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Appendices F.9 – F.11

Human Health Risk Assessment Spreadsheets

Appendix F.9

Area B

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: CURRENT/FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INCIDENTAL INGESTION OF SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $\text{Intake} = \frac{Cs \times IR \times CF \times FI \times EF \times ED}{BW \times AT}$

WHERE:	Cs = :		Concentration in soil (mg/kg)
	IR = :	100	Soil Ingestion Rate (mg/day)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	250	Exposure Frequency (days/year)
	ED = :	25	Exposure Duration (years)
	BW = :	70	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	9,125	Averaging time for noncarcinogenic exposures (days)

Unit Dose		
Lifetime Chronic Daily Int:	3.5E-07	kg-soil/kg-wt/day
Chronic Daily Intake = :	9.8E-07	kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: CURRENT/FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	0.19	6.6E-08	1.9E-07	7.30E-01	NA	4.8E-08	0.4%	NA	NA
Benzo(a)pyrene	0.18	6.3E-08	1.8E-07	7.30E+00	NA	4.6E-07	3.5%	NA	NA
Benzo(b)fluoranthene	0.34	1.2E-07	3.3E-07	7.30E-01	NA	8.7E-08	0.7%	NA	NA
Indeno(1,2,3-cd)pyrene	0.12	4.2E-08	1.2E-07	7.30E-01	NA	3.1E-08	0.2%	NA	NA
Aroclor, total	3.9	1.4E-06	3.8E-06	2.00E+00	2.00E-05	2.7E-06	20.7%	1.9E-01	80.6%
Dieldrin	0.08	2.8E-08	7.8E-08	1.60E+01	5.00E-05	4.5E-07	3.4%	1.6E-03	0.7%
Arsenic	7.9	2.8E-06	7.7E-06	1.50E+00	3.00E-04	4.1E-06	31.4%	2.6E-02	10.9%
Barium	75	2.6E-05	7.3E-05	NA	7.00E-02	NA	NA	1.0E-03	0.4%
Chromium (total)	21.2	7.4E-06	2.1E-05	NA	3.00E-03	NA	NA	6.9E-03	2.9%
Manganese	373	1.3E-04	3.6E-04	NA	1.40E-01	NA	NA	2.6E-03	1.1%
Mercury	0.71	2.5E-07	6.9E-07	NA	3.00E-04	NA	NA	2.3E-03	1.0%
Nickel	16.7	5.8E-06	1.6E-05	NA	2.00E-02	NA	NA	8.2E-04	0.3%
Vanadium	34.8	1.2E-05	3.4E-05	NA	7.00E-03	NA	NA	4.9E-03	2.1%
TEQ - Dioxins/Furans	0.0001	3.5E-11	9.8E-11	1.50E+05	NA	5.2E-06	39.8%	NA	NA
					Total	**1.3E-05**	**100.0%**	**2.4E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: CURRENT/FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Absorbed Dose} = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:			
	Cs = :		Concentration in soil (mg/kg)
	CF = :	1.0E-06	Conversion factor (kg/mg)
	SA = :	2,500	Skin surface available for contact (cm^2/event)
	AF = :	0.20	Soil to skin adherence factor (mg/cm^2)
	ABS = :		Absorption factor (unitless)
	EF = :	250	Exposure frequency (events/year)
	ED = :	25	Exposure duration (years)
	BW = :	70	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	9,125	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Intake 1.7E-06 kg-soil/kg-wt/day
Chronic Daily Intake = : 4.9E-06 kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: CURRENT/FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	ABS (unitless)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	0.19	0.13	4.32E-08	1.21E-07	7.30E-01	NA	3.2E-08	0.8%	NA	NA
Benzo(a)pyrene	0.18	0.13	4.09E-08	1.14E-07	7.30E+00	NA	3.0E-07	8.0%	NA	NA
Benzo(b)fluoranthene	0.34	0.13	7.72E-08	2.16E-07	7.30E-01	NA	5.6E-08	1.5%	NA	NA
Indeno(1,2,3-cd)pyrene	0.12	0.13	2.73E-08	7.63E-08	7.30E-01	NA	2.0E-08	0.5%	NA	NA
Aroclor, total	3.9	0.14	9.54E-07	2.67E-06	2.00E+00	2.00E-05	1.9E-06	51.3%	1.3E-01	97.2%
Dieldrin	0.08	NA	NA	NA	1.60E+01	5.00E-05	NA	NA	NA	NA
Arsenic	7.9	0.03	4.14E-07	1.16E-06	1.50E+00	3.00E-04	6.2E-07	16.7%	3.9E-03	2.8%
Barium	75	NA	NA	NA	NA	4.90E-03	NA	NA	NA	NA
Chromium (total)	21.2	NA	NA	NA	NA	7.50E-05	NA	NA	NA	NA
Manganese	373	NA	NA	NA	NA	8.40E-03	NA	NA	NA	NA
Mercury	0.71	NA	NA	NA	NA	2.10E-05	NA	NA	NA	NA
Nickel	16.7	NA	NA	NA	NA	8.00E-04	NA	NA	NA	NA
Vanadium	34.8	NA	NA	NA	NA	1.80E-04	NA	NA	NA	NA
TEQ - Dioxins/Furans	0.0001	0.03	5.24E-12	1.47E-11	1.50E+05	NA	7.9E-07	21.1%	NA	NA
						Total	**3.7E-06**	**100.0%**	**1.4E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - SUMMARY

