47 | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Iron | 4.3E+04 | 4.3E-02 | 1.0E-03 | 1.0E-03 | 2000 | 0.5 | 4500 | 1 | 1 | **4.3E-05** | **0%** | N |
| | | | Lead | N/A | N/A | 1.0E-04 | 1.0E-03 | 2000 | 0.5 | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Manganese | 1.1E+03 | 1.1E-03 | 1.0E-03 | 1.0E-03 | 2000 | 0.06 | 4500 | 1 | 1 | **1.1E-06** | **4%** | N |
| | | | Mercury | 3.2E-02 | 3.2E-08 | 1.0E-03 | 1.0E-03 | 2000 | 0.07 | 4500 | 1 | 1 | **3.2E-11** | **3%** | N |
| | | | Nickel | 4.1E+01 | 4.1E-05 | 2.0E-04 | 1.0E-03 | 2000 | 0.04 | 4500 | 1 | 1 | **8.3E-09** | **1%** | N |
| | | | Silver | 1.5E+00 | 1.5E-06 | 6.0E-04 | 1.0E-03 | 2000 | 0.04 | 4500 | 1 | 1 | **9.0E-10** | **3%** | N |
| | | | Thallium | 5.8E+00 | 5.8E-06 | 1.0E-03 | 1.0E-03 | 2000 | 1 | 4500 | 1 | 1 | **5.8E-09** | **0%** | N |
| | | | Vanadium | 1.8E+00 | 1.8E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.026 | 4500 | 1 | 1 | **1.8E-09** | **9%** | N |
| | | | Zinc | 1.3E+03 | 1.3E-03 | 6.0E-04 | 1.0E-03 | 2000 | 0.5 | 4500 | 1 | 1 | **7.6E-07** | **0%** | N |
| Future | Trespasser - Older Child wader | Leachate - Unnamed Island | Aluminum | 1.4E+02 | 1.4E-04 | 1.0E-03 | 1.0E-03 | 2000 | 0.01 | 2700 | 1 | 1 | **1.4E-07** | **14%** | Y |
| | | | Antimony | 2.0E+00 | 2.0E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.15 | 2700 | 1 | 1 | **2.0E-09** | **1%** | N |
| | | | Arsenic | 4.1E+00 | 4.1E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.95 | 2700 | 1 | 1 | **4.1E-09** | **0%** | N |
| | | | Barium | 6.7E+02 | 6.7E-04 | 1.0E-03 | 1.0E-03 | 2000 | 0.07 | 2700 | 1 | 1 | **6.7E-07** | **2%** | N |
| | | | Beryllium | 1.8E-01 | 1.8E-07 | 1.0E-03 | 1.0E-03 | 2000 | 0.007 | 2700 | 1 | 1 | **1.8E-10** | **19%** | Y |
| | | | Cadmium | 8.3E+00 | 8.3E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.025 | 2700 | 1 | 1 | **8.3E-09** | **5%** | N |
| | | | Chromium | 5.1E+00 | 5.1E-06 | 2.0E-03 | 1.0E-03 | 2000 | 0.025 | 2700 | 1 | 1 | **1.0E-08** | **11%** | Y |
| | | | Cobalt | 1.3E+01 | 1.3E-05 | 4.0E-04 | 1.0E-03 | 2000 | 0.97 | 2700 | 1 | 1 | **5.0E-09** | **0%** | N |
| | | | Copper | 1.9E+01 | 1.9E-05 | 1.0E-03 | 1.0E-03 | 2000 | 0.57 | 2700 | 1 | 1 | **1.9E-08** | **0%** | N |
| | | | Cyanide | ND | N/A | 1.0E-03 | 1.0E-03 | 2000 | 0.47 | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |

## TABLE 4. DERMAL SCREENING - SURFACE WATER INORGANICS

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | Conc ug/L | Conc mg/cm3 | Kp (cm/hr) | Isc cm | IR $cm^3$/day | ABSGI | A $cm^2$ | t_event hr/event | EV event/day | DA_event mg/cm2-evt | Derm/Drink Kp | Chem Assess |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Iron | 4.3E+04 | 4.3E-02 | 1.0E-03 | 1.0E-03 | 2000 | 0.5 | 2700 | 1 | 1 | **4.3E-05** | **0%** | N |
| | | | Lead | N/A | N/A | 1.0E-04 | 1.0E-03 | 2000 | 0.5 | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Manganese | 1.1E+03 | 1.1E-03 | 1.0E-03 | 1.0E-03 | 2000 | 0.06 | 2700 | 1 | 1 | **1.1E-06** | **2%** | N |
| | | | Mercury | 3.2E-02 | 3.2E-08 | 1.0E-03 | 1.0E-03 | 2000 | 0.07 | 2700 | 1 | 1 | **3.2E-11** | **2%** | N |
| | | | Nickel | 4.1E+01 | 4.1E-05 | 2.0E-04 | 1.0E-03 | 2000 | 0.04 | 2700 | 1 | 1 | **8.3E-09** | **1%** | N |
| | | | Silver | 1.5E+00 | 1.5E-06 | 6.0E-04 | 1.0E-03 | 2000 | 0.04 | 2700 | 1 | 1 | **9.0E-10** | **2%** | N |
| | | | Thallium | 5.8E+00 | 5.8E-06 | 1.0E-03 | 1.0E-03 | 2000 | 1 | 2700 | 1 | 1 | **5.8E-09** | **0%** | N |
| | | | Vanadium | 1.8E+00 | 1.8E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.026 | 2700 | 1 | 1 | **1.8E-09** | **5%** | N |
| | | | Zinc | 1.3E+03 | 1.3E-03 | 6.0E-04 | 1.0E-03 | 2000 | 0.5 | 2700 | 1 | 1 | **7.6E-07** | **0%** | N |
| Future | Rec. User - Adult wader | Unnamed Island Ponds | Aluminum | 3.3E+03 | 3.3E-03 | 1.0E-03 | 1.0E-03 | 2000 | 0.01 | 7310 | 1 | 1 | **3.3E-06** | **37%** | Y |
| | | | Arsenic | 3.2E+00 | 3.2E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.95 | 7310 | 1 | 1 | **3.2E-09** | **0%** | N |
| | | | Cadmium | 1.4E+00 | 1.4E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.025 | 7310 | 1 | 1 | **1.4E-09** | **15%** | Y |
| | | | Chromium | 1.4E+01 | 1.4E-05 | 2.0E-03 | 1.0E-03 | 2000 | 0.025 | 7310 | 1 | 1 | **2.7E-08** | **29%** | Y |
| | | | Cobalt | ND | N/A | 4.0E-04 | 1.0E-03 | 2000 | 0.97 | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Copper | 7.0E+01 | 7.0E-05 | 1.0E-03 | 1.0E-03 | 2000 | 0.57 | 7310 | 1 | 1 | **7.0E-08** | **1%** | N |
| | | | Cyanide | 3.6E+00 | 3.6E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.47 | 7310 | 1 | 1 | **3.6E-09** | **1%** | N |
| | | | Iron | 1.0E+04 | 1.0E-02 | 1.0E-03 | 1.0E-03 | 2000 | 0.5 | 7310 | 1 | 1 | **1.0E-05** | **1%** | N |
| | | | Lead | N/A | N/A | 1.0E-04 | 1.0E-03 | 2000 | 0.5 | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Manganese | 5.8E+02 | 5.8E-04 | 1.0E-03 | 1.0E-03 | 2000 | 0.06 | 7310 | 1 | 1 | **5.8E-07** | **6%** | N |
| | | | Mercury | ND | N/A | 1.0E-03 | 1.0E-03 | 2000 | 0.07 | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Vanadium | 2.6E+00 | 2.6E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.026 | 7310 | 1 | 1 | **2.6E-09** | **14%** | Y |
| Future | Rec. User - Older Child wader | Unnamed Island Ponds | Aluminum | 3.3E+03 | 3.3E-03 | 1.0E-03 | 1.0E-03 | 2000 | 0.01 | 4170 | 1 | 1 | **3.3E-06** | **21%** | Y |
| | | | Arsenic | 3.2E+00 | 3.2E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.95 | 4170 | 1 | 1 | **3.2E-09** | **0%** | N |
| | | | Cadmium | 1.4E+00 | 1.4E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.025 | 4170 | 1 | 1 | **1.4E-09** | **8%** | N |
| | | | Chromium | 1.4E+01 | 1.4E-05 | 2.0E-03 | 1.0E-03 | 2000 | 0.025 | 4170 | 1 | 1 | **2.7E-08** | **17%** | Y |
| | | | Cobalt | ND | N/A | 4.0E-04 | 1.0E-03 | 2000 | 0.97 | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Copper | 7.0E+01 | 7.0E-05 | 1.0E-03 | 1.0E-03 | 2000 | 0.57 | 4170 | 1 | 1 | **7.0E-08** | **0%** | N |
| | | | Cyanide | 3.6E+00 | 3.6E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.47 | 4170 | 1 | 1 | **3.6E-09** | **0%** | N |
| | | | Iron | 1.0E+04 | 1.0E-02 | 1.0E-03 | 1.0E-03 | 2000 | 0.5 | 4170 | 1 | 1 | **1.0E-05** | **0%** | N |
| | | | Lead | N/A | N/A | 1.0E-04 | 1.0E-03 | 2000 | 0.5 | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Manganese | 5.8E+02 | 5.8E-04 | 1.0E-03 | 1.0E-03 | 2000 | 0.06 | 4170 | 1 | 1 | **5.8E-07** | **3%** | N |
| | | | Mercury | ND | N/A | 1.0E-03 | 1.0E-03 | 2000 | 0.07 | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Vanadium | 2.6E+00 | 2.6E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.026 | 4170 | 1 | 1 | **2.6E-09** | **8%** | N |
| Future | Construction Worker - Adult | Leachate - Unnamed Island | Aluminum | 1.4E+02 | 1.4E-04 | 1.0E-03 | 1.0E-03 | 2000 | 0.01 | 2100 | 0.2 | 1 | **2.7E-08** | **2%** | N |
| | | | Antimony | 2.0E+00 | 2.0E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.15 | 2100 | 0.2 | 1 | **4.1E-10** | **0%** | N |
| | | | Arsenic | 4.1E+00 | 4.1E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.95 | 2100 | 0.2 | 1 | **8.3E-10** | **0%** | N |
| | | | Barium | 6.7E+02 | 6.7E-04 | 1.0E-03 | 1.0E-03 | 2000 | 0.07 | 2100 | 0.2 | 1 | **1.3E-07** | **0%** | N |
| | | | Beryllium | 1.8E-01 | 1.8E-07 | 1.0E-03 | 1.0E-03 | 2000 | 0.007 | 2100 | 0.2 | 1 | **3.6E-11** | **3%** | N |
| | | | Cadmium | 8.3E+00 | 8.3E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.025 | 2100 | 0.2 | 1 | **1.7E-09** | **1%** | N |
| | | | Chromium | 5.1E+00 | 5.1E-06 | 2.0E-03 | 1.0E-03 | 2000 | 0.025 | 2100 | 0.2 | 1 | **2.0E-09** | **2%** | N |
| | | | Cobalt | 1.3E+01 | 1.3E-05 | 4.0E-04 | 1.0E-03 | 2000 | 0.97 | 2100 | 0.2 | 1 | **1.0E-09** | **0%** | N |
| | | | Copper | 1.9E+01 | 1.9E-05 | 1.0E-03 | 1.0E-03 | 2000 | 0.57 | 2100 | 0.2 | 1 | **3.8E-09** | **0%** | N |
| | | | Cyanide | ND | N/A | 1.0E-03 | 1.0E-03 | 2000 | 0.47 | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Iron | 4.3E+04 | 4.3E-02 | 1.0E-03 | 1.0E-03 | 2000 | 0.5 | 2100 | 0.2 | 1 | **8.5E-06** | **0%** | N |
| | | | Lead | N/A | N/A | 1.0E-04 | 1.0E-03 | 2000 | 0.5 | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Manganese | 1.1E+03 | 1.1E-03 | 1.0E-03 | 1.0E-03 | 2000 | 0.06 | 2100 | 0.2 | 1 | **2.2E-07** | **0%** | N |
| | | | Mercury | 3.2E-02 | 3.2E-08 | 1.0E-03 | 1.0E-03 | 2000 | 0.07 | 2100 | 0.2 | 1 | **6.4E-12** | **0%** | N |
| | | | Nickel | 4.1E+01 | 4.1E-05 | 2.0E-04 | 1.0E-03 | 2000 | 0.04 | 2100 | 0.2 | 1 | **1.7E-09** | **0%** | N |
| | | | Silver | 1.5E+00 | 1.5E-06 | 6.0E-04 | 1.0E-03 | 2000 | 0.04 | 2100 | 0.2 | 1 | **1.8E-10** | **0%** | N |
| | | | Thallium | 5.8E+00 | 5.8E-06 | 1.0E-03 | 1.0E-03 | 2000 | 1 | 2100 | 0.2 | 1 | **1.2E-09** | **0%** | N |
| | | | Vanadium | 1.8E+00 | 1.8E-06 | 1.0E-03 | 1.0E-03 | 2000 | 0.026 | 2100 | 0.2 | 1 | **3.7E-10** | **1%** | N |
| | | | Zinc | 1.3E+03 | 1.3E-03 | 6.0E-04 | 1.0E-03 | 2000 | 0.5 | 2100 | 0.2 | 1 | **1.5E-07** | **0%** | N |

**DERMAL ABSORPTION CALCULATION EXAMPLE**

**Note: This EPA spreadsheet utilized as basis for Appendix E calculations.**

FOR INORGANIC CHEMICALS IN WATER (latest version 04/01)

Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media

Enter the Following Exposure Conditions: for site specific conditions, change values for A through AT (Given are default values from Table 8-6)

| | | | |
|---|---|---|---|
| Concentration (mg/L*L/1000 cm3): | Conc = | 0.001 | mg/cm3 (default value for purpose of illustration) |
| Input site specific concentrations in Column marked "Conc" | | = 1 mg/L (1 ppm) | = 1 ug/cm3 = 1000 ppb |
| Area exposed (cm2): | SA= | 18000 | cm2 |
| Event time (hr/event): | t_event = | 0.58 | hr/event (35 minutes/event) |
| Event frequency (events/day): | EV = | 1 | event/day |
| Exposure frequency (days/year): | EF = | 350 | days/yr |
| Exposure duration (years): | ED = | 30 | years |
| Body weight (kg): | BW = | 70 | kg |
| Averaging time (days): | AT = | 25550 | days |
| for carcinogenic effects, AT=70 years (25,550 days) | | | |
| for noncarcinogenic effects, AT=ED (in days) | | | |

Default conditions for screening purposes:

Compare Dermal to Drinking: Adults showering for 35 minutes/day, compared to drinking 2L water/day

Dermal (mg/day) = DA_event * A * EV
Drinking (mg/day) = Conc * IR * ABSIG

| | | | |
|---|---|---|---|
| IR: Ingestion rate of drinking water | IR = | 2000 | (cm3/day = L/day * 1000 cm3/L) |
| ABSIG: Absorption fraction in GI tract | Chemical specific | | |
| Condition for screening: "Y" when Dermal is 10% of Drinking | | | |

Compare Dermal to Total dose exposed during adult showering assuming 5 gal/min of water flow rate

Total dose (mg/day) = Q * T_event * EV

| | | | |
|---|---|---|---|
| Q: Shower flow rate (5-15 gal/min; here using 5 gal/min) | Q = | 1135500 | (cm3/hr = gal/min * 3.785 gal/l * 60 min/hr *1000 cm3/hr) |

Refer to Appendix A for equations to evaluate DA_event and DAD

| CHEMICAL | Kp (cm/hr) | Source of Kp (exp or default) | Conc (mg/cm3) | DA_event (mg/cm2-event) | DAD (mg/kg-day) | ABSGI (chemical specific) | Screening | Chemicals to be assessed | Derm/ Total Dose |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 1.0E-03 | default | 1.0E-03 | 5.8E-07 | 6.2E-05 | 15% | 3.50% | N | 0.00% |

## TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | Conc ug/L | Conc mg/cm3 | CAS No. | MWT | logKow | Kp (cm/hr) predicted | Isc cm | IR $cm^3$/day | ABSGI | B | tau (hr) | FA for tau>3 | log(Ds/lsc) | Dsc/lsc | Dsc | b | c | t_star1 B>0.6 | t_star3 B<=0.6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Current | Trespasser - Adolescent wader | Leachate - Unnamed Island | | | | | | | | | | | | | | | | | | | | |
| | | | 4-Methylphenol | 4.5E-01 | 4.5E-07 | 106445 | 108.1 | 1.95 | 7.7E-03 | 1.0E-03 | 2000 | 1 | 0.031 | **0.42** | 1.0 | -3.41E+00 | 3.93E-04 | **3.93E-07** | 3.2E-01 | 3.5E-01 | N/A | 1.02 |
| | | | Acenaphthylene | 2.6E-02 | 2.6E-08 | 208968 | 152.2 | 3.94 | 9.1E-02 | 1.0E-03 | 2000 | 1 | 0.432 | **0.75** | 1.0 | -3.65E+00 | 2.23E-04 | **2.23E-07** | 6.4E-01 | 6.6E-01 | N/A | 1.80 |
| | | | Atrazine | 3.2E+00 | 3.2E-06 | 1912249 | 215.7 | 2.61 | 5.2E-03 | 1.0E-03 | 2000 | 1 | 0.030 | **1.70** | 1.0 | -4.01E+00 | 9.82E-05 | **9.82E-08** | 3.2E-01 | 3.5E-01 | N/A | 4.07 |
| | | | Benzo(a)anthracene | 4.5E-02 | 4.5E-08 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.7E-02 | 1.7E-08 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 1.5E-02 | 1.5E-08 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 1.3E-02 | 1.3E-08 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | 1.6E-02 | 1.6E-08 | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 2.8E+00 | 2.8E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 3.4E-02 | 3.4E-08 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Dibenz(a,h)anthracene | ND | N/A | 53703 | 278.4 | 6.84 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.81** | 0.6 | -4.36E+00 | 4.37E-05 | **4.37E-08** | N/A | N/A | N/A | 9.14 |
| | | | Dibenzofuran | 2.8E-01 | 2.8E-07 | 132649 | 222.3 | 4.39 | 7.3E-02 | 1.0E-03 | 2000 | 1 | 0.420 | **1.85** | 1.0 | -4.04E+00 | 9.02E-05 | **9.02E-08** | 6.3E-01 | 6.6E-01 | N/A | 4.44 |
| | | | Indeno(1,2,3-cd)pyrene | 1.1E-02 | 1.1E-08 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Naphthalene | 9.2E-01 | 9.2E-07 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | N-Nitrosodiphenylamine | 4.7E+00 | 4.7E-06 | 86306 | 198.2 | 3.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.079 | **1.35** | 1.0 | -3.91E+00 | 1.23E-04 | **1.23E-07** | 3.5E-01 | 3.9E-01 | N/A | 3.25 |
| | | | Pentachlorophenol | ND | N/A | 87865 | 266.4 | 5.86 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.26** | 0.9 | -4.29E+00 | 5.11E-05 | **5.11E-08** | N/A | N/A | N/A | 7.83 |
| | | | Phenanthrene | 2.7E-01 | 2.7E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.8E+00 | 1.8E-06 | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | 3.9E+00 | 3.9E-06 | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Chlorobenzene | 1.2E+01 | 1.2E-05 | 108907 | 112.6 | 2.84 | 2.8E-02 | 1.0E-03 | 2000 | 1 | 0.115 | **0.45** | 1.0 | -3.43E+00 | 3.71E-04 | **3.71E-07** | 3.8E-01 | 4.1E-01 | N/A | 1.08 |
| | | | Ethylbenzene | ND | N/A | 100414 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | Xylene (total) | 1.2E+00 | 1.2E-06 | 1330207 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Total PCBs | 3.5E+00 | 3.5E-06 | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | 1.2E-02 | 1.2E-08 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | 1.4E-03 | 1.4E-09 | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | ND | N/A | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-BHC | 9.9E-04 | 9.9E-10 | 319846 | 290.8 | 3.81 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.082 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | alpha-Chlordane | 3.8E-03 | 3.8E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Dieldrin | 1.8E-03 | 1.8E-09 | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | ND | N/A | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| Current | Trespasser - Adolescent wader | Unnamed Island Ponds | | | | | | | | | | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 1.3E-01 | 1.3E-07 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.2E-01 | 1.2E-07 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 2.5E-01 | 2.5E-07 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 1.1E-01 | 1.1E-07 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | ND | N/A | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 1.9E+00 | 1.9E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 1.4E-01 | 1.4E-07 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Indeno(1,2,3-cd)pyrene | 1.1E-01 | 1.1E-07 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Naphthalene | 1.9E-01 | 1.9E-07 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | Phenanthrene | 1.4E-01 | 1.4E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | ND | N/A | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | ND | N/A | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Bromodichloromethane | ND | N/A | 75274 | 163.8 | 2.09 | 4.6E-03 | 1.0E-03 | 2000 | 1 | 0.023 | **0.87** | 1.0 | -3.72E+00 | 1.92E-04 | **1.92E-07** | 3.2E-01 | 3.5E-01 | N/A | 2.09 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Aroclor-1260 | ND | N/A | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | 4,4'-DDD | 1.2E-02 | 1.2E-08 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | ND | N/A | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | 9.2E-03 | 9.2E-09 | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-Chlordane | 3.3E-03 | 3.3E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | beta-BHC | ND | N/A | 319857 | 290.8 | 3.80 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.080 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | Dieldrin | ND | N/A | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | 4.2E-03 | 4.2E-09 | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Heptachlor Epoxide | 5.1E-03 | 5.1E-09 | 1024573 | 389.3 | 4.98 | 2.1E-02 | 1.0E-03 | 2000 | 1 | 0.158 | **15.92** | 1.0 | -4.98E+00 | 1.05E-05 | **1.05E-08** | 4.1E-01 | 4.5E-01 | N/A | 38.21 |
| Future | Rec. User - Adult wader | Leachate - Unnamed Island | | | | | | | | | | | | | | | | | | | | |
| | | | 4-Methylphenol | 4.5E-01 | 4.5E-07 | 106445 | 108.1 | 1.95 | 7.7E-03 | 1.0E-03 | 2000 | 1 | 0.031 | **0.42** | 1.0 | -3.41E+00 | 3.93E-04 | **3.93E-07** | 3.2E-01 | 3.5E-01 | N/A | 1.02 |
| | | | Acenaphthylene | 2.6E-02 | 2.6E-08 | 208968 | 152.2 | 3.94 | 9.1E-02 | 1.0E-03 | 2000 | 1 | 0.432 | **0.75** | 1.0 | -3.65E+00 | 2.23E-04 | **2.23E-07** | 6.4E-01 | 6.6E-01 | N/A | 1.80 |
| | | | Atrazine | 3.2E+00 | 3.2E-06 | 1912249 | 215.7 | 2.61 | 5.2E-03 | 1.0E-03 | 2000 | 1 | 0.030 | **1.70** | 1.0 | -4.01E+00 | 9.82E-05 | **9.82E-08** | 3.2E-01 | 3.5E-01 | N/A | 4.07 |
| | | | Benzo(a)anthracene | 4.5E-02 | 4.5E-08 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |

## TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | t_star (hr) | A $cm^2$ | t_event hr/event | EV event/day | DA_event mg/cm2-evt | Derm/Drink Kp | Chem Assess |
|---|---|---|---|---|---|---|---|---|---|---|
| Current | Trespasser - Adolescent wader | Leachate - Unnamed Island | | | | | | | | |
| | | | 4-Methylphenol | 1.02 | 3700 | 1 | 1 | **6.2E-09** | **3%** | N |
| | | | Acenaphthylene | 1.80 | 3700 | 1 | 1 | **5.7E-09** | **40%** | Y |
| | | | Atrazine | 4.07 | 3700 | 1 | 1 | **6.0E-08** | **3%** | N |
| | | | Benzo(a)anthracene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 3700 | 1 | 1 | **6.3E-07** | **41%** | Y |
| | | | Chrysene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenz(a,h)anthracene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenzofuran | 4.44 | 3700 | 1 | 1 | **7.8E-08** | **51%** | Y |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Naphthalene | 1.32 | 3700 | 1 | 1 | **8.8E-08** | **18%** | Y |
| | | | N-Nitrosodiphenylamine | 3.25 | 3700 | 1 | 1 | **2.2E-07** | **9%** | N |
| | | | Pentachlorophenol | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Phenanthrene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 3700 | 1 | 1 | **1.8E-07** | **18%** | Y |
| | | | Benzene | 0.69 | 3700 | 1 | 1 | **9.0E-08** | **4%** | N |
| | | | Chlorobenzene | 1.08 | 3700 | 1 | 1 | **6.3E-07** | **10%** | N |
| | | | Ethylbenzene | 0.99 | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Xylene (total) | 0.99 | 3700 | 1 | 1 | **1.1E-07** | **17%** | Y |
| | | | | | | | | | | |
| | | | Total PCBs | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 4,4'-DDD | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-BHC | 10.73 | 3700 | 1 | 1 | **7.2E-11** | **13%** | Y |
| | | | alpha-Chlordane | 49.90 | 3700 | 1 | 1 | **1.1E-09** | **55%** | Y |
| | | | Dieldrin | 34.33 | 3700 | 1 | 1 | **1.8E-10** | **19%** | Y |
| | | | Gamma-Chlordane | 49.90 | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| Current | Trespasser - Adolescent wader | Unnamed Island Ponds | | | | | | | | |
| | | | Benzo(a)anthracene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 7600 | 1 | 1 | **4.2E-07** | **85%** | Y |
| | | | Chrysene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Naphthalene | 1.32 | 7600 | 1 | 1 | **1.8E-08** | **36%** | Y |
| | | | Phenanthrene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzene | 0.69 | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Bromodichloromethane | 2.09 | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | Aroclor-1260 | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDD | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-Chlordane | 49.90 | 7600 | 1 | 1 | **9.9E-10** | **113%** | Y |
| | | | beta-BHC | 10.73 | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dieldrin | 34.33 | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Gamma-Chlordane | 49.90 | 7600 | 1 | 1 | **1.3E-09** | **113%** | Y |
| | | | Heptachlor Epoxide | 38.21 | 7600 | 1 | 1 | **1.2E-09** | **88%** | Y |
| Future | Rec. User - Adult wader | Leachate - Unnamed Island | | | | | | | | |
| | | | 4-Methylphenol | 1.02 | 4500 | 1 | 1 | **6.2E-09** | **3%** | N |
| | | | Acenaphthylene | 1.80 | 4500 | 1 | 1 | **5.7E-09** | **49%** | Y |
| | | | Atrazine | 4.07 | 4500 | 1 | 1 | **6.0E-08** | **4%** | N |
| | | | Benzo(a)anthracene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |

## TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | Conc ug/L | Conc mg/cm3 | CAS No. | MWT | logKow | Kp (cm/hr) predicted | Isc cm | IR $cm^3$/day | ABSGI | B | tau (hr) | FA for tau>3 | log(Ds/lsc) | Dsc/lsc | Dsc | b | c | t_star1 B>0.6 | t_star3 B<=0.6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Benzo(a)pyrene | 1.7E-02 | 1.7E-08 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 1.5E-02 | 1.5E-08 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 1.3E-02 | 1.3E-08 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | 1.6E-02 | 1.6E-08 | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 2.8E+00 | 2.8E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 3.4E-02 | 3.4E-08 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Dibenz(a,h)anthracene | ND | N/A | 53703 | 278.4 | 6.84 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.81** | 0.6 | -4.36E+00 | 4.37E-05 | **4.37E-08** | N/A | N/A | N/A | 9.14 |
| | | | Dibenzofuran | 2.8E-01 | 2.8E-07 | 132649 | 222.3 | 4.39 | 7.3E-02 | 1.0E-03 | 2000 | 1 | 0.420 | **1.85** | 1.0 | -4.04E+00 | 9.02E-05 | **9.02E-08** | 6.3E-01 | 6.6E-01 | N/A | 4.44 |
| | | | Indeno(1,2,3-cd)pyrene | 1.1E-02 | 1.1E-08 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Naphthalene | 9.2E-01 | 9.2E-07 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | N-Nitrosodiphenylamine | 4.7E+00 | 4.7E-06 | 86306 | 198.2 | 3.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.079 | **1.35** | 1.0 | -3.91E+00 | 1.23E-04 | **1.23E-07** | 3.5E-01 | 3.9E-01 | N/A | 3.25 |
| | | | Pentachlorophenol | ND | N/A | 87865 | 266.4 | 5.86 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.26** | 0.9 | -4.29E+00 | 5.11E-05 | **5.11E-08** | N/A | N/A | N/A | 7.83 |
| | | | Phenanthrene | 2.7E-01 | 2.7E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.8E+00 | 1.8E-06 | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | 3.9E+00 | 3.9E-06 | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Chlorobenzene | 1.2E+01 | 1.2E-05 | 108907 | 112.6 | 2.84 | 2.8E-02 | 1.0E-03 | 2000 | 1 | 0.115 | **0.45** | 1.0 | -3.43E+00 | 3.71E-04 | **3.71E-07** | 3.8E-01 | 4.1E-01 | N/A | 1.08 |
| | | | Ethylbenzene | ND | N/A | 100414 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | Xylene (total) | 1.2E+00 | 1.2E-06 | 1330207 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Total PCBs | 3.5E+00 | 3.5E-06 | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | 1.2E-02 | 1.2E-08 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | 1.4E-03 | 1.4E-09 | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | ND | N/A | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-BHC | 9.9E-04 | 9.9E-10 | 319846 | 290.8 | 3.81 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.082 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | alpha-Chlordane | 3.8E-03 | 3.8E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Dieldrin | 1.8E-03 | 1.8E-09 | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | ND | N/A | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| Future | Rec. User - Older Child wader | Leachate - Unnamed Island | | | | | | | | | | | | | | | | | | | | |
| | | | 4-Methylphenol | 4.5E-01 | 4.5E-07 | 106445 | 108.1 | 1.95 | 7.7E-03 | 1.0E-03 | 2000 | 1 | 0.031 | **0.42** | 1.0 | -3.41E+00 | 3.93E-04 | **3.93E-07** | 3.2E-01 | 3.5E-01 | N/A | 1.02 |
| | | | Acenaphthylene | 2.6E-02 | 2.6E-08 | 208968 | 152.2 | 3.94 | 9.1E-02 | 1.0E-03 | 2000 | 1 | 0.432 | **0.75** | 1.0 | -3.65E+00 | 2.23E-04 | **2.23E-07** | 6.4E-01 | 6.6E-01 | N/A | 1.80 |
| | | | Atrazine | 3.2E+00 | 3.2E-06 | 1912249 | 215.7 | 2.61 | 5.2E-03 | 1.0E-03 | 2000 | 1 | 0.030 | **1.70** | 1.0 | -4.01E+00 | 9.82E-05 | **9.82E-08** | 3.2E-01 | 3.5E-01 | N/A | 4.07 |
| | | | Benzo(a)anthracene | 4.5E-02 | 4.5E-08 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.7E-02 | 1.7E-08 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 1.5E-02 | 1.5E-08 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 1.3E-02 | 1.3E-08 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | 1.6E-02 | 1.6E-08 | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 2.8E+00 | 2.8E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 3.4E-02 | 3.4E-08 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Dibenz(a,h)anthracene | ND | N/A | 53703 | 278.4 | 6.84 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.81** | 0.6 | -4.36E+00 | 4.37E-05 | **4.37E-08** | N/A | N/A | N/A | 9.14 |
| | | | Dibenzofuran | 2.8E-01 | 2.8E-07 | 132649 | 222.3 | 4.39 | 7.3E-02 | 1.0E-03 | 2000 | 1 | 0.420 | **1.85** | 1.0 | -4.04E+00 | 9.02E-05 | **9.02E-08** | 6.3E-01 | 6.6E-01 | N/A | 4.44 |
| | | | Indeno(1,2,3-cd)pyrene | 1.1E-02 | 1.1E-08 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Naphthalene | 9.2E-01 | 9.2E-07 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | N-Nitrosodiphenylamine | 4.7E+00 | 4.7E-06 | 86306 | 198.2 | 3.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.079 | **1.35** | 1.0 | -3.91E+00 | 1.23E-04 | **1.23E-07** | 3.5E-01 | 3.9E-01 | N/A | 3.25 |
| | | | Pentachlorophenol | ND | N/A | 87865 | 266.4 | 5.86 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.26** | 0.9 | -4.29E+00 | 5.11E-05 | **5.11E-08** | N/A | N/A | N/A | 7.83 |
| | | | Phenanthrene | 2.7E-01 | 2.7E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.8E+00 | 1.8E-06 | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | 3.9E+00 | 3.9E-06 | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Chlorobenzene | 1.2E+01 | 1.2E-05 | 108907 | 112.6 | 2.84 | 2.8E-02 | 1.0E-03 | 2000 | 1 | 0.115 | **0.45** | 1.0 | -3.43E+00 | 3.71E-04 | **3.71E-07** | 3.8E-01 | 4.1E-01 | N/A | 1.08 |
| | | | Ethylbenzene | ND | N/A | 100414 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | Xylene (total) | 1.2E+00 | 1.2E-06 | 1330207 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Total PCBs | 3.5E+00 | 3.5E-06 | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | 1.2E-02 | 1.2E-08 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | 1.4E-03 | 1.4E-09 | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | ND | N/A | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-BHC | 9.9E-04 | 9.9E-10 | 319846 | 290.8 | 3.81 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.082 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | alpha-Chlordane | 3.8E-03 | 3.8E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Dieldrin | 1.8E-03 | 1.8E-09 | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | ND | N/A | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |

## TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | t_star (hr) | A $cm^2$ | t_event hr/event | EV event/day | DA_event mg/cm2-evt | Derm/Drink Kp | Chem Assess |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Benzo(a)pyrene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 4500 | 1 | 1 | **6.3E-07** | **50%** | Y |
| | | | Chrysene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenz(a,h)anthracene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenzofuran | 4.44 | 4500 | 1 | 1 | **7.8E-08** | **62%** | Y |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Naphthalene | 1.32 | 4500 | 1 | 1 | **8.8E-08** | **21%** | Y |
| | | | N-Nitrosodiphenylamine | 3.25 | 4500 | 1 | 1 | **2.2E-07** | **11%** | Y |
| | | | Pentachlorophenol | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Phenanthrene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 4500 | 1 | 1 | **1.8E-07** | **22%** | Y |
| | | | Benzene | 0.69 | 4500 | 1 | 1 | **9.0E-08** | **5%** | N |
| | | | Chlorobenzene | 1.08 | 4500 | 1 | 1 | **6.3E-07** | **12%** | Y |
| | | | Ethylbenzene | 0.99 | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Xylene (total) | 0.99 | 4500 | 1 | 1 | **1.1E-07** | **20%** | Y |
| | | | | | | | | | | |
| | | | Total PCBs | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 4,4'-DDD | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-BHC | 10.73 | 4500 | 1 | 1 | **7.2E-11** | **16%** | Y |
| | | | alpha-Chlordane | 49.90 | 4500 | 1 | 1 | **1.1E-09** | **67%** | Y |
| | | | Dieldrin | 34.33 | 4500 | 1 | 1 | **1.8E-10** | **23%** | Y |
| | | | Gamma-Chlordane | 49.90 | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| Future | Rec. User - Older Child wader | Leachate - Unnamed Island | 4-Methylphenol | 1.02 | 2700 | 1 | 1 | **6.2E-09** | **2%** | N |
| | | | Acenaphthylene | 1.80 | 2700 | 1 | 1 | **5.7E-09** | **29%** | Y |
| | | | Atrazine | 4.07 | 2700 | 1 | 1 | **6.0E-08** | **3%** | N |
| | | | Benzo(a)anthracene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 2700 | 1 | 1 | **6.3E-07** | **30%** | Y |
| | | | Chrysene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenz(a,h)anthracene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenzofuran | 4.44 | 2700 | 1 | 1 | **7.8E-08** | **37%** | Y |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Naphthalene | 1.32 | 2700 | 1 | 1 | **8.8E-08** | **13%** | Y |
| | | | N-Nitrosodiphenylamine | 3.25 | 2700 | 1 | 1 | **2.2E-07** | **6%** | N |
| | | | Pentachlorophenol | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Phenanthrene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 2700 | 1 | 1 | **1.8E-07** | **13%** | Y |
| | | | Benzene | 0.69 | 2700 | 1 | 1 | **9.0E-08** | **3%** | N |
| | | | Chlorobenzene | 1.08 | 2700 | 1 | 1 | **6.3E-07** | **7%** | N |
| | | | Ethylbenzene | 0.99 | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Xylene (total) | 0.99 | 2700 | 1 | 1 | **1.1E-07** | **12%** | Y |
| | | | | | | | | | | |
| | | | Total PCBs | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 4,4'-DDD | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-BHC | 10.73 | 2700 | 1 | 1 | **7.2E-11** | **10%** | N |
| | | | alpha-Chlordane | 49.90 | 2700 | 1 | 1 | **1.1E-09** | **40%** | Y |
| | | | Dieldrin | 34.33 | 2700 | 1 | 1 | **1.8E-10** | **14%** | Y |
| | | | Gamma-Chlordane | 49.90 | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |

## TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | Conc ug/L | Conc mg/cm3 | CAS No. | MWT | logKow | Kp (cm/hr) predicted | Isc cm | IR $cm^3$/day | ABSGI | B | tau (hr) | FA for tau>3 | log(Ds/lsc) | Dsc/lsc | Dsc | b | c | t_star1 B>0.6 | t_star3 B<=0.6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Future | Rec. User - Adult wader | Unnamed Island Ponds | | | | | | | | | | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 1.3E-01 | 1.3E-07 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.2E-01 | 1.2E-07 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 2.5E-01 | 2.5E-07 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 1.1E-01 | 1.1E-07 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | ND | N/A | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 1.9E+00 | 1.9E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 1.4E-01 | 1.4E-07 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Indeno(1,2,3-cd)pyrene | 1.1E-01 | 1.1E-07 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Naphthalene | 1.9E-01 | 1.9E-07 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | Phenanthrene | 1.4E-01 | 1.4E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | ND | N/A | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | ND | N/A | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Bromodichloromethane | ND | N/A | 75274 | 163.8 | 2.09 | 4.6E-03 | 1.0E-03 | 2000 | 1 | 0.023 | **0.87** | 1.0 | -3.72E+00 | 1.92E-04 | **1.92E-07** | 3.2E-01 | 3.5E-01 | N/A | 2.09 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Aroclor-1260 | ND | N/A | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | 4,4'-DDD | 1.2E-02 | 1.2E-08 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | ND | N/A | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | 9.2E-03 | 9.2E-09 | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-Chlordane | 3.3E-03 | 3.3E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | beta-BHC | ND | N/A | 319857 | 290.8 | 3.80 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.080 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | Dieldrin | ND | N/A | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | 4.2E-03 | 4.2E-09 | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Heptachlor Epoxide | 5.1E-03 | 5.1E-09 | 1024573 | 389.3 | 4.98 | 2.1E-02 | 1.0E-03 | 2000 | 1 | 0.158 | **15.92** | 1.0 | -4.98E+00 | 1.05E-05 | **1.05E-08** | 4.1E-01 | 4.5E-01 | N/A | 38.21 |
| Future | Rec. User - Older Child wader | Unnamed Island Ponds | | | | | | | | | | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 1.3E-01 | 1.3E-07 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.2E-01 | 1.2E-07 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 2.5E-01 | 2.5E-07 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 1.1E-01 | 1.1E-07 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | ND | N/A | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 1.9E+00 | 1.9E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 1.4E-01 | 1.4E-07 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Indeno(1,2,3-cd)pyrene | 1.1E-01 | 1.1E-07 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Naphthalene | 1.9E-01 | 1.9E-07 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | Phenanthrene | 1.4E-01 | 1.4E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | ND | N/A | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | ND | N/A | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Bromodichloromethane | ND | N/A | 75274 | 163.8 | 2.09 | 4.6E-03 | 1.0E-03 | 2000 | 1 | 0.023 | **0.87** | 1.0 | -3.72E+00 | 1.92E-04 | **1.92E-07** | 3.2E-01 | 3.5E-01 | N/A | 2.09 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Aroclor-1260 | ND | N/A | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | 4,4'-DDD | 1.2E-02 | 1.2E-08 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | ND | N/A | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | 9.2E-03 | 9.2E-09 | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-Chlordane | 3.3E-03 | 3.3E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | beta-BHC | ND | N/A | 319857 | 290.8 | 3.80 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.080 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | Dieldrin | ND | N/A | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | 4.2E-03 | 4.2E-09 | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Heptachlor Epoxide | 5.1E-03 | 5.1E-09 | 1024573 | 389.3 | 4.98 | 2.1E-02 | 1.0E-03 | 2000 | 1 | 0.158 | **15.92** | 1.0 | -4.98E+00 | 1.05E-05 | **1.05E-08** | 4.1E-01 | 4.5E-01 | N/A | 38.21 |
| Future | Construction Worker - Adult | Leachate - Unnamed Island | | | | | | | | | | | | | | | | | | | | |
| | | | 4-Methylphenol | 4.5E-01 | 4.5E-07 | 106445 | 108.1 | 1.95 | 7.7E-03 | 1.0E-03 | 2000 | 1 | 0.031 | **0.42** | 1.0 | -3.41E+00 | 3.93E-04 | **3.93E-07** | 3.2E-01 | 3.5E-01 | N/A | 1.02 |
| | | | Acenaphthylene | 2.6E-02 | 2.6E-08 | 208968 | 152.2 | 3.94 | 9.1E-02 | 1.0E-03 | 2000 | 1 | 0.432 | **0.75** | 1.0 | -3.65E+00 | 2.23E-04 | **2.23E-07** | 6.4E-01 | 6.6E-01 | N/A | 1.80 |
| | | | Atrazine | 3.2E+00 | 3.2E-06 | 1912249 | 215.7 | 2.61 | 5.2E-03 | 1.0E-03 | 2000 | 1 | 0.030 | **1.70** | 1.0 | -4.01E+00 | 9.82E-05 | **9.82E-08** | 3.2E-01 | 3.5E-01 | N/A | 4.07 |
| | | | Benzo(a)anthracene | 4.5E-02 | 4.5E-08 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.7E-02 | 1.7E-08 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 1.5E-02 | 1.5E-08 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 1.3E-02 | 1.3E-08 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | 1.6E-02 | 1.6E-08 | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 2.8E+00 | 2.8E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 3.4E-02 | 3.4E-08 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Dibenz(a,h)anthracene | ND | N/A | 53703 | 278.4 | 6.84 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.81** | 0.6 | -4.36E+00 | 4.37E-05 | **4.37E-08** | N/A | N/A | N/A | 9.14 |
| | | | Dibenzofuran | 2.8E-01 | 2.8E-07 | 132649 | 222.3 | 4.39 | 7.3E-02 | 1.0E-03 | 2000 | 1 | 0.420 | **1.85** | 1.0 | -4.04E+00 | 9.02E-05 | **9.02E-08** | 6.3E-01 | 6.6E-01 | N/A | 4.44 |
| | | | Indeno(1,2,3-cd)pyrene | 1.1E-02 | 1.1E-08 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |

## TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | t_star (hr) | A $cm^2$ | t_event hr/event | EV event/day | DA_event mg/cm2-evt | Derm/Drink Kp | Chem Assess |
|---|---|---|---|---|---|---|---|---|---|---|
| Future | Rec. User - Adult wader | Unnamed Island Ponds | | | | | | | | |
| | | | Benzo(a)anthracene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 7310 | 1 | 1 | **4.2E-07** | **81%** | Y |
| | | | Chrysene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Naphthalene | 1.32 | 7310 | 1 | 1 | **1.8E-08** | **35%** | Y |
| | | | Phenanthrene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzene | 0.69 | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Bromodichloromethane | 2.09 | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | Aroclor-1260 | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDD | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-Chlordane | 49.90 | 7310 | 1 | 1 | **9.9E-10** | **109%** | Y |
| | | | beta-BHC | 10.73 | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dieldrin | 34.33 | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Gamma-Chlordane | 49.90 | 7310 | 1 | 1 | **1.3E-09** | **109%** | Y |
| | | | Heptachlor Epoxide | 38.21 | 7310 | 1 | 1 | **1.2E-09** | **84%** | Y |
| Future | Rec. User - Older Child wader | Unnamed Island Ponds | | | | | | | | |
| | | | Benzo(a)anthracene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 4170 | 1 | 1 | **4.2E-07** | **46%** | Y |
| | | | Chrysene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Naphthalene | 1.32 | 4170 | 1 | 1 | **1.8E-08** | **20%** | Y |
| | | | Phenanthrene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzene | 0.69 | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Bromodichloromethane | 2.09 | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | Aroclor-1260 | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDD | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-Chlordane | 49.90 | 4170 | 1 | 1 | **9.9E-10** | **62%** | Y |
| | | | beta-BHC | 10.73 | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dieldrin | 34.33 | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Gamma-Chlordane | 49.90 | 4170 | 1 | 1 | **1.3E-09** | **62%** | Y |
| | | | Heptachlor Epoxide | 38.21 | 4170 | 1 | 1 | **1.2E-09** | **48%** | Y |
| Future | Construction Worker - Adult | Leachate - Unnamed Island | | | | | | | | |
| | | | 4-Methylphenol | 1.02 | 2100 | 0.2 | 1 | **2.8E-09** | **1%** | N |
| | | | Acenaphthylene | 1.80 | 2100 | 0.2 | 1 | **2.6E-09** | **10%** | Y |
| | | | Atrazine | 4.07 | 2100 | 0.2 | 1 | **2.7E-08** | **1%** | N |
| | | | Benzo(a)anthracene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 2100 | 0.2 | 1 | **2.8E-07** | **10%** | Y |
| | | | Chrysene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenz(a,h)anthracene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenzofuran | 4.44 | 2100 | 0.2 | 1 | **3.5E-08** | **13%** | Y |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |

## TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | Conc ug/L | Conc mg/cm3 | CAS No. | MWT | logKow | Kp (cm/hr) predicted | Isc cm | IR $cm^3$/day | ABSGI | B | tau (hr) | FA for tau>3 | log(Ds/lsc) | Dsc/lsc | Dsc | b | c | t_star1 B>0.6 | t_star3 B<=0.6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Naphthalene | 9.2E-01 | 9.2E-07 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | N-Nitrosodiphenylamine | 4.7E+00 | 4.7E-06 | 86306 | 198.2 | 3.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.079 | **1.35** | 1.0 | -3.91E+00 | 1.23E-04 | **1.23E-07** | 3.5E-01 | 3.9E-01 | N/A | 3.25 |
| | | | Pentachlorophenol | ND | N/A | 87865 | 266.4 | 5.86 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.26** | 0.9 | -4.29E+00 | 5.11E-05 | **5.11E-08** | N/A | N/A | N/A | 7.83 |
| | | | Phenanthrene | 2.7E-01 | 2.7E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.8E+00 | 1.8E-06 | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | 3.9E+00 | 3.9E-06 | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Chlorobenzene | 1.2E+01 | 1.2E-05 | 108907 | 112.6 | 2.84 | 2.8E-02 | 1.0E-03 | 2000 | 1 | 0.115 | **0.45** | 1.0 | -3.43E+00 | 3.71E-04 | **3.71E-07** | 3.8E-01 | 4.1E-01 | N/A | 1.08 |
| | | | Ethylbenzene | ND | N/A | 100414 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | Xylene (total) | 1.2E+00 | 1.2E-06 | 1330207 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Total PCBs | 3.5E+00 | 3.5E-06 | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | 1.2E-02 | 1.2E-08 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | 1.4E-03 | 1.4E-09 | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | ND | N/A | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-BHC | 9.9E-04 | 9.9E-10 | 319846 | 290.8 | 3.81 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.082 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | alpha-Chlordane | 3.8E-03 | 3.8E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Dieldrin | 1.8E-03 | 1.8E-09 | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | ND | N/A | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |

## TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | t_star (hr) | A $cm^2$ | t_event hr/event | EV event/day | DA_event mg/cm2-evt | Derm/Drink Kp | Chem Assess |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Naphthalene | 1.32 | 2100 | 0.2 | 1 | **3.9E-08** | **4%** | N |
| | | | N-Nitrosodiphenylamine | 3.25 | 2100 | 0.2 | 1 | **9.8E-08** | **2%** | N |
| | | | Pentachlorophenol | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Phenanthrene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 2100 | 0.2 | 1 | **8.0E-08** | **5%** | N |
| | | | Benzene | 0.69 | 2100 | 0.2 | 1 | **3.8E-08** | **1%** | N |
| | | | Chlorobenzene | 1.08 | 2100 | 0.2 | 1 | **2.8E-07** | **2%** | N |
| | | | Ethylbenzene | 0.99 | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Xylene (total) | 0.99 | 2100 | 0.2 | 1 | **4.8E-08** | **4%** | N |
| | | | | | | | | | | |
| | | | Total PCBs | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 4,4'-DDD | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-BHC | 10.73 | 2100 | 0.2 | 1 | **3.2E-11** | **3%** | N |
| | | | alpha-Chlordane | 49.90 | 2100 | 0.2 | 1 | **5.0E-10** | **14%** | Y |
| | | | Dieldrin | 34.33 | 2100 | 0.2 | 1 | **8.1E-11** | **5%** | N |
| | | | Gamma-Chlordane | 49.90 | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |

## TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | Conc ug/L | Conc mg/cm3 | CAS No. | MWT | logKow | Kp (cm/hr) predicted | Isc cm | IR $cm^3$/day | ABSGI | B | tau (hr) | FA for tau>3 | log(Ds/lsc) | Dsc/lsc | Dsc | b | c | t_star1 B>0.6 | t_star3 B<=0.6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Current | Trespasser - Adolescent wader | Leachate - Unnamed Island | | | | | | | | | | | | | | | | | | | | |
| | | | 4-Methylphenol | 4.5E-01 | 4.5E-07 | 106445 | 108.1 | 1.95 | 7.7E-03 | 1.0E-03 | 2000 | 1 | 0.031 | **0.42** | 1.0 | -3.41E+00 | 3.93E-04 | **3.93E-07** | 3.2E-01 | 3.5E-01 | N/A | 1.02 |
| | | | Acenaphthylene | 2.6E-02 | 2.6E-08 | 208968 | 152.2 | 3.94 | 9.1E-02 | 1.0E-03 | 2000 | 1 | 0.432 | **0.75** | 1.0 | -3.65E+00 | 2.23E-04 | **2.23E-07** | 6.4E-01 | 6.6E-01 | N/A | 1.80 |
| | | | Atrazine | 1.1E+00 | 1.1E-06 | 1912249 | 215.7 | 2.61 | 5.2E-03 | 1.0E-03 | 2000 | 1 | 0.030 | **1.70** | 1.0 | -4.01E+00 | 9.82E-05 | **9.82E-08** | 3.2E-01 | 3.5E-01 | N/A | 4.07 |
| | | | Benzo(a)anthracene | 4.5E-02 | 4.5E-08 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.7E-02 | 1.7E-08 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 1.5E-02 | 1.5E-08 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 1.3E-02 | 1.3E-08 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | 1.6E-02 | 1.6E-08 | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 2.8E+00 | 2.8E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 3.4E-02 | 3.4E-08 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Dibenz(a,h)anthracene | ND | N/A | 53703 | 278.4 | 6.84 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.81** | 0.6 | -4.36E+00 | 4.37E-05 | **4.37E-08** | N/A | N/A | N/A | 9.14 |
| | | | Dibenzofuran | 2.8E-01 | 2.8E-07 | 132649 | 222.3 | 4.39 | 7.3E-02 | 1.0E-03 | 2000 | 1 | 0.420 | **1.85** | 1.0 | -4.04E+00 | 9.02E-05 | **9.02E-08** | 6.3E-01 | 6.6E-01 | N/A | 4.44 |
| | | | Indeno(1,2,3-cd)pyrene | 1.1E-02 | 1.1E-08 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Naphthalene | 9.2E-01 | 9.2E-07 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | N-Nitrosodiphenylamine | 4.7E+00 | 4.7E-06 | 86306 | 198.2 | 3.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.079 | **1.35** | 1.0 | -3.91E+00 | 1.23E-04 | **1.23E-07** | 3.5E-01 | 3.9E-01 | N/A | 3.25 |
| | | | Pentachlorophenol | ND | N/A | 87865 | 266.4 | 5.86 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.26** | 0.9 | -4.29E+00 | 5.11E-05 | **5.11E-08** | N/A | N/A | N/A | 7.83 |
| | | | Phenanthrene | 2.7E-01 | 2.7E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.8E+00 | 1.8E-06 | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | 3.9E+00 | 3.9E-06 | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Chlorobenzene | 1.2E+01 | 1.2E-05 | 108907 | 112.6 | 2.84 | 2.8E-02 | 1.0E-03 | 2000 | 1 | 0.115 | **0.45** | 1.0 | -3.43E+00 | 3.71E-04 | **3.71E-07** | 3.8E-01 | 4.1E-01 | N/A | 1.08 |
| | | | Ethylbenzene | ND | N/A | 100414 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | Xylene (total) | 1.2E+00 | 1.2E-06 | 1330207 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Total PCBs | 3.5E+00 | 3.5E-06 | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | 1.2E-02 | 1.2E-08 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | 1.4E-03 | 1.4E-09 | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | ND | N/A | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-BHC | 9.9E-04 | 9.9E-10 | 319846 | 290.8 | 3.81 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.082 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | alpha-Chlordane | 3.8E-03 | 3.8E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Dieldrin | 1.8E-03 | 1.8E-09 | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | ND | N/A | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| Current | Trespasser - Adolescent wader | Unnamed Island Ponds | | | | | | | | | | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 1.3E-01 | 1.3E-07 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.2E-01 | 1.2E-07 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 6.3E-02 | 6.3E-08 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 5.4E-02 | 5.4E-08 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | ND | N/A | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 1.9E+00 | 1.9E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 1.4E-01 | 1.4E-07 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Indeno(1,2,3-cd)pyrene | 5.4E-02 | 5.4E-08 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Naphthalene | 5.9E-02 | 5.9E-08 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | Phenanthrene | 1.4E-01 | 1.4E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | ND | N/A | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | ND | N/A | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Bromodichloromethane | ND | N/A | 75274 | 163.8 | 2.09 | 4.6E-03 | 1.0E-03 | 2000 | 1 | 0.023 | **0.87** | 1.0 | -3.72E+00 | 1.92E-04 | **1.92E-07** | 3.2E-01 | 3.5E-01 | N/A | 2.09 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Aroclor-1260 | ND | N/A | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | 4,4'-DDD | 3.1E-03 | 3.1E-09 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | ND | N/A | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | 3.0E-03 | 3.0E-09 | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-Chlordane | 1.4E-03 | 1.4E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | beta-BHC | ND | N/A | 319857 | 290.8 | 3.80 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.080 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | Dieldrin | ND | N/A | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | 4.2E-03 | 4.2E-09 | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Heptachlor Epoxide | 1.5E-03 | 1.5E-09 | 1024573 | 389.3 | 4.98 | 2.1E-02 | 1.0E-03 | 2000 | 1 | 0.158 | **15.92** | 1.0 | -4.98E+00 | 1.05E-05 | **1.05E-08** | 4.1E-01 | 4.5E-01 | N/A | 38.21 |
| Future | Rec. User - Adult wader | Leachate - Unnamed Island | | | | | | | | | | | | | | | | | | | | |
| | | | 4-Methylphenol | 4.5E-01 | 4.5E-07 | 106445 | 108.1 | 1.95 | 7.7E-03 | 1.0E-03 | 2000 | 1 | 0.031 | **0.42** | 1.0 | -3.41E+00 | 3.93E-04 | **3.93E-07** | 3.2E-01 | 3.5E-01 | N/A | 1.02 |
| | | | Acenaphthylene | 2.6E-02 | 2.6E-08 | 208968 | 152.2 | 3.94 | 9.1E-02 | 1.0E-03 | 2000 | 1 | 0.432 | **0.75** | 1.0 | -3.65E+00 | 2.23E-04 | **2.23E-07** | 6.4E-01 | 6.6E-01 | N/A | 1.80 |
| | | | Atrazine | 1.1E+00 | 1.1E-06 | 1912249 | 215.7 | 2.61 | 5.2E-03 | 1.0E-03 | 2000 | 1 | 0.030 | **1.70** | 1.0 | -4.01E+00 | 9.82E-05 | **9.82E-08** | 3.2E-01 | 3.5E-01 | N/A | 4.07 |
| | | | Benzo(a)anthracene | 4.5E-02 | 4.5E-08 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |

## TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | t_star (hr) | A $cm^2$ | t_event hr/event | EV event/day | DA_event mg/cm2-evt | Derm/Drink Kp | Chem Assess |
|---|---|---|---|---|---|---|---|---|---|---|
| Current | Trespasser - Adolescent wader | Leachate - Unnamed Island | | | | | | | | |
| | | | 4-Methylphenol | 1.02 | 3700 | 1 | 1 | **6.2E-09** | **3%** | N |
| | | | Acenaphthylene | 1.80 | 3700 | 1 | 1 | **5.7E-09** | **40%** | Y |
| | | | Atrazine | 4.07 | 3700 | 1 | 1 | **2.0E-08** | **3%** | N |
| | | | Benzo(a)anthracene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 3700 | 1 | 1 | **6.3E-07** | **41%** | Y |
| | | | Chrysene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenz(a,h)anthracene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenzofuran | 4.44 | 3700 | 1 | 1 | **7.8E-08** | **51%** | Y |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Naphthalene | 1.32 | 3700 | 1 | 1 | **8.8E-08** | **18%** | Y |
| | | | N-Nitrosodiphenylamine | 3.25 | 3700 | 1 | 1 | **2.2E-07** | **9%** | N |
| | | | Pentachlorophenol | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Phenanthrene | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 3700 | 1 | 1 | **1.8E-07** | **18%** | Y |
| | | | Benzene | 0.69 | 3700 | 1 | 1 | **9.0E-08** | **4%** | N |
| | | | Chlorobenzene | 1.08 | 3700 | 1 | 1 | **6.3E-07** | **10%** | N |
| | | | Ethylbenzene | 0.99 | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Xylene (total) | 0.99 | 3700 | 1 | 1 | **1.1E-07** | **17%** | Y |
| | | | | | | | | | | |
| | | | Total PCBs | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 4,4'-DDD | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-BHC | 10.73 | 3700 | 1 | 1 | **7.2E-11** | **13%** | Y |
| | | | alpha-Chlordane | 49.90 | 3700 | 1 | 1 | **1.1E-09** | **55%** | Y |
| | | | Dieldrin | 34.33 | 3700 | 1 | 1 | **1.8E-10** | **19%** | Y |
| | | | Gamma-Chlordane | 49.90 | 3700 | 1 | 1 | **N/A** | **N/A** | N/A |
| Current | Trespasser - Adolescent wader | Unnamed Island Ponds | | | | | | | | |
| | | | Benzo(a)anthracene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 7600 | 1 | 1 | **4.2E-07** | **85%** | Y |
| | | | Chrysene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Naphthalene | 1.32 | 7600 | 1 | 1 | **5.6E-09** | **36%** | Y |
| | | | Phenanthrene | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzene | 0.69 | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Bromodichloromethane | 2.09 | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | Aroclor-1260 | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDD | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-Chlordane | 49.90 | 7600 | 1 | 1 | **4.2E-10** | **113%** | Y |
| | | | beta-BHC | 10.73 | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dieldrin | 34.33 | 7600 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Gamma-Chlordane | 49.90 | 7600 | 1 | 1 | **1.3E-09** | **113%** | Y |
| | | | Heptachlor Epoxide | 38.21 | 7600 | 1 | 1 | **3.5E-10** | **88%** | Y |
| Future | Rec. User - Adult wader | Leachate - Unnamed Island | | | | | | | | |
| | | | 4-Methylphenol | 1.02 | 4500 | 1 | 1 | **6.2E-09** | **3%** | N |
| | | | Acenaphthylene | 1.80 | 4500 | 1 | 1 | **5.7E-09** | **49%** | Y |
| | | | Atrazine | 4.07 | 4500 | 1 | 1 | **2.0E-08** | **4%** | N |
| | | | Benzo(a)anthracene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |

## TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | Conc ug/L | Conc mg/cm3 | CAS No. | MWT | logKow | Kp (cm/hr) predicted | Isc cm | IR $cm^3$/day | ABSGI | B | tau (hr) | FA for tau>3 | log(Ds/lsc) | Dsc/lsc | Dsc | b | c | t_star1 B>0.6 | t_star3 B<=0.6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Benzo(a)pyrene | 1.7E-02 | 1.7E-08 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 1.5E-02 | 1.5E-08 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 1.3E-02 | 1.3E-08 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | 1.6E-02 | 1.6E-08 | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 2.8E+00 | 2.8E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 3.4E-02 | 3.4E-08 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Dibenz(a,h)anthracene | ND | N/A | 53703 | 278.4 | 6.84 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.81** | 0.6 | -4.36E+00 | 4.37E-05 | **4.37E-08** | N/A | N/A | N/A | 9.14 |
| | | | Dibenzofuran | 2.8E-01 | 2.8E-07 | 132649 | 222.3 | 4.39 | 7.3E-02 | 1.0E-03 | 2000 | 1 | 0.420 | **1.85** | 1.0 | -4.04E+00 | 9.02E-05 | **9.02E-08** | 6.3E-01 | 6.6E-01 | N/A | 4.44 |
| | | | Indeno(1,2,3-cd)pyrene | 1.1E-02 | 1.1E-08 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Naphthalene | 9.2E-01 | 9.2E-07 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | N-Nitrosodiphenylamine | 4.7E+00 | 4.7E-06 | 86306 | 198.2 | 3.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.079 | **1.35** | 1.0 | -3.91E+00 | 1.23E-04 | **1.23E-07** | 3.5E-01 | 3.9E-01 | N/A | 3.25 |
| | | | Pentachlorophenol | ND | N/A | 87865 | 266.4 | 5.86 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.26** | 0.9 | -4.29E+00 | 5.11E-05 | **5.11E-08** | N/A | N/A | N/A | 7.83 |
| | | | Phenanthrene | 2.7E-01 | 2.7E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.8E+00 | 1.8E-06 | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | 3.9E+00 | 3.9E-06 | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Chlorobenzene | 1.2E+01 | 1.2E-05 | 108907 | 112.6 | 2.84 | 2.8E-02 | 1.0E-03 | 2000 | 1 | 0.115 | **0.45** | 1.0 | -3.43E+00 | 3.71E-04 | **3.71E-07** | 3.8E-01 | 4.1E-01 | N/A | 1.08 |
| | | | Ethylbenzene | ND | N/A | 100414 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | Xylene (total) | 1.2E+00 | 1.2E-06 | 1330207 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Total PCBs | 3.5E+00 | 3.5E-06 | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | 1.2E-02 | 1.2E-08 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | 1.4E-03 | 1.4E-09 | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | ND | N/A | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-BHC | 9.9E-04 | 9.9E-10 | 319846 | 290.8 | 3.81 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.082 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | alpha-Chlordane | 3.8E-03 | 3.8E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Dieldrin | 1.8E-03 | 1.8E-09 | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | ND | N/A | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| Future | Rec. User - Older Child wader | Leachate - Unnamed Island | | | | | | | | | | | | | | | | | | | | |
| | | | 4-Methylphenol | 4.5E-01 | 4.5E-07 | 106445 | 108.1 | 1.95 | 7.7E-03 | 1.0E-03 | 2000 | 1 | 0.031 | **0.42** | 1.0 | -3.41E+00 | 3.93E-04 | **3.93E-07** | 3.2E-01 | 3.5E-01 | N/A | 1.02 |
| | | | Acenaphthylene | 2.6E-02 | 2.6E-08 | 208968 | 152.2 | 3.94 | 9.1E-02 | 1.0E-03 | 2000 | 1 | 0.432 | **0.75** | 1.0 | -3.65E+00 | 2.23E-04 | **2.23E-07** | 6.4E-01 | 6.6E-01 | N/A | 1.80 |
| | | | Atrazine | 1.1E+00 | 1.1E-06 | 1912249 | 215.7 | 2.61 | 5.2E-03 | 1.0E-03 | 2000 | 1 | 0.030 | **1.70** | 1.0 | -4.01E+00 | 9.82E-05 | **9.82E-08** | 3.2E-01 | 3.5E-01 | N/A | 4.07 |
| | | | Benzo(a)anthracene | 4.5E-02 | 4.5E-08 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.7E-02 | 1.7E-08 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 1.5E-02 | 1.5E-08 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 1.3E-02 | 1.3E-08 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | 1.6E-02 | 1.6E-08 | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 2.8E+00 | 2.8E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 3.4E-02 | 3.4E-08 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Dibenz(a,h)anthracene | ND | N/A | 53703 | 278.4 | 6.84 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.81** | 0.6 | -4.36E+00 | 4.37E-05 | **4.37E-08** | N/A | N/A | N/A | 9.14 |
| | | | Dibenzofuran | 2.8E-01 | 2.8E-07 | 132649 | 222.3 | 4.39 | 7.3E-02 | 1.0E-03 | 2000 | 1 | 0.420 | **1.85** | 1.0 | -4.04E+00 | 9.02E-05 | **9.02E-08** | 6.3E-01 | 6.6E-01 | N/A | 4.44 |
| | | | Indeno(1,2,3-cd)pyrene | 1.1E-02 | 1.1E-08 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Naphthalene | 9.2E-01 | 9.2E-07 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | N-Nitrosodiphenylamine | 4.7E+00 | 4.7E-06 | 86306 | 198.2 | 3.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.079 | **1.35** | 1.0 | -3.91E+00 | 1.23E-04 | **1.23E-07** | 3.5E-01 | 3.9E-01 | N/A | 3.25 |
| | | | Pentachlorophenol | ND | N/A | 87865 | 266.4 | 5.86 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.26** | 0.9 | -4.29E+00 | 5.11E-05 | **5.11E-08** | N/A | N/A | N/A | 7.83 |
| | | | Phenanthrene | 2.7E-01 | 2.7E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.8E+00 | 1.8E-06 | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | 3.9E+00 | 3.9E-06 | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Chlorobenzene | 1.2E+01 | 1.2E-05 | 108907 | 112.6 | 2.84 | 2.8E-02 | 1.0E-03 | 2000 | 1 | 0.115 | **0.45** | 1.0 | -3.43E+00 | 3.71E-04 | **3.71E-07** | 3.8E-01 | 4.1E-01 | N/A | 1.08 |
| | | | Ethylbenzene | ND | N/A | 100414 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | Xylene (total) | 1.2E+00 | 1.2E-06 | 1330207 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Total PCBs | 3.5E+00 | 3.5E-06 | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | 1.2E-02 | 1.2E-08 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | 1.4E-03 | 1.4E-09 | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | ND | N/A | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-BHC | 9.9E-04 | 9.9E-10 | 319846 | 290.8 | 3.81 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.082 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | alpha-Chlordane | 3.8E-03 | 3.8E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Dieldrin | 1.8E-03 | 1.8E-09 | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | ND | N/A | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |

## TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | t_star (hr) | A $cm^2$ | t_event hr/event | EV event/day | DA_event mg/cm2-evt | Derm/Drink Kp | Chem Assess |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Benzo(a)pyrene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 4500 | 1 | 1 | **6.3E-07** | **50%** | Y |
| | | | Chrysene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenz(a,h)anthracene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenzofuran | 4.44 | 4500 | 1 | 1 | **7.8E-08** | **62%** | Y |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Naphthalene | 1.32 | 4500 | 1 | 1 | **8.8E-08** | **21%** | Y |
| | | | N-Nitrosodiphenylamine | 3.25 | 4500 | 1 | 1 | **2.2E-07** | **11%** | Y |
| | | | Pentachlorophenol | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Phenanthrene | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 4500 | 1 | 1 | **1.8E-07** | **22%** | Y |
| | | | Benzene | 0.69 | 4500 | 1 | 1 | **9.0E-08** | **5%** | N |
| | | | Chlorobenzene | 1.08 | 4500 | 1 | 1 | **6.3E-07** | **12%** | Y |
| | | | Ethylbenzene | 0.99 | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Xylene (total) | 0.99 | 4500 | 1 | 1 | **1.1E-07** | **20%** | Y |
| | | | | | | | | | | |
| | | | Total PCBs | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 4,4'-DDD | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-BHC | 10.73 | 4500 | 1 | 1 | **7.2E-11** | **16%** | Y |
| | | | alpha-Chlordane | 49.90 | 4500 | 1 | 1 | **1.1E-09** | **67%** | Y |
| | | | Dieldrin | 34.33 | 4500 | 1 | 1 | **1.8E-10** | **23%** | Y |
| | | | Gamma-Chlordane | 49.90 | 4500 | 1 | 1 | **N/A** | **N/A** | N/A |
| Future | Rec. User - Older Child wader | Leachate - Unnamed Island | | | | | | | | |
| | | | 4-Methylphenol | 1.02 | 2700 | 1 | 1 | **6.2E-09** | **2%** | N |
| | | | Acenaphthylene | 1.80 | 2700 | 1 | 1 | **5.7E-09** | **29%** | Y |
| | | | Atrazine | 4.07 | 2700 | 1 | 1 | **2.0E-08** | **3%** | N |
| | | | Benzo(a)anthracene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 2700 | 1 | 1 | **6.3E-07** | **30%** | Y |
| | | | Chrysene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenz(a,h)anthracene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenzofuran | 4.44 | 2700 | 1 | 1 | **7.8E-08** | **37%** | Y |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Naphthalene | 1.32 | 2700 | 1 | 1 | **8.8E-08** | **13%** | Y |
| | | | N-Nitrosodiphenylamine | 3.25 | 2700 | 1 | 1 | **2.2E-07** | **6%** | N |
| | | | Pentachlorophenol | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Phenanthrene | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 2700 | 1 | 1 | **1.8E-07** | **13%** | Y |
| | | | Benzene | 0.69 | 2700 | 1 | 1 | **9.0E-08** | **3%** | N |
| | | | Chlorobenzene | 1.08 | 2700 | 1 | 1 | **6.3E-07** | **7%** | N |
| | | | Ethylbenzene | 0.99 | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Xylene (total) | 0.99 | 2700 | 1 | 1 | **1.1E-07** | **12%** | Y |
| | | | | | | | | | | |
| | | | Total PCBs | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 4,4'-DDD | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-BHC | 10.73 | 2700 | 1 | 1 | **7.2E-11** | **10%** | N |
| | | | alpha-Chlordane | 49.90 | 2700 | 1 | 1 | **1.1E-09** | **40%** | Y |
| | | | Dieldrin | 34.33 | 2700 | 1 | 1 | **1.8E-10** | **14%** | Y |
| | | | Gamma-Chlordane | 49.90 | 2700 | 1 | 1 | **N/A** | **N/A** | N/A |

## TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | Conc ug/L | Conc mg/cm3 | CAS No. | MWT | logKow | Kp (cm/hr) predicted | Isc cm | IR $cm^3$/day | ABSGI | B | tau (hr) | FA for tau>3 | log(Ds/lsc) | Dsc/lsc | Dsc | b | c | t_star1 B>0.6 | t_star3 B<=0.6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Future | Rec. User - Adult wader | Unnamed Island Ponds | | | | | | | | | | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 1.3E-01 | 1.3E-07 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.2E-01 | 1.2E-07 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 6.3E-02 | 6.3E-08 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 5.4E-02 | 5.4E-08 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | ND | N/A | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 1.9E+00 | 1.9E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 1.4E-01 | 1.4E-07 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Indeno(1,2,3-cd)pyrene | 5.4E-02 | 5.4E-08 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Naphthalene | 5.9E-02 | 5.9E-08 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | Phenanthrene | 1.4E-01 | 1.4E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | ND | N/A | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | ND | N/A | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Bromodichloromethane | ND | N/A | 75274 | 163.8 | 2.09 | 4.6E-03 | 1.0E-03 | 2000 | 1 | 0.023 | **0.87** | 1.0 | -3.72E+00 | 1.92E-04 | **1.92E-07** | 3.2E-01 | 3.5E-01 | N/A | 2.09 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Aroclor-1260 | ND | N/A | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | 4,4'-DDD | 3.1E-03 | 3.1E-09 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | ND | N/A | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | 3.0E-03 | 3.0E-09 | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-Chlordane | 1.4E-03 | 1.4E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | beta-BHC | ND | N/A | 319857 | 290.8 | 3.80 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.080 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | Dieldrin | ND | N/A | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | 4.2E-03 | 4.2E-09 | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Heptachlor Epoxide | 1.5E-03 | 1.5E-09 | 1024573 | 389.3 | 4.98 | 2.1E-02 | 1.0E-03 | 2000 | 1 | 0.158 | **15.92** | 1.0 | -4.98E+00 | 1.05E-05 | **1.05E-08** | 4.1E-01 | 4.5E-01 | N/A | 38.21 |
| Future | Rec. User - Older Child wader | Unnamed Island Ponds | | | | | | | | | | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 1.3E-01 | 1.3E-07 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.2E-01 | 1.2E-07 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 6.3E-02 | 6.3E-08 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 5.4E-02 | 5.4E-08 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | ND | N/A | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 1.9E+00 | 1.9E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 1.4E-01 | 1.4E-07 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Indeno(1,2,3-cd)pyrene | 5.4E-02 | 5.4E-08 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Naphthalene | 5.9E-02 | 5.9E-08 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | Phenanthrene | 1.4E-01 | 1.4E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | ND | N/A | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | ND | N/A | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Bromodichloromethane | ND | N/A | 75274 | 163.8 | 2.09 | 4.6E-03 | 1.0E-03 | 2000 | 1 | 0.023 | **0.87** | 1.0 | -3.72E+00 | 1.92E-04 | **1.92E-07** | 3.2E-01 | 3.5E-01 | N/A | 2.09 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Aroclor-1260 | ND | N/A | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | 4,4'-DDD | 3.1E-03 | 3.1E-09 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | ND | N/A | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | 3.0E-03 | 3.0E-09 | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-Chlordane | 1.4E-03 | 1.4E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | beta-BHC | ND | N/A | 319857 | 290.8 | 3.80 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.080 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | Dieldrin | ND | N/A | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | 4.2E-03 | 4.2E-09 | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Heptachlor Epoxide | 1.5E-03 | 1.5E-09 | 1024573 | 389.3 | 4.98 | 2.1E-02 | 1.0E-03 | 2000 | 1 | 0.158 | **15.92** | 1.0 | -4.98E+00 | 1.05E-05 | **1.05E-08** | 4.1E-01 | 4.5E-01 | N/A | 38.21 |
| Future | Construction Worker - Adult | Leachate - Unnamed Island | | | | | | | | | | | | | | | | | | | | |
| | | | 4-Methylphenol | 4.5E-01 | 4.5E-07 | 106445 | 108.1 | 1.95 | 7.7E-03 | 1.0E-03 | 2000 | 1 | 0.031 | **0.42** | 1.0 | -3.41E+00 | 3.93E-04 | **3.93E-07** | 3.2E-01 | 3.5E-01 | N/A | 1.02 |
| | | | Acenaphthylene | 2.6E-02 | 2.6E-08 | 208968 | 152.2 | 3.94 | 9.1E-02 | 1.0E-03 | 2000 | 1 | 0.432 | **0.75** | 1.0 | -3.65E+00 | 2.23E-04 | **2.23E-07** | 6.4E-01 | 6.6E-01 | N/A | 1.80 |
| | | | Atrazine | 1.1E+00 | 1.1E-06 | 1912249 | 215.7 | 2.61 | 5.2E-03 | 1.0E-03 | 2000 | 1 | 0.030 | **1.70** | 1.0 | -4.01E+00 | 9.82E-05 | **9.82E-08** | 3.2E-01 | 3.5E-01 | N/A | 4.07 |
| | | | Benzo(a)anthracene | 4.5E-02 | 4.5E-08 | 56553 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Benzo(a)pyrene | 1.7E-02 | 1.7E-08 | 50328 | 250.0 | 6.10 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.64** | 1.0 | -4.20E+00 | 6.31E-05 | **6.31E-08** | N/A | N/A | N/A | 6.34 |
| | | | Benzo(b)fluoranthene | 1.5E-02 | 1.5E-08 | 205992 | 252.3 | 6.12 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | Benzo(g,h,i)perylene | 1.3E-02 | 1.3E-08 | 191242 | 276.3 | 7.23 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 1.0 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |
| | | | Benzo(k)fluoranthene | 1.6E-02 | 1.6E-08 | 207089 | 252.3 | 6.11 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.72** | 1.0 | -4.21E+00 | 6.13E-05 | **6.13E-08** | N/A | N/A | N/A | 6.53 |
| | | | bis(2-Ethylhexyl)phthalat | 2.8E+00 | 2.8E-06 | 117817 | 391.0 | 5.11 | 2.5E-02 | 1.0E-03 | 2000 | 1 | 0.190 | **16.27** | 0.8 | -4.99E+00 | 1.02E-05 | **1.02E-08** | 4.3E-01 | 4.7E-01 | N/A | 39.05 |
| | | | Chrysene | 3.4E-02 | 3.4E-08 | 218019 | 228.3 | 5.66 | NA | 1.0E-03 | 2000 | 1 | N/A | **2.00** | 1.0 | -4.08E+00 | 8.35E-05 | **8.35E-08** | N/A | N/A | N/A | 4.79 |
| | | | Dibenz(a,h)anthracene | ND | N/A | 53703 | 278.4 | 6.84 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.81** | 0.6 | -4.36E+00 | 4.37E-05 | **4.37E-08** | N/A | N/A | N/A | 9.14 |
| | | | Dibenzofuran | 2.8E-01 | 2.8E-07 | 132649 | 222.3 | 4.39 | 7.3E-02 | 1.0E-03 | 2000 | 1 | 0.420 | **1.85** | 1.0 | -4.04E+00 | 9.02E-05 | **9.02E-08** | 6.3E-01 | 6.6E-01 | N/A | 4.44 |
| | | | Indeno(1,2,3-cd)pyrene | 1.1E-02 | 1.1E-08 | 193395 | 276.3 | 6.58 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.71** | 0.6 | -4.35E+00 | 4.49E-05 | **4.49E-08** | N/A | N/A | N/A | 8.90 |

## TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | t_star (hr) | A $cm^2$ | t_event hr/event | EV event/day | DA_event mg/cm2-evt | Derm/Drink Kp | Chem Assess |
|---|---|---|---|---|---|---|---|---|---|---|
| Future | Rec. User - Adult wader | Unnamed Island Ponds | | | | | | | | |
| | | | Benzo(a)anthracene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 7310 | 1 | 1 | **4.2E-07** | **81%** | Y |
| | | | Chrysene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Naphthalene | 1.32 | 7310 | 1 | 1 | **5.6E-09** | **35%** | Y |
| | | | Phenanthrene | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzene | 0.69 | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Bromodichloromethane | 2.09 | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | Aroclor-1260 | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDD | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-Chlordane | 49.90 | 7310 | 1 | 1 | **4.2E-10** | **109%** | Y |
| | | | beta-BHC | 10.73 | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dieldrin | 34.33 | 7310 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Gamma-Chlordane | 49.90 | 7310 | 1 | 1 | **1.3E-09** | **109%** | Y |
| | | | Heptachlor Epoxide | 38.21 | 7310 | 1 | 1 | **3.5E-10** | **84%** | Y |
| Future | Rec. User - Older Child wader | Unnamed Island Ponds | | | | | | | | |
| | | | Benzo(a)anthracene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 4170 | 1 | 1 | **4.2E-07** | **46%** | Y |
| | | | Chrysene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Naphthalene | 1.32 | 4170 | 1 | 1 | **5.6E-09** | **20%** | Y |
| | | | Phenanthrene | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzene | 0.69 | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Bromodichloromethane | 2.09 | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | Aroclor-1260 | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDD | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-Chlordane | 49.90 | 4170 | 1 | 1 | **4.2E-10** | **62%** | Y |
| | | | beta-BHC | 10.73 | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Dieldrin | 34.33 | 4170 | 1 | 1 | **N/A** | **N/A** | N/A |
| | | | Gamma-Chlordane | 49.90 | 4170 | 1 | 1 | **1.3E-09** | **62%** | Y |
| | | | Heptachlor Epoxide | 38.21 | 4170 | 1 | 1 | **3.5E-10** | **48%** | Y |
| Future | Construction Worker - Adult | Leachate - Unnamed Island | | | | | | | | |
| | | | 4-Methylphenol | 1.02 | 2100 | 0.2 | 1 | **2.8E-09** | **1%** | N |
| | | | Acenaphthylene | 1.80 | 2100 | 0.2 | 1 | **2.6E-09** | **10%** | Y |
| | | | Atrazine | 4.07 | 2100 | 0.2 | 1 | **9.0E-09** | **1%** | N |
| | | | Benzo(a)anthracene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(a)pyrene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(b)fluoranthene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(g,h,i)perylene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Benzo(k)fluoranthene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | bis(2-Ethylhexyl)phthalat | 39.05 | 2100 | 0.2 | 1 | **2.8E-07** | **10%** | Y |
| | | | Chrysene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenz(a,h)anthracene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Dibenzofuran | 4.44 | 2100 | 0.2 | 1 | **3.5E-08** | **13%** | Y |
| | | | Indeno(1,2,3-cd)pyrene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |

## TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | Conc ug/L | Conc mg/cm3 | CAS No. | MWT | logKow | Kp (cm/hr) predicted | Isc cm | IR $cm^3$/day | ABSGI | B | tau (hr) | FA for tau>3 | log(Ds/Isc) | Dsc/Isc | Dsc | b | c | t_star1 B>0.6 | t_star3 B<=0.6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Naphthalene | 9.2E-01 | 9.2E-07 | 91203 | 128.2 | 3.30 | 4.7E-02 | 1.0E-03 | 2000 | 1 | 0.203 | **0.55** | 1.0 | -3.52E+00 | 3.03E-04 | **3.03E-07** | 4.4E-01 | 4.8E-01 | N/A | 1.32 |
| | | | N-Nitrosodiphenylamine | 4.7E+00 | 4.7E-06 | 86306 | 198.2 | 3.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.079 | **1.35** | 1.0 | -3.91E+00 | 1.23E-04 | **1.23E-07** | 3.5E-01 | 3.9E-01 | N/A | 3.25 |
| | | | Pentachlorophenol | ND | N/A | 87865 | 266.4 | 5.86 | NA | 1.0E-03 | 2000 | 1 | N/A | **3.26** | 0.9 | -4.29E+00 | 5.11E-05 | **5.11E-08** | N/A | N/A | N/A | 7.83 |
| | | | Phenanthrene | 2.7E-01 | 2.7E-07 | 85018 | 178.2 | 4.46 | NA | 1.0E-03 | 2000 | 1 | N/A | **1.05** | 1.0 | -3.80E+00 | 1.59E-04 | **1.59E-07** | N/A | N/A | N/A | 2.51 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.8E+00 | 1.8E-06 | 106467 | 147.0 | 3.39 | 4.2E-02 | 1.0E-03 | 2000 | 1 | 0.196 | **0.70** | 1.0 | -3.62E+00 | 2.38E-04 | **2.38E-07** | 4.4E-01 | 4.7E-01 | N/A | 1.68 |
| | | | Benzene | 3.9E+00 | 3.9E-06 | 71432 | 78.1 | 2.13 | 1.5E-02 | 1.0E-03 | 2000 | 1 | 0.051 | **0.29** | 1.0 | -3.24E+00 | 5.79E-04 | **5.79E-07** | 3.3E-01 | 3.7E-01 | N/A | 0.69 |
| | | | Chlorobenzene | 1.2E+01 | 1.2E-05 | 108907 | 112.6 | 2.84 | 2.8E-02 | 1.0E-03 | 2000 | 1 | 0.115 | **0.45** | 1.0 | -3.43E+00 | 3.71E-04 | **3.71E-07** | 3.8E-01 | 4.1E-01 | N/A | 1.08 |
| | | | Ethylbenzene | ND | N/A | 100414 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | Xylene (total) | 1.2E+00 | 1.2E-06 | 1330207 | 106.2 | 3.15 | 4.9E-02 | 1.0E-03 | 2000 | 1 | 0.195 | **0.41** | 1.0 | -3.39E+00 | 4.03E-04 | **4.03E-07** | 4.4E-01 | 4.7E-01 | N/A | 0.99 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | Total PCBs | 3.5E+00 | 3.5E-06 | ####### | 292.0 | 6.03 | NA | 1.0E-03 | 2000 | 1 | N/A | **4.54** | 1.0 | -4.44E+00 | 3.67E-05 | **3.67E-08** | N/A | N/A | N/A | 10.90 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | 1.2E-02 | 1.2E-08 | 72548 | 320.0 | 5.80 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.51** | 0.8 | -4.59E+00 | 2.56E-05 | **2.56E-08** | N/A | N/A | N/A | 15.63 |
| | | | 4,4'-DDE | 1.4E-03 | 1.4E-09 | 72559 | 318.0 | 5.69 | NA | 1.0E-03 | 2000 | 1 | N/A | **6.35** | 0.8 | -4.58E+00 | 2.63E-05 | **2.63E-08** | N/A | N/A | N/A | 15.24 |
| | | | 4,4'-DDT | ND | N/A | 50293 | 355.0 | 6.36 | NA | 1.0E-03 | 2000 | 1 | N/A | **10.23** | 0.7 | -4.79E+00 | 1.63E-05 | **1.63E-08** | N/A | N/A | N/A | 24.55 |
| | | | alpha-BHC | 9.9E-04 | 9.9E-10 | 319846 | 290.8 | 3.81 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.082 | **4.47** | 1.0 | -4.43E+00 | 3.73E-05 | **3.73E-08** | 3.5E-01 | 3.9E-01 | N/A | 10.73 |
| | | | alpha-Chlordane | 3.8E-03 | 3.8E-09 | 5103719 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |
| | | | Dieldrin | 1.8E-03 | 1.8E-09 | 60571 | 381.0 | 4.56 | 1.2E-02 | 1.0E-03 | 2000 | 1 | 0.092 | **14.30** | 0.8 | -4.93E+00 | 1.17E-05 | **1.17E-08** | 3.6E-01 | 4.0E-01 | N/A | 34.33 |
| | | | Gamma-Chlordane | ND | N/A | 5103742 | 410.0 | 5.47 | 3.4E-02 | 1.0E-03 | 2000 | 1 | 0.264 | **20.79** | 0.7 | -5.10E+00 | 8.02E-06 | **8.02E-09** | 4.9E-01 | 5.3E-01 | N/A | 49.90 |

## TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

**(Variable Definitions follow Table)**

| Timeframe | Receptor | Exposure Point | Chemical | t_star (hr) | A $cm^2$ | t_event hr/event | EV event/day | DA_event mg/cm2-evt | Derm/Drink Kp | Chem Assess |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Naphthalene | 1.32 | 2100 | 0.2 | 1 | **3.9E-08** | **4%** | N |
| | | | N-Nitrosodiphenylamine | 3.25 | 2100 | 0.2 | 1 | **9.8E-08** | **2%** | N |
| | | | Pentachlorophenol | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Phenanthrene | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | 1.68 | 2100 | 0.2 | 1 | **8.0E-08** | **5%** | N |
| | | | Benzene | 0.69 | 2100 | 0.2 | 1 | **3.8E-08** | **1%** | N |
| | | | Chlorobenzene | 1.08 | 2100 | 0.2 | 1 | **2.8E-07** | **2%** | N |
| | | | Ethylbenzene | 0.99 | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | Xylene (total) | 0.99 | 2100 | 0.2 | 1 | **4.8E-08** | **4%** | N |
| | | | | | | | | | | |
| | | | Total PCBs | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | | | | | | | | |
| | | | 4,4'-DDD | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDE | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | 4,4'-DDT | N/A | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |
| | | | alpha-BHC | 10.73 | 2100 | 0.2 | 1 | **3.2E-11** | **3%** | N |
| | | | alpha-Chlordane | 49.90 | 2100 | 0.2 | 1 | **5.0E-10** | **14%** | Y |
| | | | Dieldrin | 34.33 | 2100 | 0.2 | 1 | **8.1E-11** | **5%** | N |
| | | | Gamma-Chlordane | 49.90 | 2100 | 0.2 | 1 | **N/A** | **N/A** | N/A |

## DERMAL ABSORPTION CALCULATION EXAMPLE

**Note: This EPA spreadsheet utilized as basis for Appendix E calculations.**

FOR ORGANIC CHEMICALS IN WATER (updated on 11/99)

Worksheet to Calculate Dermal Absorption of Organic Chemicals from Aqueous Media (updated 11/99)

Enter the Following Exposure Conditions: for site specific conditions, change values in Cells G5-G18

| | | | |
|---|---|---|---|
| Concentration (mg/L*L/1000 cm3): | Conc = | 1.0E-03 | mg/cm3 (default value for purpose of illustration) |
| Input site specific concentrations in Column marked "Conc" | | = 1 mg/L (1 ppm) | = 1 ug/cm3 = 1000 ppb |
| Area exposed (cm2): | A = | 5672.0 | cm2 |
| Event time (hr/event): | t_event = | 0.5 | hr/event (35 minutes/event) |
| Event frequency (events/day): | EV = | 1.0 | event/day |
| Exposure frequency (days/year): | EF = | 26.0 | days/yr |
| Exposure duration (years): | ED = | 7.0 | years |
| Body weight (kg): | BW = | 70.0 | kg |
| Averaging time (days): | AT = | 2555.0 | days |
| for carcinogenic effects, AT=70 years (25,550 days) | | | |
| for noncarcinogenic effects, AT=ED (in days) | | | |
| Skin thickness (assumed to be 10 um): | lsc = | 1.0E-03 | cm |

Default conditions for screening purposes:

Compare Dermal to Drinking: Adults showering for 35 minutes/day, compared to drinking 2L water/day

| | | | |
|---|---|---|---|
| Dermal (mg/day) = DA_event * A * EV | IR = | 2000.0 | (cm3/day = L/day * 1000 cm3/L) |
| Drinking (mg/day) = Conc * IR * ABSIG | ABSGI = | 1.0 | (assumed 100% GI absorption) |

IR: Ingestion rate of drinking water
ABSIG: Absorption fraction in GI tract

Refer to Appendix A for equations to evaluate DA_event and DAD

(*): outside of the Effective Prediction Domain (EPD) determined by the Flynn's measured Kp data

95% LCI and UCI are evaluated by Dr. Paul Pinsky in NCEA using SAS

| | CHEMICAL | CAS No. | MWT | logKow | Kp 95% LCI | Kp (cm/hr) predicted | Kp (cm/hr) measured | Kp 95% UCI | Chemicals outside EPD (*) | Derm/ Drink Kp | Chem Assess | B | tau (hr) | t_star (hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 118 | Heptachlor | 76448 | 373.5 | 4.27 | 3.4E-04 | 8.6E-03 | | 2.2E-01 | | **14%** | Y | 0.1 | **12.99** | 31.16 |

| FA for tau>3 | Conc (mg/cm3) | DA_event (mg/cm2-evt) | DAD (mg/kg-day) | log(Ds/lsc) | Dsc/lsc | Dsc | b | c | t_star1 B>0.6 | t_star3 B<=0.6 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.8 | 1.4E-09 | **6.8E-11** | **3.9E-10** | -4.89E+00 | 1.28E-05 | **1.28E-08** | 3.4E-01 | 3.8E-01 | #NUM! | 31.16 |

Table 6.RME. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

| Timeframe | Receptor | Exposure Point | Chemical of Potential Concern | Media | Dermal Absorption Fraction (soil) | FA | Kp | | T(event) | | Tau | | T* | | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Value | Units | Value | Units | Value | Units | Value | Units | Value |
| Current | Trespasser - Adolescent wader | Leachate - Unnamed Island | | | | | | | | | | | | | |
| | | | 4-Methylphenol | Surface Water | -- | 1 | 7.7E-03 | cm/hr | 1 | hr/event | 0.42 | hr | 1.02 | hr | 0.0306 |
| | | | Acenaphthylene | Surface Water | -- | 1 | 9.1E-02 | cm/hr | 1 | hr/event | 0.75 | hr | 1.80 | hr | 0.4320 |
| | | | Atrazine | Surface Water | -- | 1 | 5.2E-03 | cm/hr | 1 | hr/event | 1.70 | hr | 4.07 | hr | 0.0296 |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 1 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Dibenz(a,h)anthracene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.81 | hr | N/A | hr | N/A |
| | | | Dibenzofuran | Surface Water | -- | 1 | 7.3E-02 | cm/hr | 1 | hr/event | 1.85 | hr | 4.44 | hr | 0.4204 |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 1 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |
| | | | N-Nitrosodiphenylamine | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 1.35 | hr | 3.25 | hr | 0.0788 |
| | | | Pentachlorophenol | Surface Water | -- | 0.9 | NA | cm/hr | 1 | hr/event | 3.26 | hr | N/A | hr | N/A |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 1 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Chlorobenzene | Surface Water | -- | 1 | 2.8E-02 | cm/hr | 1 | hr/event | 0.45 | hr | 1.08 | hr | 0.1152 |
| | | | Ethylbenzene | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 1 | hr/event | 0.41 | hr | 0.99 | hr | 0.1952 |
| | | | Xylene (total) | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 1 | hr/event | 0.41 | hr | 0.99 | hr | 0.1953 |
| | | | | | | | | | | | | | | | |
| | | | Total PCBs | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 1 | hr/event | 10.23 | hr | N/A | hr | N/A |
| | | | alpha-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 1 | hr/event | 4.47 | hr | 10.73 | hr | 0.0816 |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 1 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| Current | Trespasser - Adolescent wader | Unnamed Island Ponds | | | | | | | | | | | | | |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 1 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 1 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 1 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Bromodichloromethane | Surface Water | -- | 1 | 4.6E-03 | cm/hr | 1 | hr/event | 0.87 | hr | 2.09 | hr | 0.0227 |
| | | | | | | | | | | | | | | | |
| | | | Aroclor-1260 | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 1 | hr/event | 10.23 | hr | N/A | hr | N/A |