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: CURRENT/FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
Benzo(a)anthracene	4.8E-08	3.2E-08	NA	8.0E-08	0.5%	NA	NA	NA	NA	NA
Benzo(a)pyrene	4.6E-07	3.0E-07	NA	7.6E-07	4.5%	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	8.7E-08	5.6E-08	NA	1.4E-07	0.8%	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	3.1E-08	2.0E-08	NA	5.1E-08	0.3%	NA	NA	NA	NA	NA
Aroclor, total	2.7E-06	1.9E-06	NA	4.6E-06	27.4%	1.9E-01	1.3E-01	NA	3.2E-01	86.7%
Dieldrin	4.5E-07	NA	NA	4.5E-07	2.6%	1.6E-03	NA	NA	1.6E-03	0.4%
Arsenic	4.1E-06	6.2E-07	NA	4.8E-06	28.2%	2.6E-02	3.9E-03	NA	3.0E-02	7.9%
Barium	NA	NA	NA	NA	NA	1.0E-03	NA	NA	1.0E-03	0.3%
Chromium (total)	NA	NA	NA	NA	NA	6.9E-03	NA	NA	6.9E-03	1.8%
Manganese	NA	NA	NA	NA	NA	2.6E-03	NA	NA	2.6E-03	0.7%
Mercury	NA	NA	NA	NA	NA	2.3E-03	NA	NA	2.3E-03	0.6%
Nickel	NA	NA	NA	NA	NA	8.2E-04	NA	NA	8.2E-04	0.2%
Vanadium	NA	NA	NA	NA	NA	4.9E-03	NA	NA	4.9E-03	1.3%
TEQ - Dioxins/Furans	5.2E-06	7.9E-07	NA	6.0E-06	35.7%	NA	NA	NA	NA	NA
Total	**1.3E-05**	**3.7E-06**	**NA**	**1.7E-05**	**100.0%**	**2.4E-01**	**1.4E-01**	**NA**	**3.7E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: CURRENT/FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INCIDENTAL INGESTION OF SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $\text{Intake} = \frac{Cs \times IR \times CF \times FI \times EF \times ED}{BW \times AT}$

WHERE:	Cs = :		Concentration in soil (mg/kg)
	IR = :	50	Soil Ingestion Rate (mg/day)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	250	Exposure Frequency (days/year)
	ED = :	9	Exposure Duration (years)
	BW = :	70	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	3,285	Averaging time for noncarcinogenic exposures (days)

Unit Dose		
Lifetime Chronic Daily Int:	6.3E-08	kg-soil/kg-wt/day
Chronic Daily Intake = :	4.9E-07	kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: CURRENT/FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	0.19	1.2E-08	9.3E-08	7.30E-01	NA	8.7E-09	0.7%	NA	NA
Benzo(a)pyrene	0.18	1.1E-08	8.8E-08	7.30E+00	NA	8.3E-08	6.7%	NA	NA
Benzo(b)fluoranthene	0.2	1.3E-08	9.8E-08	7.30E-01	NA	9.2E-09	0.7%	NA	NA
Indeno(1,2,3-cd)pyrene	0.12	7.5E-09	5.9E-08	7.30E-01	NA	5.5E-09	0.4%	NA	NA
Aroclor, total	1.1	6.9E-08	5.4E-07	1.00E+00	2.00E-05	6.9E-08	5.6%	2.7E-02	66.0%
Dieldrin	0.021	1.3E-09	1.0E-08	1.60E+01	5.00E-05	2.1E-08	1.7%	2.1E-04	0.5%
Arsenic	4.8	3.0E-07	2.3E-06	1.50E+00	3.00E-04	4.5E-07	36.7%	7.8E-03	19.2%
Barium	44.4	2.8E-06	2.2E-05	NA	7.00E-02	NA	NA	3.1E-04	0.8%
Chromium (total)	12.9	8.1E-07	6.3E-06	NA	3.00E-03	NA	NA	2.1E-03	5.2%
Manganese	254	1.6E-05	1.2E-04	NA	1.40E-01	NA	NA	8.9E-04	2.2%
Mercury	0.33	2.1E-08	1.6E-07	NA	3.00E-04	NA	NA	5.4E-04	1.3%
Nickel	14.8	9.3E-07	7.2E-06	NA	2.00E-02	NA	NA	3.6E-04	0.9%
Vanadium	23.3	1.5E-06	1.1E-05	NA	7.00E-03	NA	NA	1.6E-03	4.0%
TEQ - Dioxins/Furans	0.000062	3.9E-12	3.0E-11	1.50E+05	NA	5.8E-07	47.4%	NA	NA
					Total	**1.2E-06**	**100.0%**	**4.1E-02**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: CURRENT/FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{AbsorbedDose} = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:			
	Cs = :		Concentration in soil (mg/kg)
	CF = :	1.0E-06	Conversion factor (kg/mg)
	SA = :	2,500	Skin surface available for contact (cm^2/event)
	AF = :	0.02	Soil to skin adherence factor (mg/cm^2)
	ABS = :		Absorption factor (unitless)
	EF = :	250	Exposure frequency (events/year)
	ED = :	9	Exposure duration (years)
	BW = :	70	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	3,285	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Intake 6.3E-08 kg-soil/kg-wt/day
Chronic Daily Intake = : 4.9E-07 kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: CURRENT/FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	ABS (unitless)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	0.19	0.13	1.55E-09	1.21E-08	7.30E-01	NA	1.1E-09	2.1%	NA	NA
Benzo(a)pyrene	0.18	0.13	1.47E-09	1.14E-08	7.30E+00	NA	1.1E-08	19.7%	NA	NA
Benzo(b)fluoranthene	0.2	0.13	1.64E-09	1.27E-08	7.30E-01	NA	1.2E-09	2.2%	NA	NA
Indeno(1,2,3-cd)pyrene	0.12	0.13	9.81E-10	7.63E-09	7.30E-01	NA	7.2E-10	1.3%	NA	NA
Aroclor, total	1.1	0.14	9.69E-09	7.53E-08	1.00E+00	2.00E-05	9.7E-09	17.7%	3.8E-03	94.1%
Dieldrin	0.021	NA	NA	NA	1.60E+01	5.00E-05	NA	NA	NA	NA
Arsenic	4.8	0.03	9.06E-09	7.05E-08	1.50E+00	3.00E-04	1.4E-08	24.9%	2.3E-04	5.9%
Barium	44.4	NA	NA	NA	NA	4.90E-03	NA	NA	NA	NA
Chromium (total)	12.9	NA	NA	NA	NA	7.50E-05	NA	NA	NA	NA
Manganese	254	NA	NA	NA	NA	8.40E-03	NA	NA	NA	NA
Mercury	0.33	NA	NA	NA	NA	2.10E-05	NA	NA	NA	NA
Nickel	14.8	NA	NA	NA	NA	8.00E-04	NA	NA	NA	NA
Vanadium	23.3	NA	NA	NA	NA	1.80E-04	NA	NA	NA	NA
TEQ - Dioxins/Furans	0.000062	0.03	1.17E-13	9.10E-13	1.50E+05	NA	1.8E-08	32.1%	NA	NA
						Total	**5.5E-08**	**100.0%**	**4.0E-03**	**100.0%**

RISK ASSESSMENT SPREADSHEET - SUMMARY

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: CURRENT/FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
Benzo(a)anthracene	8.7E-09	1.1E-09	NA	9.9E-09	0.8%	NA	NA	NA	NA	NA
Benzo(a)pyrene	8.3E-08	1.1E-08	NA	9.3E-08	7.2%	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	9.2E-09	1.2E-09	NA	1.0E-08	0.8%	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	5.5E-09	7.2E-10	NA	6.2E-09	0.5%	NA	NA	NA	NA	NA
Aroclor, total	6.9E-08	9.7E-09	NA	7.9E-08	6.1%	2.7E-02	3.8E-03	NA	3.1E-02	68.5%
Dieldrin	2.1E-08	NA	NA	2.1E-08	1.6%	2.1E-04	NA	NA	2.1E-04	0.5%
Arsenic	4.5E-07	1.4E-08	NA	4.7E-07	36.2%	7.8E-03	2.3E-04	NA	8.1E-03	18.0%
Barium	NA	NA	NA	NA	NA	3.1E-04	NA	NA	3.1E-04	0.7%
Chromium (total)	NA	NA	NA	NA	NA	2.1E-03	NA	NA	2.1E-03	4.7%
Manganese	NA	NA	NA	NA	NA	8.9E-04	NA	NA	8.9E-04	2.0%
Mercury	NA	NA	NA	NA	NA	5.4E-04	NA	NA	5.4E-04	1.2%
Nickel	NA	NA	NA	NA	NA	3.6E-04	NA	NA	3.6E-04	0.8%
Vanadium	NA	NA	NA	NA	NA	1.6E-03	NA	NA	1.6E-03	3.6%
TEQ - Dioxins/Furans	5.8E-07	1.8E-08	NA	6.0E-07	46.7%	NA	NA	NA	NA	NA
Total	**1.2E-06**	**5.5E-08**	**NA**	**1.3E-06**	**100.0%**	**4.1E-02**	**4.0E-03**	**NA**	**4.5E-02**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME - AREA #1
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INCIDENTAL INGESTION OF SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Intake} = \frac{Cs \times IR \times CF \times FI \times EF \times ED}{BW \times AT}$$

WHERE:			
	Cs = :		Concentration in soil (mg/kg)
	IR = :	100	Soil Ingestion Rate (mg/day)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	250	Exposure Frequency (days/year)
	ED = :	25	Exposure Duration (years)
	BW = :	70	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	9,125	Averaging time for noncarcinogenic exposures (days)

Unit Dose		
Lifetime Chronic Daily Intake	3.5E-07	kg-soil/kg-wt/day
Chronic Daily Intake = :	9.8E-07	kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME - AREA #1
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	0.78	2.7E-07	7.6E-07	7.30E-01	NA	2.0E-07	1.4%	NA	NA
Benzo(a)pyrene	0.49	1.7E-07	4.8E-07	7.30E+00	NA	1.3E-06	8.6%	NA	NA
Benzo(b)fluoranthene	1	3.5E-07	9.8E-07	7.30E-01	NA	2.6E-07	1.8%	NA	NA
Bis(2-ethylhexyl)phthalate	0.06	2.1E-08	5.9E-08	1.40E-02	2.00E-02	2.9E-10	0.0%	2.9E-06	0.0%
Dibenzo(a,h)anthracene	0.072	2.5E-08	7.0E-08	7.30E+00	NA	1.8E-07	1.3%	NA	NA
Indeno(1,2,3-cd)pyrene	0.28	9.8E-08	2.7E-07	7.30E-01	NA	7.1E-08	0.5%	NA	NA
Aroclor, total	3.9	1.4E-06	3.8E-06	2.00E+00	2.00E-05	2.7E-06	18.8%	1.9E-01	77.6%
Alpha-chlordane	0.016	5.6E-09	1.6E-08	3.50E-01	5.00E-04	2.0E-09	0.0%	3.1E-05	0.0%
Dieldrin	0.08	2.8E-08	7.8E-08	1.60E+01	5.00E-05	4.5E-07	3.1%	1.6E-03	0.6%
Arsenic	7.9	2.8E-06	7.7E-06	1.50E+00	3.00E-04	4.1E-06	28.5%	2.6E-02	10.5%
Barium	164	5.7E-05	1.6E-04	NA	7.00E-02	NA	NA	2.3E-03	0.9%
Cadmium	0.65	2.3E-07	6.4E-07	NA	1.00E-03	NA	NA	6.4E-04	0.3%
Chromium (total)	38.5	1.3E-05	3.8E-05	NA	3.00E-03	NA	NA	1.3E-02	5.1%
Manganese	373	1.3E-04	3.6E-04	NA	1.40E-01	NA	NA	2.6E-03	1.1%
Mercury	0.71	2.5E-07	6.9E-07	NA	3.00E-04	NA	NA	2.3E-03	0.9%
Nickel	24.2	8.5E-06	2.4E-05	NA	2.00E-02	NA	NA	1.2E-03	0.5%
Vanadium	38.3	1.3E-05	3.7E-05	NA	7.00E-03	NA	NA	5.4E-03	2.2%
Zinc	264	9.2E-05	2.6E-04	NA	3.00E-01	NA	NA	8.6E-04	0.4%
TEQ - Dioxins/Furans	0.0001	3.5E-11	9.8E-11	1.50E+05	NA	5.2E-06	36.1%	NA	NA
					Total	**1.5E-05**	**100.0%**	**2.5E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME - AREA #1
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $\text{AbsorbedDose} = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$