Table 6.RME. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

| Timeframe | Receptor | Exposure Point | Chemical of Potential Concern | Media | Dermal Absorption Fraction (soil) | FA | Kp | | T(event) | | Tau | | T* | | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Value | Units | Value | Units | Value | Units | Value | Units | Value |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | beta-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 1 | hr/event | 4.47 | hr | 10.73 | hr | 0.0804 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 1 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Heptachlor Epoxide | Surface Water | -- | 1 | 2.1E-02 | cm/hr | 1 | hr/event | 15.92 | hr | 38.21 | hr | 0.1585 |
| Future | Rec. User - Adult wader | Leachate - Unnamed Island | | | | | | | | | | | | | |
| | | | 4-Methylphenol | Surface Water | -- | 1 | 7.7E-03 | cm/hr | 1 | hr/event | 0.42 | hr | 1.02 | hr | 0.0306 |
| | | | Acenaphthylene | Surface Water | -- | 1 | 9.1E-02 | cm/hr | 1 | hr/event | 0.75 | hr | 1.80 | hr | 0.4320 |
| | | | Atrazine | Surface Water | -- | 1 | 5.2E-03 | cm/hr | 1 | hr/event | 1.70 | hr | 4.07 | hr | 0.0296 |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 1 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Dibenz(a,h)anthracene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.81 | hr | N/A | hr | N/A |
| | | | Dibenzofuran | Surface Water | -- | 1 | 7.3E-02 | cm/hr | 1 | hr/event | 1.85 | hr | 4.44 | hr | 0.4204 |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 1 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |
| | | | N-Nitrosodiphenylamine | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 1.35 | hr | 3.25 | hr | 0.0788 |
| | | | Pentachlorophenol | Surface Water | -- | 0.9 | NA | cm/hr | 1 | hr/event | 3.26 | hr | N/A | hr | N/A |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 1 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Chlorobenzene | Surface Water | -- | 1 | 2.8E-02 | cm/hr | 1 | hr/event | 0.45 | hr | 1.08 | hr | 0.1152 |
| | | | Ethylbenzene | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 1 | hr/event | 0.41 | hr | 0.99 | hr | 0.1952 |
| | | | Xylene (total) | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 1 | hr/event | 0.41 | hr | 0.99 | hr | 0.1953 |
| | | | | | | | | | | | | | | | |
| | | | Total PCBs | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 1 | hr/event | 10.23 | hr | N/A | hr | N/A |
| | | | alpha-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 1 | hr/event | 4.47 | hr | 10.73 | hr | 0.0816 |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 1 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| Future | Rec. User - Older Child wader | Leachate - Unnamed Island | | | | | | | | | | | | | |
| | | | 4-Methylphenol | Surface Water | -- | 1 | 7.7E-03 | cm/hr | 1 | hr/event | 0.42 | hr | 1.02 | hr | 0.0306 |
| | | | Acenaphthylene | Surface Water | -- | 1 | 9.1E-02 | cm/hr | 1 | hr/event | 0.75 | hr | 1.80 | hr | 0.4320 |
| | | | Atrazine | Surface Water | -- | 1 | 5.2E-03 | cm/hr | 1 | hr/event | 1.70 | hr | 4.07 | hr | 0.0296 |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 1 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Dibenz(a,h)anthracene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.81 | hr | N/A | hr | N/A |
| | | | Dibenzofuran | Surface Water | -- | 1 | 7.3E-02 | cm/hr | 1 | hr/event | 1.85 | hr | 4.44 | hr | 0.4204 |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 1 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |

Table 6.RME. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

| Timeframe | Receptor | Exposure Point | Chemical of Potential Concern | Media | Dermal Absorption Fraction (soil) | FA | Kp | | T(event) | | Tau | | T* | | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Value | Units | Value | Units | Value | Units | Value | Units | Value |
| | | | N-Nitrosodiphenylamine | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 1.35 | hr | 3.25 | hr | 0.0788 |
| | | | Pentachlorophenol | Surface Water | -- | 0.9 | NA | cm/hr | 1 | hr/event | 3.26 | hr | N/A | hr | N/A |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 1 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Chlorobenzene | Surface Water | -- | 1 | 2.8E-02 | cm/hr | 1 | hr/event | 0.45 | hr | 1.08 | hr | 0.1152 |
| | | | Ethylbenzene | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 1 | hr/event | 0.41 | hr | 0.99 | hr | 0.1952 |
| | | | Xylene (total) | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 1 | hr/event | 0.41 | hr | 0.99 | hr | 0.1953 |
| | | | | | | | | | | | | | | | |
| | | | Total PCBs | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 1 | hr/event | 10.23 | hr | N/A | hr | N/A |
| | | | alpha-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 1 | hr/event | 4.47 | hr | 10.73 | hr | 0.0816 |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 1 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| Future | Rec. User - Adult wader | Unnamed Island Ponds | | | | | | | | | | | | | |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 1 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 1 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 1 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Bromodichloromethane | Surface Water | -- | 1 | 4.6E-03 | cm/hr | 1 | hr/event | 0.87 | hr | 2.09 | hr | 0.0227 |
| | | | | | | | | | | | | | | | |
| | | | Aroclor-1260 | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 1 | hr/event | 10.23 | hr | N/A | hr | N/A |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | beta-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 1 | hr/event | 4.47 | hr | 10.73 | hr | 0.0804 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 1 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Heptachlor Epoxide | Surface Water | -- | 1 | 2.1E-02 | cm/hr | 1 | hr/event | 15.92 | hr | 38.21 | hr | 0.1585 |
| Future | Rec. User - Older Child wader | Unnamed Island Ponds | | | | | | | | | | | | | |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 1 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 1 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |

Table 6.RME. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

| Timeframe | Receptor | Exposure Point | Chemical of Potential Concern | Media | Dermal Absorption Fraction (soil) | FA | Kp | | T(event) | | Tau | | T* | | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Value | Units | Value | Units | Value | Units | Value | Units | Value |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 1 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Bromodichloromethane | Surface Water | -- | 1 | 4.6E-03 | cm/hr | 1 | hr/event | 0.87 | hr | 2.09 | hr | 0.0227 |
| | | | | | | | | | | | | | | | |
| | | | Aroclor-1260 | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 1 | hr/event | 10.23 | hr | N/A | hr | N/A |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | beta-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 1 | hr/event | 4.47 | hr | 10.73 | hr | 0.0804 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 1 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Heptachlor Epoxide | Surface Water | -- | 1 | 2.1E-02 | cm/hr | 1 | hr/event | 15.92 | hr | 38.21 | hr | 0.1585 |
| Future | Rec. User - Adult wader | Leachate - Unnamed Island | | | | | | | | | | | | | |
| | | | 4-Methylphenol | Surface Water | -- | 1 | 7.7E-03 | cm/hr | 0.2 | hr/event | 0.42 | hr | 1.02 | hr | 0.0306 |
| | | | Acenaphthylene | Surface Water | -- | 1 | 9.1E-02 | cm/hr | 0.2 | hr/event | 0.75 | hr | 1.80 | hr | 0.4320 |
| | | | Atrazine | Surface Water | -- | 1 | 5.2E-03 | cm/hr | 0.2 | hr/event | 1.70 | hr | 4.07 | hr | 0.0296 |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 0.2 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Dibenz(a,h)anthracene | Surface Water | -- | 0.6 | NA | cm/hr | 0.2 | hr/event | 3.81 | hr | N/A | hr | N/A |
| | | | Dibenzofuran | Surface Water | -- | 1 | 7.3E-02 | cm/hr | 0.2 | hr/event | 1.85 | hr | 4.44 | hr | 0.4204 |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 0.2 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 0.2 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |
| | | | N-Nitrosodiphenylamine | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 0.2 | hr/event | 1.35 | hr | 3.25 | hr | 0.0788 |
| | | | Pentachlorophenol | Surface Water | -- | 0.9 | NA | cm/hr | 0.2 | hr/event | 3.26 | hr | N/A | hr | N/A |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 0.2 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 0.2 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Chlorobenzene | Surface Water | -- | 1 | 2.8E-02 | cm/hr | 0.2 | hr/event | 0.45 | hr | 1.08 | hr | 0.1152 |
| | | | Ethylbenzene | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 0.2 | hr/event | 0.41 | hr | 0.99 | hr | 0.1952 |
| | | | Xylene (total) | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 0.2 | hr/event | 0.41 | hr | 0.99 | hr | 0.1953 |
| | | | | | | | | | | | | | | | |
| | | | Total PCBs | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 0.2 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 0.2 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 0.2 | hr/event | 10.23 | hr | N/A | hr | N/A |
| | | | alpha-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 0.2 | hr/event | 4.47 | hr | 10.73 | hr | 0.0816 |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 0.2 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 0.2 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 0.2 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |

FA = Fraction Absorbed Water
Kp = Dermal Permeability Coefficient of Compound in Water

T(event) = Event Duration
Tau = Lag Time

T* = Time to Reach Steady-State
B = Dimensionless Ratio of the Permeability Coefficient of a Compound Through the Stratum Corneum Relative to its Permeability Coefficient Across the Viable Epidermis

Table 6.CT. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

| Timeframe | Receptor | Exposure Point | Chemical of Potential Concern | Media | Dermal Absorption Fraction (soil) | FA | Kp | | T(event) | | Tau | | T* | | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Value | Units | Value | Units | Value | Units | Value | Units | Value |
| Current | Trespasser - Adolescent wader | Leachate - Unnamed Island | | | | | | | | | | | | | |
| | | | 4-Methylphenol | Surface Water | -- | 1 | 7.7E-03 | cm/hr | 1 | hr/event | 0.42 | hr | 1.02 | hr | 0.0306 |
| | | | Acenaphthylene | Surface Water | -- | 1 | 9.1E-02 | cm/hr | 1 | hr/event | 0.75 | hr | 1.80 | hr | 0.4320 |
| | | | Atrazine | Surface Water | -- | 1 | 5.2E-03 | cm/hr | 1 | hr/event | 1.70 | hr | 4.07 | hr | 0.0296 |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 1 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Dibenz(a,h)anthracene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.81 | hr | N/A | hr | N/A |
| | | | Dibenzofuran | Surface Water | -- | 1 | 7.3E-02 | cm/hr | 1 | hr/event | 1.85 | hr | 4.44 | hr | 0.4204 |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 1 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |
| | | | N-Nitrosodiphenylamine | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 1.35 | hr | 3.25 | hr | 0.0788 |
| | | | Pentachlorophenol | Surface Water | -- | 0.9 | NA | cm/hr | 1 | hr/event | 3.26 | hr | N/A | hr | N/A |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 1 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Chlorobenzene | Surface Water | -- | 1 | 2.8E-02 | cm/hr | 1 | hr/event | 0.45 | hr | 1.08 | hr | 0.1152 |
| | | | Ethylbenzene | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 1 | hr/event | 0.41 | hr | 0.99 | hr | 0.1952 |
| | | | Xylene (total) | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 1 | hr/event | 0.41 | hr | 0.99 | hr | 0.1953 |
| | | | | | | | | | | | | | | | |
| | | | Total PCBs | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 1 | hr/event | 10.23 | hr | N/A | hr | N/A |
| | | | alpha-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 1 | hr/event | 4.47 | hr | 10.73 | hr | 0.0816 |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 1 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| Current | Trespasser - Adolescent wader | Unnamed Island Ponds | | | | | | | | | | | | | |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 1 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 1 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 1 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Bromodichloromethane | Surface Water | -- | 1 | 4.6E-03 | cm/hr | 1 | hr/event | 0.87 | hr | 2.09 | hr | 0.0227 |
| | | | | | | | | | | | | | | | |
| | | | Aroclor-1260 | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 1 | hr/event | 10.23 | hr | N/A | hr | N/A |

Table 6.CT. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

| Timeframe | Receptor | Exposure Point | Chemical of Potential Concern | Media | Dermal Absorption Fraction (soil) | FA | Kp | | T(event) | | Tau | | T* | | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Value | Units | Value | Units | Value | Units | Value | Units | Value |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | beta-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 1 | hr/event | 4.47 | hr | 10.73 | hr | 0.0804 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 1 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Heptachlor Epoxide | Surface Water | -- | 1 | 2.1E-02 | cm/hr | 1 | hr/event | 15.92 | hr | 38.21 | hr | 0.1585 |
| Future | Rec. User - Adult wader | Leachate - Unnamed Island | | | | | | | | | | | | | |
| | | | 4-Methylphenol | Surface Water | -- | 1 | 7.7E-03 | cm/hr | 1 | hr/event | 0.42 | hr | 1.02 | hr | 0.0306 |
| | | | Acenaphthylene | Surface Water | -- | 1 | 9.1E-02 | cm/hr | 1 | hr/event | 0.75 | hr | 1.80 | hr | 0.4320 |
| | | | Atrazine | Surface Water | -- | 1 | 5.2E-03 | cm/hr | 1 | hr/event | 1.70 | hr | 4.07 | hr | 0.0296 |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 1 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Dibenz(a,h)anthracene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.81 | hr | N/A | hr | N/A |
| | | | Dibenzofuran | Surface Water | -- | 1 | 7.3E-02 | cm/hr | 1 | hr/event | 1.85 | hr | 4.44 | hr | 0.4204 |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 1 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |
| | | | N-Nitrosodiphenylamine | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 1.35 | hr | 3.25 | hr | 0.0788 |
| | | | Pentachlorophenol | Surface Water | -- | 0.9 | NA | cm/hr | 1 | hr/event | 3.26 | hr | N/A | hr | N/A |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 1 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Chlorobenzene | Surface Water | -- | 1 | 2.8E-02 | cm/hr | 1 | hr/event | 0.45 | hr | 1.08 | hr | 0.1152 |
| | | | Ethylbenzene | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 1 | hr/event | 0.41 | hr | 0.99 | hr | 0.1952 |
| | | | Xylene (total) | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 1 | hr/event | 0.41 | hr | 0.99 | hr | 0.1953 |
| | | | | | | | | | | | | | | | |
| | | | Total PCBs | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 1 | hr/event | 10.23 | hr | N/A | hr | N/A |
| | | | alpha-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 1 | hr/event | 4.47 | hr | 10.73 | hr | 0.0816 |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 1 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| Future | Rec. User - Older Child wader | Leachate - Unnamed Island | | | | | | | | | | | | | |
| | | | 4-Methylphenol | Surface Water | -- | 1 | 7.7E-03 | cm/hr | 1 | hr/event | 0.42 | hr | 1.02 | hr | 0.0306 |
| | | | Acenaphthylene | Surface Water | -- | 1 | 9.1E-02 | cm/hr | 1 | hr/event | 0.75 | hr | 1.80 | hr | 0.4320 |
| | | | Atrazine | Surface Water | -- | 1 | 5.2E-03 | cm/hr | 1 | hr/event | 1.70 | hr | 4.07 | hr | 0.0296 |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 1 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Dibenz(a,h)anthracene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.81 | hr | N/A | hr | N/A |
| | | | Dibenzofuran | Surface Water | -- | 1 | 7.3E-02 | cm/hr | 1 | hr/event | 1.85 | hr | 4.44 | hr | 0.4204 |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 1 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |

Table 6.CT. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

| Timeframe | Receptor | Exposure Point | Chemical of Potential Concern | Media | Dermal Absorption Fraction (soil) | FA | Kp | | T(event) | | Tau | | T* | | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Value | Units | Value | Units | Value | Units | Value | Units | Value |
| | | | N-Nitrosodiphenylamine | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 1.35 | hr | 3.25 | hr | 0.0788 |
| | | | Pentachlorophenol | Surface Water | -- | 0.9 | NA | cm/hr | 1 | hr/event | 3.26 | hr | N/A | hr | N/A |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 1 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Chlorobenzene | Surface Water | -- | 1 | 2.8E-02 | cm/hr | 1 | hr/event | 0.45 | hr | 1.08 | hr | 0.1152 |
| | | | Ethylbenzene | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 1 | hr/event | 0.41 | hr | 0.99 | hr | 0.1952 |
| | | | Xylene (total) | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 1 | hr/event | 0.41 | hr | 0.99 | hr | 0.1953 |
| | | | | | | | | | | | | | | | |
| | | | Total PCBs | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 1 | hr/event | 10.23 | hr | N/A | hr | N/A |
| | | | alpha-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 1 | hr/event | 4.47 | hr | 10.73 | hr | 0.0816 |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 1 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| Future | Rec. User - Adult wader | Unnamed Island Ponds | | | | | | | | | | | | | |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 1 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 1 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 1 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Bromodichloromethane | Surface Water | -- | 1 | 4.6E-03 | cm/hr | 1 | hr/event | 0.87 | hr | 2.09 | hr | 0.0227 |
| | | | | | | | | | | | | | | | |
| | | | Aroclor-1260 | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 1 | hr/event | 10.23 | hr | N/A | hr | N/A |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | beta-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 1 | hr/event | 4.47 | hr | 10.73 | hr | 0.0804 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 1 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Heptachlor Epoxide | Surface Water | -- | 1 | 2.1E-02 | cm/hr | 1 | hr/event | 15.92 | hr | 38.21 | hr | 0.1585 |
| Future | Rec. User - Older Child wader | Unnamed Island Ponds | | | | | | | | | | | | | |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 1 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 1 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 1 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |

Table 6.CT. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

| Timeframe | Receptor | Exposure Point | Chemical of Potential Concern | Media | Dermal Absorption Fraction (soil) | FA | Kp | | T(event) | | Tau | | T* | | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Value | Units | Value | Units | Value | Units | Value | Units | Value |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 1 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 1 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Bromodichloromethane | Surface Water | -- | 1 | 4.6E-03 | cm/hr | 1 | hr/event | 0.87 | hr | 2.09 | hr | 0.0227 |
| | | | | | | | | | | | | | | | |
| | | | Aroclor-1260 | Surface Water | -- | 1 | NA | cm/hr | 1 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 1 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 1 | hr/event | 10.23 | hr | N/A | hr | N/A |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | beta-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 1 | hr/event | 4.47 | hr | 10.73 | hr | 0.0804 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 1 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 1 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Heptachlor Epoxide | Surface Water | -- | 1 | 2.1E-02 | cm/hr | 1 | hr/event | 15.92 | hr | 38.21 | hr | 0.1585 |
| Future | Rec. User - Adult wader | Leachate - Unnamed Island | | | | | | | | | | | | | |
| | | | 4-Methylphenol | Surface Water | -- | 1 | 7.7E-03 | cm/hr | 0.2 | hr/event | 0.42 | hr | 1.02 | hr | 0.0306 |
| | | | Acenaphthylene | Surface Water | -- | 1 | 9.1E-02 | cm/hr | 0.2 | hr/event | 0.75 | hr | 1.80 | hr | 0.4320 |
| | | | Atrazine | Surface Water | -- | 1 | 5.2E-03 | cm/hr | 0.2 | hr/event | 1.70 | hr | 4.07 | hr | 0.0296 |
| | | | Benzo(a)anthracene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Benzo(a)pyrene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.64 | hr | N/A | hr | N/A |
| | | | Benzo(b)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | Benzo(g,h,i)perylene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Benzo(k)fluoranthene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.72 | hr | N/A | hr | N/A |
| | | | bis(2-Ethylhexyl)phthalate | Surface Water | -- | 0.8 | 2.5E-02 | cm/hr | 0.2 | hr/event | 16.27 | hr | 39.05 | hr | 0.1896 |
| | | | Chrysene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 2.00 | hr | N/A | hr | N/A |
| | | | Dibenz(a,h)anthracene | Surface Water | -- | 0.6 | NA | cm/hr | 0.2 | hr/event | 3.81 | hr | N/A | hr | N/A |
| | | | Dibenzofuran | Surface Water | -- | 1 | 7.3E-02 | cm/hr | 0.2 | hr/event | 1.85 | hr | 4.44 | hr | 0.4204 |
| | | | Indeno(1,2,3-cd)pyrene | Surface Water | -- | 0.6 | NA | cm/hr | 0.2 | hr/event | 3.71 | hr | N/A | hr | N/A |
| | | | Naphthalene | Surface Water | -- | 1 | 4.7E-02 | cm/hr | 0.2 | hr/event | 0.55 | hr | 1.32 | hr | 0.2031 |
| | | | N-Nitrosodiphenylamine | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 0.2 | hr/event | 1.35 | hr | 3.25 | hr | 0.0788 |
| | | | Pentachlorophenol | Surface Water | -- | 0.9 | NA | cm/hr | 0.2 | hr/event | 3.26 | hr | N/A | hr | N/A |
| | | | Phenanthrene | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 1.05 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 1,4-Dichlorobenzene | Surface Water | -- | 1 | 4.2E-02 | cm/hr | 0.2 | hr/event | 0.70 | hr | 1.68 | hr | 0.1957 |
| | | | Benzene | Surface Water | -- | 1 | 1.5E-02 | cm/hr | 0.2 | hr/event | 0.29 | hr | 0.69 | hr | 0.0505 |
| | | | Chlorobenzene | Surface Water | -- | 1 | 2.8E-02 | cm/hr | 0.2 | hr/event | 0.45 | hr | 1.08 | hr | 0.1152 |
| | | | Ethylbenzene | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 0.2 | hr/event | 0.41 | hr | 0.99 | hr | 0.1952 |
| | | | Xylene (total) | Surface Water | -- | 1 | 4.9E-02 | cm/hr | 0.2 | hr/event | 0.41 | hr | 0.99 | hr | 0.1953 |
| | | | | | | | | | | | | | | | |
| | | | Total PCBs | Surface Water | -- | 1 | NA | cm/hr | 0.2 | hr/event | 4.54 | hr | N/A | hr | N/A |
| | | | | | | | | | | | | | | | |
| | | | 4,4'-DDD | Surface Water | -- | 0.8 | NA | cm/hr | 0.2 | hr/event | 6.51 | hr | N/A | hr | N/A |
| | | | 4,4'-DDE | Surface Water | -- | 0.8 | NA | cm/hr | 0.2 | hr/event | 6.35 | hr | N/A | hr | N/A |
| | | | 4,4'-DDT | Surface Water | -- | 0.7 | NA | cm/hr | 0.2 | hr/event | 10.23 | hr | N/A | hr | N/A |
| | | | alpha-BHC | Surface Water | -- | 1 | 1.2E-02 | cm/hr | 0.2 | hr/event | 4.47 | hr | 10.73 | hr | 0.0816 |
| | | | alpha-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 0.2 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |
| | | | Dieldrin | Surface Water | -- | 0.8 | 1.2E-02 | cm/hr | 0.2 | hr/event | 14.30 | hr | 34.33 | hr | 0.0918 |
| | | | Gamma-Chlordane | Surface Water | -- | 0.7 | 3.4E-02 | cm/hr | 0.2 | hr/event | 20.79 | hr | 49.90 | hr | 0.2635 |

FA = Fraction Absorbed Water
Kp = Dermal Permeability Coefficient of Compound in Water

T(event) = Event Duration
Tau = Lag Time

T* = Time to Reach Steady-State
B = Dimensionless Ratio of the Permeability Coefficient of a Compound Through the Stratum Corneum Relative to its Permeability Coefficient Across the Viable Epidermis

Table 7. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SOIL/SEDIMENT

| Timeframe | Receptor | Exposure Point | Chemical of Potential Concern | Media | Dermal Absorption Fraction (soil) | FA | Kp | | T(event) | | Tau | | T* | | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Value | Value | Units | Value | Units | Value | Units | Value | Units | Value |
| All | All | Unnamed Island | | | | | | | | | | | | | |
| | | | Benzo(a)anthracene | Sediment/Soil | 0.13 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Benzo(a)pyrene | Sediment/Soil | 0.13 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Benzo(b)fluoranthene | Sediment/Soil | 0.13 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Benzo(g,h,i)perylene | Sediment/Soil | 0.13 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Benzo(k)fluoranthene | Sediment/Soil | 0.13 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Bis(2-ethylhexyl)phthalate | Sediment/Soil | 0.1 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Carbazole | Sediment/Soil | 0.13 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Dibenz(a,h)anthracene | Sediment/Soil | 0.13 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Dibenzofuran | Sediment/Soil | 0.1 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Indeno(1,2,3-cd)pyrene | Sediment/Soil | 0.13 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Naphthalene | Sediment/Soil | 0.13 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Phenanthrene | Sediment/Soil | 0.13 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Aroclor-1242 | Sediment/Soil | 0.14 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Aroclor-1254 | Sediment/Soil | 0.14 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Aroclor-1260 | Sediment/Soil | 0.14 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Dieldrin | Sediment/Soil | 0.1 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Dioxin TEQ | Sediment/Soil | 0.03 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Arsenic | Sediment/Soil | 0.03 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |
| | | | Cadmium | Sediment/Soil | 0.001 | No data | No data | No data | No data | No data | No data | No data | No data | No data | No data |

FA = Fraction Absorbed Water
Kp = Dermal Permeability Coefficient of Compound in Water

T(event) = Event Duration
Tau = Lag Time

T* = Time to Reach Steady-State
B = Dimensionless Ratio of the Permeability Coefficient of a Compound Through the Stratum Corneum Relative to its Permeability Coefficient Across the Viable Epidermis

# APPENDIX F

# EARLY LIFE EXPOSURE CALCULATIONS

APPENDIX F TABLE 7.1.RME

CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | Age-Dependent Intake/Exposure Concentration [1] | | Age-Dependent Adjustment Factor (ADAF) [2] | | CSF/Unit Risk | | Cancer Risk | Cancer Risk | Cumulative Cancer Risk |
| | | | | | | | Value | Units | Ages 9-16 | Ages 17-18 | Ages 9-16 | Ages 17-18 | Value | Units | Ages 9-16 [3] | Ages 17-18 [3] | Ages 9-18 [4] |
| Soil | Surface Soil | Unnamed Island | Ingestion | | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 1.2E-07 | mg/kg-day | 9.9E-08 | 2.5E-08 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.2E-07 | 1.8E-08 | 2.3E-07 |
| | | | | Benzo(a)pyrene | 1E+00 | mg/kg | 1.1E-07 | mg/kg-day | 8.8E-08 | 2.2E-08 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.9E-06 | 1.6E-07 | 2.1E-06 |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 1.7E-07 | mg/kg-day | 1.3E-07 | 3.3E-08 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.9E-07 | 2.4E-08 | 3.1E-07 |
| | | | | Benzo(k)fluoranthene | 9E-01 | mg/kg | 7.1E-08 | mg/kg-day | 5.7E-08 | 1.4E-08 | 3.0E+00 | 1.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.2E-08 | 1.0E-09 | 1.3E-08 |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 2.1E-08 | mg/kg-day | 1.7E-08 | 4.2E-09 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 3.7E-07 | 3.1E-08 | 4.0E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 8E-01 | mg/kg | 6.6E-08 | mg/kg-day | 5.3E-08 | 1.3E-08 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.2E-07 | 9.7E-09 | 1.3E-07 |
| | | | | Chromium | 1E+02 | mg/kg | 1.2E-05 | mg/kg-day | 9.3E-06 | 2.3E-06 | 3.0E+00 | 1.0E+00 | 5.0E-01 | (mg/kg-day) $^{-1}$ | 1.4E-05 | 1.2E-06 | 1.5E-05 |
| | | | Exp. Route Total | | | | | | | | | | | | N/A | | N/A |
| | | | Dermal | | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 6.6E-08 | mg/kg-day | 5.3E-08 | 1.3E-08 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.2E-07 | 9.7E-09 | 1.3E-07 |
| | | | | Benzo(a)pyrene | 1E+00 | mg/kg | 5.9E-08 | mg/kg-day | 4.7E-08 | 1.2E-08 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.0E-06 | 8.6E-08 | 1.1E-06 |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 8.9E-08 | mg/kg-day | 7.1E-08 | 1.8E-08 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.6E-07 | 1.3E-08 | 1.7E-07 |
| | | | | Benzo(k)fluoranthene | 9E-01 | mg/kg | 3.8E-08 | mg/kg-day | 3.0E-08 | 7.6E-09 | 3.0E+00 | 1.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 6.7E-09 | 5.5E-10 | 7.2E-09 |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 1.1E-08 | mg/kg-day | 9.1E-09 | 2.3E-09 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.0E-07 | 1.7E-08 | 2.2E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 8E-01 | mg/kg | 3.5E-08 | mg/kg-day | 2.8E-08 | 7.1E-09 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 6.2E-08 | 5.2E-09 | 6.7E-08 |
| | | | | Chromium | 1E+02 | mg/kg | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | Exp. Route Total | | | | | | | | | | | | N/A | | N/A |
| | | Exposure Point Total | | | | | | | | | | | | | N/A | | N/A |
| | Exposure Medium Total | | | | | | | | | | | | | | N/A | | N/A |
| Medium Total | | | | | | | | | | | | | | | N/A | | N/A |
| Leachate | Leachate | Unnamed Island | Dermal | | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 2E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Chrysene | 3E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | ND | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Chromium | 5E+00 | ug/L | 1.5E-08 | mg/kg-day | 1.2E-08 | 3.1E-09 | 3.0E+00 | 1.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | 4.6E-10 | 3.8E-11 | 5.0E-10 |
| | | | Exp. Route Total | | | | | | | | | | | | N/A | | N/A |
| | | Exposure Point Total | | | | | | | | | | | | | N/A | | N/A |
| | Exposure Medium Total | | | | | | | | | | | | | | N/A | | N/A |
| Medium Total | | | | | | | | | | | | | | | N/A | | N/A |

APPENDIX F TABLE 7.1.RME

CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | Age-Dependent Intake/Exposure Concentration [1] | | Age-Dependent Adjustment Factor (ADAF) [2] | | CSF/Unit Risk | | Cancer Risk | Cancer Risk | Cumulative Cancer Risk |
| | | | | | | | Value | Units | Ages 9-16 | Ages 17-18 | Ages 9-16 | Ages 17-18 | Value | Units | Ages 9-16 [3] | Ages 17-18 [3] | Ages 9-18 [4] |
| Surface Water | Surface Water | Unnamed Island | Dermal | | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 3E-01 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | ND | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Chrysene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Chromium | 1E+01 | ug/L | 8.4E-08 | mg/kg-day | 6.7E-08 | 1.7E-08 | 3.0E+00 | 1.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | 2.5E-09 | 2.1E-10 | 2.7E-09 |
| | | | Exp. Route Total | | | | | | | | | | | | N/A | | N/A |
| | | Exposure Point Total | | | | | | | | | | | | | N/A | | N/A |
| | Exposure Medium Total | | | | | | | | | | | | | | N/A | | N/A |
| Medium Total | | | | | | | | | | | | | | | N/A | | N/A |
| Sediment | Sediment | Unnamed Island | Ingestion | | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 9.5E-08 | mg/kg-day | 7.6E-08 | 1.9E-08 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.7E-07 | 1.4E-08 | 1.8E-07 |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 9.9E-08 | mg/kg-day | 7.9E-08 | 2.0E-08 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.7E-06 | 1.4E-07 | 1.9E-06 |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 7.2E-08 | mg/kg-day | 5.8E-08 | 1.4E-08 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.3E-07 | 1.1E-08 | 1.4E-07 |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 5.8E-08 | mg/kg-day | 4.7E-08 | 1.2E-08 | 3.0E+00 | 1.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.0E-08 | 8.5E-10 | 1.1E-08 |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 1.1E-08 | mg/kg-day | 9.1E-09 | 2.3E-09 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.0E-07 | 1.7E-08 | 2.2E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 4.3E-08 | mg/kg-day | 3.4E-08 | 8.6E-09 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 7.5E-08 | 6.3E-09 | 8.2E-08 |
| | | | | Chromium | 2E+02 | mg/kg | 6.8E-06 | mg/kg-day | 5.5E-06 | 1.4E-06 | 3.0E+00 | 1.0E+00 | 5.0E-01 | (mg/kg-day) $^{-1}$ | 8.2E-06 | 6.8E-07 | 8.9E-06 |
| | | | Exp. Route Total | | | | | | | | | | | | N/A | | N/A |
| | | | Dermal | | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 2.8E-07 | mg/kg-day | 2.2E-07 | 5.6E-08 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 4.9E-07 | 4.1E-08 | 5.3E-07 |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 2.9E-07 | mg/kg-day | 2.3E-07 | 5.9E-08 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 5.1E-06 | 4.3E-07 | 5.6E-06 |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 2.1E-07 | mg/kg-day | 1.7E-07 | 4.3E-08 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.7E-07 | 3.1E-08 | 4.0E-07 |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 1.7E-07 | mg/kg-day | 1.4E-07 | 3.4E-08 | 3.0E+00 | 1.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 3.0E-08 | 2.5E-09 | 3.3E-08 |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 3.4E-08 | mg/kg-day | 2.7E-08 | 6.7E-09 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 5.9E-07 | 4.9E-08 | 6.4E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 1.3E-07 | mg/kg-day | 1.0E-07 | 2.5E-08 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.2E-07 | 1.9E-08 | 2.4E-07 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | Exp. Route Total | | | | | | | | | | | | N/A | | N/A |
| | | Exposure Point Total | | | | | | | | | | | | | N/A | | N/A |
| | Exposure Medium Total | | | | | | | | | | | | | | N/A | | N/A |
| Medium Total | | | | | | | | | | | | | | | N/A | | N/A |
| | | | | | | | | | | | | | | Total of Receptor Risks Across All Media | N/A | | N/A |

Notes

Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the age-dependent intake/exposure concentration by the appropriate default age-dependent adjustment factor (ADAF) and the appropriate cancer slope factor (CSF) according to the following formula:

Cancer Risk = Intake (mg/kg-day) x CSF (mg/kg-day)$^{-1}$ x ADAF

[1] Age-dependent intake/exposure concentration determined by multiplying the intake/exposure concentration by the fraction of years related to default ADAFs: 8/10 of the value for ages 9-16 and 2/10 of the value for ages 17-18

[2] ADAFs: 3 for ages 9-16 and 1 for ages 17-18

[3] Age-dependent cancer risk calculated by multiplying the age-dependent intake/exposure concentration by the appropriate ADAF and cancer slope factor.

[4] Cumulative cancer risk calculated by adding the age-dependent cancer risk results together.