Where:	Cs = :		Concentration in soil (mg/kg)
	CF = :	1.0E-06	Conversion factor (kg/mg)
	SA = :	2,500	Skin surface available for contact (cm^2/event)
	AF = :	0.20	Soil to skin adherence factor (mg/cm^2)
	ABS = :		Absorption factor (unitless)
	EF = :	250	Exposure frequency (events/year)
	ED = :	25	Exposure duration (years)
	BW = :	70	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	9,125	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Int: 1.7E-06 kg-soil/kg-wt/day
Chronic Daily Intake = : 4.9E-06 kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME - AREA #1
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	ABS (unitless)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	0.78	0.13	1.77E-07	4.96E-07	7.30E-01	NA	1.3E-07	2.8%	NA	NA
Benzo(a)pyrene	0.49	0.13	1.11E-07	3.12E-07	7.30E+00	NA	8.1E-07	17.7%	NA	NA
Benzo(b)fluoranthene	1	0.13	2.27E-07	6.36E-07	7.30E-01	NA	1.7E-07	3.6%	NA	NA
Bis(2-ethylhexyl)phthalate	0.06	NA	NA	NA	1.40E-02	2.00E-02	NA	NA	NA	NA
Dibenzo(a,h)anthracene	0.072	0.13	1.64E-08	4.58E-08	7.30E+00	NA	1.2E-07	2.6%	NA	NA
Indeno(1,2,3-cd)pyrene	0.28	0.13	6.36E-08	1.78E-07	7.30E-01	NA	4.6E-08	1.0%	NA	NA
Aroclor, total	3.9	0.14	9.54E-07	2.67E-06	2.00E+00	2.00E-05	1.9E-06	41.6%	1.3E-01	96.7%
Alpha-chlordane	0.016	0.04	1.12E-09	3.13E-09	3.50E-01	5.00E-04	3.9E-10	0.0%	6.3E-06	0.0%
Dieldrin	0.08	NA	NA	NA	1.60E+01	5.00E-05	NA	NA	NA	NA
Arsenic	7.9	0.03	4.14E-07	1.16E-06	1.50E+00	3.00E-04	6.2E-07	13.5%	3.9E-03	2.8%
Barium	164	NA	NA	NA	NA	4.90E-03	NA	NA	NA	NA
Cadmium	0.65	0.01	1.14E-08	3.18E-08	NA	5.00E-05	NA	NA	6.4E-04	0.5%
Chromium (total)	38.5	NA	NA	NA	NA	7.50E-05	NA	NA	NA	NA
Manganese	373	NA	NA	NA	NA	8.40E-03	NA	NA	NA	NA
Mercury	0.71	NA	NA	NA	NA	2.10E-05	NA	NA	NA	NA
Nickel	24.2	NA	NA	NA	NA	8.00E-04	NA	NA	NA	NA
Vanadium	38.3	NA	NA	NA	NA	1.80E-04	NA	NA	NA	NA
Zinc	264	NA	NA	NA	NA	3.00E-01	NA	NA	NA	NA
TEQ - Dioxins/Furans	0.0001	0.03	5.24E-12	1.47E-11	1.50E+05	NA	7.9E-07	17.1%	NA	NA
						Total	**4.6E-06**	**100.0%**	**1.4E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - SUMMARY

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME - AREA #1
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
Benzo(a)anthracene	2.0E-07	1.3E-07	NA	3.3E-07	1.7%	NA	NA	NA	NA	NA
Benzo(a)pyrene	1.3E-06	8.1E-07	NA	2.1E-06	10.8%	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	2.6E-07	1.7E-07	NA	4.2E-07	2.2%	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	2.9E-10	NA	NA	2.9E-10	0.0%	2.9E-06	NA	NA	2.9E-06	0.0%
Dibenzo(a,h)anthracene	1.8E-07	1.2E-07	NA	3.0E-07	1.6%	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	7.1E-08	4.6E-08	NA	1.2E-07	0.6%	NA	NA	NA	NA	NA
Aroclor, total	2.7E-06	1.9E-06	NA	4.6E-06	24.3%	1.9E-01	1.3E-01	NA	3.2E-01	84.5%
Alpha-chlordane	2.0E-09	3.9E-10	NA	2.3E-09	0.0%	3.1E-05	6.3E-06	NA	3.8E-05	0.0%
Dieldrin	4.5E-07	NA	NA	4.5E-07	2.3%	1.6E-03	NA	NA	1.6E-03	0.4%
Arsenic	4.1E-06	6.2E-07	NA	4.8E-06	24.9%	2.6E-02	3.9E-03	NA	3.0E-02	7.7%
Barium	NA	NA	NA	NA	NA	2.3E-03	NA	NA	2.3E-03	0.6%
Cadmium	NA	NA	NA	NA	NA	6.4E-04	6.4E-04	NA	1.3E-03	0.3%
Chromium (total)	NA	NA	NA	NA	NA	1.3E-02	NA	NA	1.3E-02	3.3%
Manganese	NA	NA	NA	NA	NA	2.6E-03	NA	NA	2.6E-03	0.7%
Mercury	NA	NA	NA	NA	NA	2.3E-03	NA	NA	2.3E-03	0.6%
Nickel	NA	NA	NA	NA	NA	1.2E-03	NA	NA	1.2E-03	0.3%
Vanadium	NA	NA	NA	NA	NA	5.4E-03	NA	NA	5.4E-03	1.4%
Zinc	NA	NA	NA	NA	NA	8.6E-04	NA	NA	8.6E-04	0.2%
TEQ - Dioxins/Furans	5.2E-06	7.9E-07	NA	6.0E-06	31.5%	NA	NA	NA	NA	NA
Total	**1.5E-05**	**4.6E-06**	**NA**	**1.9E-05**	**100.0%**	**2.5E-01**	**1.4E-01**	**NA**	**3.8E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE - AREA #1
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INCIDENTAL INGESTION OF SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $\text{Intake} = \frac{Cs \times IR \times CF \times FI \times EF \times ED}{BW \times AT}$

WHERE:			
	Cs = :		Concentration in soil (mg/kg)
	IR = :	50	Soil Ingestion Rate (mg/day)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	250	Exposure Frequency (days/year)
	ED = :	9	Exposure Duration (years)
	BW = :	70	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	3,285	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Int: 6.3E-08 kg-soil/kg-wt/day
Chronic Daily Intake = : 4.9E-07 kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE - AREA #1
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	0.26	1.6E-08	1.3E-07	7.30E-01	NA	1.2E-08	1.2%	NA	NA
Benzo(a)pyrene	0.2	1.3E-08	9.8E-08	7.30E+00	NA	9.2E-08	9.2%	NA	NA
Benzo(b)fluoranthene	0.29	1.8E-08	1.4E-07	7.30E-01	NA	1.3E-08	1.3%	NA	NA
Bis(2-ethylhexyl)phthalate	0.06	3.8E-09	2.9E-08	1.40E-02	2.00E-02	5.3E-11	0.0%	1.5E-06	0.0%
Dibenzo(a,h)anthracene	0.072	4.5E-09	3.5E-08	7.30E+00	NA	3.3E-08	3.3%	NA	NA
Indeno(1,2,3-cd)pyrene	0.17	1.1E-08	8.3E-08	7.30E-01	NA	7.8E-09	0.8%	NA	NA
Aroclor, total	0.63	4.0E-08	3.1E-07	1.00E+00	2.00E-05	4.0E-08	4.0%	1.5E-02	51.4%
Alpha-chlordane	0.003	1.9E-10	1.5E-09	3.50E-01	5.00E-04	6.6E-11	0.0%	2.9E-06	0.0%
Dieldrin	0.012	7.5E-10	5.9E-09	1.60E+01	5.00E-05	1.2E-08	1.2%	1.2E-04	0.4%
Arsenic	4.5	2.8E-07	2.2E-06	1.50E+00	3.00E-04	4.2E-07	42.8%	7.3E-03	24.5%
Barium	61.7	3.9E-06	3.0E-05	NA	7.00E-02	NA	NA	4.3E-04	1.4%
Cadmium	0.33	2.1E-08	1.6E-07	NA	1.00E-03	NA	NA	1.6E-04	0.5%
Chromium (total)	18.5	1.2E-06	9.1E-06	NA	3.00E-03	NA	NA	3.0E-03	10.1%
Manganese	235	1.5E-05	1.1E-04	NA	1.40E-01	NA	NA	8.2E-04	2.7%
Mercury	0.25	1.6E-08	1.2E-07	NA	3.00E-04	NA	NA	4.1E-04	1.4%
Nickel	14.8	9.3E-07	7.2E-06	NA	2.00E-02	NA	NA	3.6E-04	1.2%
Vanadium	24.1	1.5E-06	1.2E-05	NA	7.00E-03	NA	NA	1.7E-03	5.6%
Zinc	138	8.7E-06	6.8E-05	NA	3.00E-01	NA	NA	2.3E-04	0.8%
TEQ - Dioxins/Furans	0.000038	2.4E-12	1.9E-11	1.50E+05	NA	3.6E-07	36.1%	NA	NA
					Total	**9.9E-07**	**100.0%**	**3.0E-02**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE - AREA #1
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $\text{Absorbed Dose} = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$

Where:			
	Cs = :		Concentration in soil (mg/kg)
	CF = :	1.0E-06	Conversion factor (kg/mg)
	SA = :	2,500	Skin surface available for contact (cm^2/event)
	AF = :	0.02	Soil to skin adherence factor (mg/cm^2)
	ABS = :		Absorption factor (unitless)
	EF = :	250	Exposure frequency (events/year)
	ED = :	9	Exposure duration (years)
	BW = :	70	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	3,285	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Intz 6.3E-08 kg-soil/kg-wt/day
Chronic Daily Intake = : 4.9E-07 kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE - AREA #1
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	ABS (unitless)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	0.26	0.13	2.13E-09	1.65E-08	7.30E-01	NA	1.6E-09	3.1%	NA	NA
Benzo(a)pyrene	0.2	0.13	1.64E-09	1.27E-08	7.30E+00	NA	1.2E-08	24.1%	NA	NA
Benzo(b)fluoranthene	0.29	0.13	2.37E-09	1.84E-08	7.30E-01	NA	1.7E-09	3.5%	NA	NA
Bis(2-ethylhexyl)phthalate	0.06	NA	NA	NA	1.40E-02	2.00E-02	NA	NA	NA	NA
Dibenzo(a,h)anthracene	0.072	0.13	5.89E-10	4.58E-09	7.30E+00	NA	4.3E-09	8.7%	NA	NA
Indeno(1,2,3-cd)pyrene	0.17	0.13	1.39E-09	1.08E-08	7.30E-01	NA	1.0E-09	2.0%	NA	NA
Aroclor, total	0.63	0.14	5.55E-09	4.32E-08	1.00E+00	2.00E-05	5.5E-09	11.2%	2.2E-03	89.5%
Alpha-chlordane	0.003	0.04	7.55E-12	5.87E-11	3.50E-01	5.00E-04	2.6E-12	0.0%	1.2E-07	0.0%
Dieldrin	0.012	NA	NA	NA	1.60E+01	5.00E-05	NA	NA	NA	NA
Arsenic	4.5	0.03	8.49E-09	6.60E-08	1.50E+00	3.00E-04	1.3E-08	25.7%	2.2E-04	9.1%
Barium	61.7	NA	NA	NA	NA	4.90E-03	NA	NA	NA	NA
Cadmium	0.33	0.01	2.08E-10	1.61E-09	NA	5.00E-05	NA	NA	3.2E-05	1.3%
Chromium (total)	18.5	NA	NA	NA	NA	7.50E-05	NA	NA	NA	NA
Manganese	235	NA	NA	NA	NA	8.40E-03	NA	NA	NA	NA
Mercury	0.25	NA	NA	NA	NA	2.10E-05	NA	NA	NA	NA
Nickel	14.8	NA	NA	NA	NA	8.00E-04	NA	NA	NA	NA
Vanadium	24.1	NA	NA	NA	NA	1.80E-04	NA	NA	NA	NA
Zinc	138	NA	NA	NA	NA	3.00E-01	NA	NA	NA	NA
TEQ - Dioxins/Furans	0.000038	0.03	7.17E-14	5.58E-13	1.50E+05	NA	1.1E-08	21.7%	NA	NA
						Total	**5.0E-08**	**100.0%**	**2.4E-03**	**100.0%**