APPENDIX F TABLE 7.1.CT

CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | Age-Dependent Intake/Exposure Concentration [1] | | Age-Dependent Adjustment Factor (ADAF) [2] | | CSF/Unit Risk | | Cancer Risk | Cancer Risk | Cumulative Cancer Risk |
| | | | | | | | Value | Units | Ages 9-16 | Ages 17-18 | Ages 9-16 | Ages 17-18 | Value | Units | Ages 9-16 [3] | Ages 17-18 [3] | Ages 9-18 [4] |
| Soil | Surface Soil | Unnamed Island | Ingestion | | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 3.1E-08 | mg/kg-day | 2.5E-08 | 6.2E-09 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 5.4E-08 | 4.5E-09 | 5.9E-08 |
| | | | | Benzo(a)pyrene | 1E+00 | mg/kg | 2.7E-08 | mg/kg-day | 2.2E-08 | 5.5E-09 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 4.8E-07 | 4.0E-08 | 5.2E-07 |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 4.1E-08 | mg/kg-day | 3.3E-08 | 8.3E-09 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 7.3E-08 | 6.0E-09 | 7.9E-08 |
| | | | | Benzo(k)fluoranthene | 9E-01 | mg/kg | 1.8E-08 | mg/kg-day | 1.4E-08 | 3.5E-09 | 3.0E+00 | 1.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 3.1E-09 | 2.6E-10 | 3.4E-09 |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 5.3E-09 | mg/kg-day | 4.2E-09 | 1.1E-09 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 9.3E-08 | 7.8E-09 | 1.0E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 8E-01 | mg/kg | 1.7E-08 | mg/kg-day | 1.3E-08 | 3.3E-09 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.9E-08 | 2.4E-09 | 3.1E-08 |
| | | | | Chromium | 1E+02 | mg/kg | 2.9E-06 | mg/kg-day | 2.3E-06 | 5.8E-07 | 3.0E+00 | 1.0E+00 | 5.0E-01 | (mg/kg-day) $^{-1}$ | 3.5E-06 | 2.9E-07 | 3.8E-06 |
| | | | Exp. Route Total | | | | | | | | | | | | N/A | | N/A |
| | | | Dermal | | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 3.3E-08 | mg/kg-day | 2.6E-08 | 6.6E-09 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 5.8E-08 | 4.8E-09 | 6.3E-08 |
| | | | | Benzo(a)pyrene | 1E+00 | mg/kg | 2.9E-08 | mg/kg-day | 2.4E-08 | 5.9E-09 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 5.2E-07 | 4.3E-08 | 5.6E-07 |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 4.4E-08 | mg/kg-day | 3.6E-08 | 8.9E-09 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 7.8E-08 | 6.5E-09 | 8.4E-08 |
| | | | | Benzo(k)fluoranthene | 9E-01 | mg/kg | 1.9E-08 | mg/kg-day | 1.5E-08 | 3.8E-09 | 3.0E+00 | 1.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 3.3E-09 | 2.8E-10 | 3.6E-09 |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 5.7E-09 | mg/kg-day | 4.6E-09 | 1.1E-09 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.0E-07 | 8.3E-09 | 1.1E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 8E-01 | mg/kg | 1.8E-08 | mg/kg-day | 1.4E-08 | 3.5E-09 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.1E-08 | 2.6E-09 | 3.4E-08 |
| | | | | Chromium | 1E+02 | mg/kg | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | Exp. Route Total | | | | | | | | | | | | N/A | | N/A |
| | | Exposure Point Total | | | | | | | | | | | | | N/A | | N/A |
| | Exposure Medium Total | | | | | | | | | | | | | | N/A | | N/A |
| Medium Total | | | | | | | | | | | | | | | N/A | | N/A |
| Leachate | Leachate | Unnamed Island | Dermal | | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 2E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 2E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Chrysene | 3E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Dibenz(a,h)anthracene | ND | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Chromium | 5E+00 | ug/L | 7.7E-09 | mg/kg-day | 6.2E-09 | 1.5E-09 | 3.0E+00 | 1.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | 2.3E-10 | 1.9E-11 | 2.5E-10 |
| | | | Exp. Route Total | | | | | | | | | | | | N/A | | N/A |
| | | Exposure Point Total | | | | | | | | | | | | | N/A | | N/A |
| | Exposure Medium Total | | | | | | | | | | | | | | N/A | | N/A |
| Medium Total | | | | | | | | | | | | | | | N/A | | N/A |

APPENDIX F TABLE 7.1.CT

CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | Age-Dependent Intake/Exposure Concentration [1] | | Age-Dependent Adjustment Factor (ADAF) [2] | | CSF/Unit Risk | | Cancer Risk | Cancer Risk | Cumulative Cancer Risk |
| | | | | | | | Value | Units | Ages 9-16 | Ages 17-18 | Ages 9-16 | Ages 17-18 | Value | Units | Ages 9-16 [3] | Ages 17-18 [3] | Ages 9-18 [4] |
| Surface Water | Surface Water | Unnamed Island | Dermal | | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Benzo(a)pyrene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Benzo(b)fluoranthene | 6E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | ND | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Chrysene | 1E-01 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 5E-02 | ug/L | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | | Chromium | 1E+01 | ug/L | 4.2E-08 | mg/kg-day | 3.3E-08 | 8.4E-09 | 3.0E+00 | 1.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | 1.3E-09 | 1.0E-10 | 1.4E-09 |
| | | | Exp. Route Total | | | | | | | | | | | | N/A | | N/A |
| | | Exposure Point Total | | | | | | | | | | | | | N/A | | N/A |
| | Exposure Medium Total | | | | | | | | | | | | | | N/A | | N/A |
| Medium Total | | | | | | | | | | | | | | | N/A | | N/A |
| Sediment | Sediment | Unnamed Island | Ingestion | | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 2.4E-08 | mg/kg-day | 1.9E-08 | 4.7E-09 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 4.1E-08 | 3.4E-09 | 4.5E-08 |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 2.5E-08 | mg/kg-day | 2.0E-08 | 4.9E-09 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 4.3E-07 | 3.6E-08 | 4.7E-07 |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 1.8E-08 | mg/kg-day | 1.4E-08 | 3.6E-09 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.2E-08 | 2.6E-09 | 3.4E-08 |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 1.5E-08 | mg/kg-day | 1.2E-08 | 2.9E-09 | 3.0E+00 | 1.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 2.5E-09 | 2.1E-10 | 2.8E-09 |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 2.8E-09 | mg/kg-day | 2.3E-09 | 5.7E-10 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 5.0E-08 | 4.1E-09 | 5.4E-08 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 1.1E-08 | mg/kg-day | 8.6E-09 | 2.1E-09 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.9E-08 | 1.6E-09 | 2.0E-08 |
| | | | | Chromium | 2E+02 | mg/kg | 1.7E-06 | mg/kg-day | 1.4E-06 | 3.4E-07 | 3.0E+00 | 1.0E+00 | 5.0E-01 | (mg/kg-day) $^{-1}$ | 2.1E-06 | 1.7E-07 | 2.2E-06 |
| | | | Exp. Route Total | | | | | | | | | | | | N/A | | N/A |
| | | | Dermal | | | | | | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 1.4E-07 | mg/kg-day | 1.1E-07 | 2.8E-08 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.5E-07 | 2.0E-08 | 2.7E-07 |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 1.5E-07 | mg/kg-day | 1.2E-07 | 2.9E-08 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.6E-06 | 2.1E-07 | 2.8E-06 |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 1.1E-07 | mg/kg-day | 8.5E-08 | 2.1E-08 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.9E-07 | 1.6E-08 | 2.0E-07 |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 8.6E-08 | mg/kg-day | 6.9E-08 | 1.7E-08 | 3.0E+00 | 1.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.5E-08 | 1.3E-09 | 1.6E-08 |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 1.7E-08 | mg/kg-day | 1.3E-08 | 3.4E-09 | 3.0E+00 | 1.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.9E-07 | 2.5E-08 | 3.2E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 6.4E-08 | mg/kg-day | 5.1E-08 | 1.3E-08 | 3.0E+00 | 1.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.1E-07 | 9.3E-09 | 1.2E-07 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | N/A | N/A | 3.0E+00 | 1.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A | N/A | N/A |
| | | | Exp. Route Total | | | | | | | | | | | | N/A | | N/A |
| | | Exposure Point Total | | | | | | | | | | | | | N/A | | N/A |
| | Exposure Medium Total | | | | | | | | | | | | | | N/A | | N/A |
| Medium Total | | | | | | | | | | | | | | | N/A | | N/A |
| | | | | | | | | | | | | | | Total of Receptor Risks Across All Media | N/A | | N/A |

Notes

Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the age-dependent intake/exposure concentration by the appropriate default age-dependent adjustment factor (ADAF) and the appropriate cancer slope factor (CSF) according to the following formula:

Cancer Risk = Intake (mg/kg-day) x CSF (mg/kg-day)$^{-1}$ x ADAF

[1] Age-dependent intake/exposure concentration determined by multiplying the intake/exposure concentration by the fraction of years related to default ADAFs: 8/10 of the value for ages 9-16 and 2/10 of the value for ages 17-18

[2] ADAFs: 3 for ages 9-16 and 1 for ages 17-18

[3] Age-dependent cancer risk calculated by multiplying the age-dependent intake/exposure concentration by the appropriate ADAF and cancer slope factor.

[4] Cumulative cancer risk calculated by adding the age-dependent cancer risk results together.

APPENDIX F TABLE 7.3.RME

CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | Age-Dependent Adjustment Factor (ADAF) [1] | CSF/Unit Risk | | Cancer Risk |
| | | | | | | | Value | Units | Ages 6-12 | Value | Units | Ages 6-12 [2] |
| Soil | Surface/Subsurface Soil | Unnamed Island | Ingestion | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 2.2E-07 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 4.9E-07 |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 2.2E-07 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 4.8E-06 |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 2.1E-07 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 4.6E-07 |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 1.2E-07 | mg/kg-day | 3.0E+00 | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 1.2E-07 | mg/kg-day | 3.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 2.6E-08 |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 3.1E-08 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 6.8E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 9.7E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.1E-07 |
| | | | | Chromium | 2E+02 | mg/kg | 1.5E-05 | mg/kg-day | 3.0E+00 | 5.0E-01 | (mg/kg-day) $^{-1}$ | 2.2E-05 |
| | | | Exp. Route Total | | | | | | | | | N/A |
| | | | Dermal | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 2.6E-07 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 5.6E-07 |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 2.5E-07 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 5.5E-06 |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 2.4E-07 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 5.3E-07 |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 1.4E-07 | mg/kg-day | 3.0E+00 | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 1.4E-07 | mg/kg-day | 3.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 3.0E-08 |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 3.6E-08 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 7.8E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 1.1E-07 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.4E-07 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 3.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A |
| | | | Exp. Route Total | | | | | | | | | N/A |
| | | Exposure Point Total | | | | | | | | | | N/A |
| | Exposure Medium Total | | | | | | | | | | | N/A |
| Medium Total | | | | | | | | | | | | N/A |
| Leachate | Leachate | Unnamed Island | Dermal | | | | | | | | | |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Benzo(b)fluoranthene | 2E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Benzo(k)fluoranthene | 2E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Chrysene | 3E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Dibenz(a,h)anthracene | ND | ug/L | N/A | N/A | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Chromium | 5E+00 | ug/L | 9.6E-09 | mg/kg-day | 3.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | 3.6E-10 |
| | | | Exp. Route Total | | | | | | | | | N/A |
| | | Exposure Point Total | | | | | | | | | | N/A |
| | Exposure Medium Total | | | | | | | | | | | N/A |
| Medium Total | | | | | | | | | | | | N/A |

APPENDIX F TABLE 7.3.RME

CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION

REASONABLE MAXIMUM EXPOSURE

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | Age-Dependent Adjustment Factor (ADAF) [1] | CSF/Unit Risk | | Cancer Risk |
| | | | | | | | Value | Units | Ages 6-12 | Value | Units | Ages 6-12 [2] |
| Surface Water | Surface Water | Unnamed Island | Dermal (wading) | | | | | | | | | |
| | | | | Benzo(a)anthracene | 1E-01 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Benzo(a)pyrene | 1E-01 | ug/L | N/A | N/A | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Benzo(b)fluoranthene | 3E-01 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Benzo(k)fluoranthene | ND | ug/L | N/A | N/A | 3.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Chrysene | 1E-01 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-01 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Chromium | 1E+01 | ug/L | 3.9E-08 | mg/kg-day | 3.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | 1.5E-09 |
| | | | Exp. Route Total | | | | | | | | | N/A |
| | | Exposure Point Total | | | | | | | | | | N/A |
| | Exposure Medium Total | | | | | | | | | | | N/A |
| Medium Total | | | | | | | | | | | | N/A |
| Sediment | Sediment | Unnamed Island | Ingestion | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 8.1E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.8E-07 |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 8.5E-08 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.9E-06 |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 6.2E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.4E-07 |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 5.0E-08 | mg/kg-day | 3.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.1E-08 |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 9.7E-09 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.1E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 3.7E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 8.1E-08 |
| | | | | Chromium | 2E+02 | mg/kg | 5.9E-06 | mg/kg-day | 3.0E+00 | 5.0E-01 | (mg/kg-day) $^{-1}$ | 8.8E-06 |
| | | | Exp. Route Total | | | | | | | | | N/A |
| | | | Dermal | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 1.3E-07 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.9E-07 |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 1.4E-07 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 3.0E-06 |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 1.0E-07 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.2E-07 |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 8.1E-08 | mg/kg-day | 3.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.8E-08 |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 1.6E-08 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 3.5E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 6.0E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.3E-07 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 3.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A |
| | | | Exp. Route Total | | | | | | | | | N/A |
| | | Exposure Point Total | | | | | | | | | | N/A |
| | Exposure Medium Total | | | | | | | | | | | N/A |
| Medium Total | | | | | | | | | | | | N/A |
| | | | | | | | | | | | | |
| | | | | | | | | | | | Total of Receptor Risks Across All Media | N/A |

Notes

Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the age-dependent intake/exposure concentration by the appropriate default age-dependent adjustment factor (ADAF) and the appropriate cancer slope factor (CSF) according to the following formula:

Cancer Risk = Intake (mg/kg-day) x CSF (mg/kg-day)$^{-1}$ x ADAF

[1] ADAF: 3 for ages 6-12

[2] Age-dependent cancer risk calculated by multiplying the intake/exposure concentration by the ADAF and cancer slope factor.

APPENDIX F TABLE 7.3.CT

CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | Age-Dependent Adjustment Factor (ADAF) [1] | CSF/Unit Risk | | Cancer Risk |
| | | | | | | | Value | Units | Ages 6-12 | Value | Units | Ages 6-12 [2] |
| Soil | Surface/Subsurface Soil | Unnamed Island | Ingestion | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 5.6E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.2E-07 |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 5.4E-08 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.2E-06 |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 5.3E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.2E-07 |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 3.0E-08 | mg/kg-day | 3.0E+00 | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 3.0E-08 | mg/kg-day | 3.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 6.5E-09 |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 7.8E-09 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.7E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 2.4E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 5.3E-08 |
| | | | | Chromium | 2E+02 | mg/kg | 3.7E-06 | mg/kg-day | 3.0E+00 | 5.0E-01 | (mg/kg-day) $^{-1}$ | 5.6E-06 |
| | | | Exp. Route Total | | | | | | | | | N/A |
| | | | Dermal | | | | | | | | | |
| | | | | Benzo(a)anthracene | 3E+00 | mg/kg | 1.3E-07 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.8E-07 |
| | | | | Benzo(a)pyrene | 3E+00 | mg/kg | 1.2E-07 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 2.7E-06 |
| | | | | Benzo(b)fluoranthene | 3E+00 | mg/kg | 1.2E-07 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.7E-07 |
| | | | | Benzo(g,h,i)perylene | 2E+00 | mg/kg | 6.9E-08 | mg/kg-day | 3.0E+00 | N/A | N/A | N/A |
| | | | | Benzo(k)fluoranthene | 2E+00 | mg/kg | 6.8E-08 | mg/kg-day | 3.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 1.5E-08 |
| | | | | Dibenz(a,h)anthracene | 4E-01 | mg/kg | 1.8E-08 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 3.9E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 5.6E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.2E-07 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 3.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A |
| | | | Exp. Route Total | | | | | | | | | N/A |
| | | Exposure Point Total | | | | | | | | | | N/A |
| | Exposure Medium Total | | | | | | | | | | | N/A |
| Medium Total | | | | | | | | | | | | N/A |
| Leachate | Leachate | Unnamed Island | Dermal | | | | | | | | | |
| | | | | Benzo(a)anthracene | 4E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Benzo(a)pyrene | 2E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Benzo(b)fluoranthene | 2E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Benzo(k)fluoranthene | 2E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Chrysene | 3E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Dibenz(a,h)anthracene | ND | ug/L | N/A | N/A | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 1E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Chromium | 5E+00 | ug/L | 4.8E-09 | mg/kg-day | 3.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | 1.8E-10 |
| | | | Exp. Route Total | | | | | | | | | N/A |
| | | Exposure Point Total | | | | | | | | | | N/A |
| | Exposure Medium Total | | | | | | | | | | | N/A |
| Medium Total | | | | | | | | | | | | N/A |

APPENDIX F TABLE 7.3.CT

CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION

CENTRAL TENDENCY

PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | Age-Dependent Adjustment Factor (ADAF) [1] | CSF/Unit Risk | | Cancer Risk |
| | | | | | | | Value | Units | Ages 6-12 | Value | Units | Ages 6-12 [2] |
| Surface Water | Surface Water | Unnamed Island | Dermal (wading) | | | | | | | | | |
| | | | | Benzo(a)anthracene | 1E-01 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Benzo(a)pyrene | 1E-01 | ug/L | N/A | N/A | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Benzo(b)fluoranthene | 6E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Benzo(k)fluoranthene | ND | ug/L | N/A | N/A | 3.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Chrysene | 1E-01 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-03 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Indeno(1,2,3-cd)pyrene | 5E-02 | ug/L | N/A | N/A | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | N/A |
| | | | | Chromium | 1E+01 | ug/L | 2.0E-08 | mg/kg-day | 3.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | 7.4E-10 |
| | | | Exp. Route Total | | | | | | | | | N/A |
| | | Exposure Point Total | | | | | | | | | | N/A |
| | Exposure Medium Total | | | | | | | | | | | N/A |
| Medium Total | | | | | | | | | | | | N/A |
| Sediment | Sediment | Unnamed Island | Ingestion | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 2.0E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 4.4E-08 |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 2.1E-08 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 4.6E-07 |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 1.5E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 3.4E-08 |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 1.2E-08 | mg/kg-day | 3.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 2.7E-09 |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 2.4E-09 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 5.3E-08 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 9.2E-09 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 2.0E-08 |
| | | | | Chromium | 2E+02 | mg/kg | 1.5E-06 | mg/kg-day | 3.0E+00 | 5.0E-01 | (mg/kg-day) $^{-1}$ | 2.2E-06 |
| | | | Exp. Route Total | | | | | | | | | N/A |
| | | | Dermal | | | | | | | | | |
| | | | | Benzo(a)anthracene | 2E+00 | mg/kg | 6.6E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.4E-07 |
| | | | | Benzo(a)pyrene | 2E+00 | mg/kg | 6.9E-08 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.5E-06 |
| | | | | Benzo(b)fluoranthene | 2E+00 | mg/kg | 5.0E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 1.1E-07 |
| | | | | Benzo(k)fluoranthene | 1E+00 | mg/kg | 4.1E-08 | mg/kg-day | 3.0E+00 | 7.3E-02 | (mg/kg-day) $^{-1}$ | 8.9E-09 |
| | | | | Dibenz(a,h)anthracene | 3E-01 | mg/kg | 7.9E-09 | mg/kg-day | 3.0E+00 | 7.3E+00 | (mg/kg-day) $^{-1}$ | 1.7E-07 |
| | | | | Indeno(1,2,3-cd)pyrene | 1E+00 | mg/kg | 3.0E-08 | mg/kg-day | 3.0E+00 | 7.3E-01 | (mg/kg-day) $^{-1}$ | 6.6E-08 |
| | | | | Chromium | 2E+02 | mg/kg | N/A | N/A | 3.0E+00 | 1.3E-02 | (mg/kg-day) $^{-1}$ | N/A |
| | | | Exp. Route Total | | | | | | | | | N/A |
| | | Exposure Point Total | | | | | | | | | | N/A |
| | Exposure Medium Total | | | | | | | | | | | N/A |
| Medium Total | | | | | | | | | | | | N/A |
| | | | | | | | | | | | | |
| | | | | | | | | | | | Total of Receptor Risks Across All Media | N/A |

Notes

Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the age-dependent intake/exposure concentration by the appropriate default age-dependent adjustment factor (ADAF) and the appropriate cancer slope factor (CSF) according to the following formula:

Cancer Risk = Intake (mg/kg-day) x CSF (mg/kg-day)$^{-1}$ x ADAF

[1] ADAF: 3 for ages 6-12

[2] Age-dependent cancer risk calculated by multiplying the intake/exposure concentration by the ADAF and cancer slope factor.