RISK ASSESSMENT SPREADSHEET - SUMMARY

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE - AREA #1
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
Benzo(a)anthracene	1.2E-08	1.6E-09	NA	1.3E-08	1.3%	NA	NA	NA	NA	NA
Benzo(a)pyrene	9.2E-08	1.2E-08	NA	1.0E-07	10.0%	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1.3E-08	1.7E-09	NA	1.5E-08	1.4%	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	5.3E-11	NA	NA	5.3E-11	0.0%	1.5E-06	NA	NA	1.5E-06	0.0%
Dibenzo(a,h)anthracene	3.3E-08	4.3E-09	NA	3.7E-08	3.6%	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	7.8E-09	1.0E-09	NA	8.8E-09	0.8%	NA	NA	NA	NA	NA
Aroclor, total	4.0E-08	5.5E-09	NA	4.5E-08	4.3%	1.5E-02	2.2E-03	NA	1.8E-02	54.2%
Alpha-chlordane	6.6E-11	2.6E-12	NA	6.9E-11	0.0%	2.9E-06	1.2E-07	NA	3.1E-06	0.0%
Dieldrin	1.2E-08	NA	NA	1.2E-08	1.2%	1.2E-04	NA	NA	1.2E-04	0.4%
Arsenic	4.2E-07	1.3E-08	NA	4.4E-07	42.0%	7.3E-03	2.2E-04	NA	7.6E-03	23.3%
Barium	NA	NA	NA	NA	NA	4.3E-04	NA	NA	4.3E-04	1.3%
Cadmium	NA	NA	NA	NA	NA	1.6E-04	3.2E-05	NA	1.9E-04	0.6%
Chromium (total)	NA	NA	NA	NA	NA	3.0E-03	NA	NA	3.0E-03	9.3%
Manganese	NA	NA	NA	NA	NA	8.2E-04	NA	NA	8.2E-04	2.5%
Mercury	NA	NA	NA	NA	NA	4.1E-04	NA	NA	4.1E-04	1.3%
Nickel	NA	NA	NA	NA	NA	3.6E-04	NA	NA	3.6E-04	1.1%
Vanadium	NA	NA	NA	NA	NA	1.7E-03	NA	NA	1.7E-03	5.2%
Zinc	NA	NA	NA	NA	NA	2.3E-04	NA	NA	2.3E-04	0.7%
TEQ - Dioxins/Furans	3.6E-07	1.1E-08	NA	3.7E-07	35.4%	NA	NA	NA	NA	NA
Total	**9.9E-07**	**5.0E-08**	**NA**	**1.0E-06**	**100.0%**	**3.0E-02**	**2.4E-03**	**NA**	**3.2E-02**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME - AREA #2
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INCIDENTAL INGESTION OF SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Intake} = \frac{Cs \times IR \times CF \times FI \times EF \times ED}{BW \times AT}$$

WHERE:			
	Cs = :		Concentration in soil (mg/kg)
	IR = :	100	Soil Ingestion Rate (mg/day)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	250	Exposure Frequency (days/year)
	ED = :	25	Exposure Duration (years)
	BW = :	70	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	9,125	Averaging time for noncarcinogenic exposures (days)

Unit Dose		
Lifetime Chronic Daily Intake	3.5E-07	kg-soil/kg-wt/day
Chronic Daily Intake = :	9.8E-07	kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME - AREA #2
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	10	3.5E-06	9.8E-06	7.30E-01	NA	2.6E-06	2.1%	NA	NA
Benzo(a)pyrene	7.1	2.5E-06	6.9E-06	7.30E+00	NA	1.8E-05	15.0%	NA	NA
Benzo(b)fluoranthene	13	4.5E-06	1.3E-05	7.30E-01	NA	3.3E-06	2.8%	NA	NA
Bis(2-ethylhexyl)phthalate	0.8	2.8E-07	7.8E-07	1.40E-02	2.00E-02	3.9E-09	0.0%	3.9E-05	0.0%
Dibenzo(a,h)anthracene	0.62	2.2E-07	6.1E-07	7.30E+00	NA	1.6E-06	1.3%	NA	NA
Indeno(1,2,3-cd)pyrene	2	7.0E-07	2.0E-06	7.30E-01	NA	5.1E-07	0.4%	NA	NA
Aroclor, total	97	3.4E-05	9.5E-05	2.00E+00	2.00E-05	6.8E-05	56.3%	4.7E+00	94.3%
Alpha-chlordane	0.13	4.5E-08	1.3E-07	3.50E-01	5.00E-04	1.6E-08	0.0%	2.5E-04	0.0%
Dieldrin	0.24	8.4E-08	2.3E-07	1.60E+01	5.00E-05	1.3E-06	1.1%	4.7E-03	0.1%
Antimony	18.9	6.6E-06	1.8E-05	NA	4.00E-04	NA	NA	4.6E-02	0.9%
Arsenic	13.1	4.6E-06	1.3E-05	1.50E+00	3.00E-04	6.9E-06	5.7%	4.3E-02	0.8%
Barium	2180	7.6E-04	2.1E-03	NA	7.00E-02	NA	NA	3.0E-02	0.6%
Cadmium	2.5	8.7E-07	2.4E-06	NA	1.00E-03	NA	NA	2.4E-03	0.0%
Chromium (total)	332	1.2E-04	3.2E-04	NA	3.00E-03	NA	NA	1.1E-01	2.2%
Manganese	295	1.0E-04	2.9E-04	NA	1.40E-01	NA	NA	2.1E-03	0.0%
Mercury	1.2	4.2E-07	1.2E-06	NA	3.00E-04	NA	NA	3.9E-03	0.1%
Nickel	58.1	2.0E-05	5.7E-05	NA	2.00E-02	NA	NA	2.8E-03	0.1%
Thallium	2.2	7.7E-07	2.2E-06	NA	6.60E-05	NA	NA	3.3E-02	0.6%
Vanadium	69.3	2.4E-05	6.8E-05	NA	7.00E-03	NA	NA	9.7E-03	0.2%
Zinc	400	1.4E-04	3.9E-04	NA	3.00E-01	NA	NA	1.3E-03	0.0%
TEQ - Dioxins/Furans	0.00035	1.2E-10	3.4E-10	1.50E+05	NA	1.8E-05	15.2%	NA	NA
					Total	**1.2E-04**	**100.0%**	**5.0E+00**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME - AREA #2
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $\text{AbsorbedDose} = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$

Where:			
	Cs = :		Concentration in soil (mg/kg)
	CF = :	1.0E-06	Conversion factor (kg/mg)
	SA = :	2,500	Skin surface available for contact (cm^2/event)
	AF = :	0.20	Soil to skin adherence factor (mg/cm^2)
	ABS = :		Absorption factor (unitless)
	EF = :	250	Exposure frequency (events/year)
	ED = :	25	Exposure duration (years)
	BW = :	70	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	9,125	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Int: 1.7E-06 kg-soil/kg-wt/day
Chronic Daily Intake = : 4.9E-06 kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME - AREA #2
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	ABS (unitless)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	10	0.13	2.27E-06	6.36E-06	7.30E-01	NA	1.7E-06	2.4%	NA	NA
Benzo(a)pyrene	7.1	0.13	1.61E-06	4.52E-06	7.30E+00	NA	1.2E-05	17.3%	NA	NA
Benzo(b)fluoranthene	13	0.13	2.95E-06	8.27E-06	7.30E-01	NA	2.2E-06	3.2%	NA	NA
Bis(2-ethylhexyl)phthalate	0.8	NA	NA	NA	1.40E-02	2.00E-02	NA	NA	NA	NA
Dibenzo(a,h)anthracene	0.62	0.13	1.41E-07	3.94E-07	7.30E+00	NA	1.0E-06	1.5%	NA	NA
Indeno(1,2,3-cd)pyrene	2	0.13	4.54E-07	1.27E-06	7.30E-01	NA	3.3E-07	0.5%	NA	NA
Aroclor, total	97	0.14	2.37E-05	6.64E-05	2.00E+00	2.00E-05	4.7E-05	69.6%	3.3E+00	98.4%
Alpha-chlordane	0.13	0.04	9.09E-09	2.54E-08	3.50E-01	5.00E-04	3.2E-09	0.0%	5.1E-05	0.0%
Dieldrin	0.24	NA	NA	NA	1.60E+01	5.00E-05	NA	NA	NA	NA
Antimony	18.9	0.03	9.91E-07	2.77E-06	NA	6.00E-05	NA	NA	4.6E-02	1.4%
Arsenic	13.1	0.03	6.87E-07	1.92E-06	1.50E+00	3.00E-04	1.0E-06	1.5%	6.4E-03	0.2%
Barium	2180	NA	NA	NA	NA	4.90E-03	NA	NA	NA	NA
Cadmium	2.5	0.01	4.37E-08	1.22E-07	NA	5.00E-05	NA	NA	2.4E-03	0.1%
Chromium (total)	332	NA	NA	NA	NA	7.50E-05	NA	NA	NA	NA
Manganese	295	NA	NA	NA	NA	8.40E-03	NA	NA	NA	NA
Mercury	1.2	NA	NA	NA	NA	2.10E-05	NA	NA	NA	NA
Nickel	58.1	NA	NA	NA	NA	8.00E-04	NA	NA	NA	NA
Thallium	2.2	NA	NA	NA	NA	6.60E-05	NA	NA	NA	NA
Vanadium	69.3	NA	NA	NA	NA	1.80E-04	NA	NA	NA	NA
Zinc	400	NA	NA	NA	NA	3.00E-01	NA	NA	NA	NA
TEQ - Dioxins/Furans	0.00035	0.03	1.83E-11	5.14E-11	1.50E+05	NA	2.8E-06	4.0%	NA	NA
						Total	**6.8E-05**	**100.0%**	**3.4E+00**	**100.0%**

RISK ASSESSMENT SPREADSHEET - SUMMARY

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - RME - AREA #2
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
Benzo(a)anthracene	2.6E-06	1.7E-06	NA	4.2E-06	2.2%	NA	NA	NA	NA	NA
Benzo(a)pyrene	1.8E-05	1.2E-05	NA	3.0E-05	15.8%	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	3.3E-06	2.2E-06	NA	5.5E-06	2.9%	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	3.9E-09	NA	NA	3.9E-09	0.0%	3.9E-05	NA	NA	3.9E-05	0.0%
Dibenzo(a,h)anthracene	1.6E-06	1.0E-06	NA	2.6E-06	1.4%	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	5.1E-07	3.3E-07	NA	8.4E-07	0.4%	NA	NA	NA	NA	NA
Aroclor, total	6.8E-05	4.7E-05	NA	1.2E-04	61.1%	4.7E+00	3.3E+00	NA	8.1E+00	95.9%
Alpha-chlordane	1.6E-08	3.2E-09	NA	1.9E-08	0.0%	2.5E-04	5.1E-05	NA	3.1E-04	0.0%
Dieldrin	1.3E-06	NA	NA	1.3E-06	0.7%	4.7E-03	NA	NA	4.7E-03	0.1%
Antimony	NA	NA	NA	NA	NA	4.6E-02	4.6E-02	NA	9.2E-02	1.1%
Arsenic	6.9E-06	1.0E-06	NA	7.9E-06	4.2%	4.3E-02	6.4E-03	NA	4.9E-02	0.6%
Barium	NA	NA	NA	NA	NA	3.0E-02	NA	NA	3.0E-02	0.4%
Cadmium	NA	NA	NA	NA	NA	2.4E-03	2.4E-03	NA	4.9E-03	0.1%
Chromium (total)	NA	NA	NA	NA	NA	1.1E-01	NA	NA	1.1E-01	1.3%
Manganese	NA	NA	NA	NA	NA	2.1E-03	NA	NA	2.1E-03	0.0%
Mercury	NA	NA	NA	NA	NA	3.9E-03	NA	NA	3.9E-03	0.0%
Nickel	NA	NA	NA	NA	NA	2.8E-03	NA	NA	2.8E-03	0.0%
Thallium	NA	NA	NA	NA	NA	3.3E-02	NA	NA	3.3E-02	0.4%
Vanadium	NA	NA	NA	NA	NA	9.7E-03	NA	NA	9.7E-03	0.1%
Zinc	NA	NA	NA	NA	NA	1.3E-03	NA	NA	1.3E-03	0.0%
TEQ - Dioxins/Furans	1.8E-05	2.8E-06	NA	2.1E-05	11.2%	NA	NA	NA	NA	NA
Total	**1.2E-04**	**6.8E-05**	**NA**	**1.9E-04**	**100.0%**	**5.0E+00**	**3.4E+00**	**NA**	**8.4E+00**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE - AREA #2
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INCIDENTAL INGESTION OF SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $\text{Intake} = \frac{Cs \times IR \times CF \times FI \times EF \times ED}{BW \times AT}$

WHERE:			
	Cs = :		Concentration in soil (mg/kg)
	IR = :	50	Soil Ingestion Rate (mg/day)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	250	Exposure Frequency (days/year)
	ED = :	9	Exposure Duration (years)
	BW = :	70	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	3,285	Averaging time for noncarcinogenic exposures (days)

Unit Dose		
Lifetime Chronic Daily Int:	6.3E-08	kg-soil/kg-wt/day
Chronic Daily Intake = :	4.9E-07	kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE - AREA #2
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	1.9	1.2E-07	9.3E-07	7.30E-01	NA	8.7E-08	1.3%	NA	NA
Benzo(a)pyrene	7.1	4.5E-07	3.5E-06	7.30E+00	NA	3.3E-06	47.3%	NA	NA
Benzo(b)fluoranthene	2.4	1.5E-07	1.2E-06	7.30E-01	NA	1.1E-07	1.6%	NA	NA
Bis(2-ethylhexyl)phthalate	0.8	5.0E-08	3.9E-07	1.40E-02	2.00E-02	7.0E-10	0.0%	2.0E-05	0.0%
Dibenzo(a,h)anthracene	0.62	3.9E-08	3.0E-07	7.30E+00	NA	2.8E-07	4.1%	NA	NA
Indeno(1,2,3-cd)pyrene	2	1.3E-07	9.8E-07	7.30E-01	NA	9.2E-08	1.3%	NA	NA
Aroclor, total	7.1	4.5E-07	3.5E-06	1.00E+00	2.00E-05	4.5E-07	6.5%	1.7E-01	58.6%
Alpha-chlordane	0.13	8.2E-09	6.4E-08	3.50E-01	5.00E-04	2.9E-09	0.0%	1.3E-04	0.0%
Dieldrin	0.24	1.5E-08	1.2E-07	1.60E+01	5.00E-05	2.4E-07	3.5%	2.3E-03	0.8%
Antimony	7.3	4.6E-07	3.6E-06	NA	4.00E-04	NA	NA	8.9E-03	3.0%
Arsenic	13.1	8.2E-07	6.4E-06	1.50E+00	3.00E-04	1.2E-06	17.9%	2.1E-02	7.2%
Barium	2180	1.4E-04	1.1E-03	NA	7.00E-02	NA	NA	1.5E-02	5.1%
Cadmium	2.5	1.6E-07	1.2E-06	NA	1.00E-03	NA	NA	1.2E-03	0.4%
Chromium (total)	332	2.1E-05	1.6E-04	NA	3.00E-03	NA	NA	5.4E-02	18.3%
Manganese	295	1.9E-05	1.4E-04	NA	1.40E-01	NA	NA	1.0E-03	0.3%
Mercury	1.2	7.5E-08	5.9E-07	NA	3.00E-04	NA	NA	2.0E-03	0.7%
Nickel	58.1	3.7E-06	2.8E-05	NA	2.00E-02	NA	NA	1.4E-03	0.5%
Thallium	1.3	8.2E-08	6.4E-07	NA	6.60E-05	NA	NA	9.6E-03	3.2%
Vanadium	69.3	4.4E-06	3.4E-05	NA	7.00E-03	NA	NA	4.8E-03	1.6%
Zinc	400	2.5E-05	2.0E-04	NA	3.00E-01	NA	NA	6.5E-04	0.2%
TEQ - Dioxins/Furans	0.00012	7.5E-12	5.9E-11	1.50E+05	NA	1.1E-06	16.4%	NA	NA
					Total	**6.9E-06**	**100.0%**	**3.0E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE - AREA #2
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $\text{Absorbed Dose} = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$

Where:	Cs = :		Concentration in soil (mg/kg)
	CF = :	1.0E-06	Conversion factor (kg/mg)
	SA = :	2,500	Skin surface available for contact (cm^2/event)
	AF = :	0.02	Soil to skin adherence factor (mg/cm^2)
	ABS = :		Absorption factor (unitless)
	EF = :	250	Exposure frequency (events/year)
	ED = :	9	Exposure duration (years)
	BW = :	70	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	3,285	Averaging time for noncarcinogenic exposures (days)

Unit Dose		
Lifetime Chronic Daily Int	6.3E-08	kg-soil/kg-wt/day
Chronic Daily Intake = :	4.9E-07	kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE - AREA #2
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	ABS (unitless)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	1.9	0.13	1.55E-08	1.21E-07	7.30E-01	NA	1.1E-08	1.8%	NA	NA
Benzo(a)pyrene	7.1	0.13	5.81E-08	4.52E-07	7.30E+00	NA	4.2E-07	67.0%	NA	NA
Benzo(b)fluoranthene	2.4	0.13	1.96E-08	1.53E-07	7.30E-01	NA	1.4E-08	2.3%	NA	NA
Bis(2-ethylhexyl)phthalate	0.8	NA	NA	NA	1.40E-02	2.00E-02	NA	NA	NA	NA
Dibenzo(a,h)anthracene	0.62	0.13	5.07E-09	3.94E-08	7.30E+00	NA	3.7E-08	5.9%	NA	NA
Indeno(1,2,3-cd)pyrene	2	0.13	1.64E-08	1.27E-07	7.30E-01	NA	1.2E-08	1.9%	NA	NA
Aroclor, total	7.1	0.14	6.25E-08	4.86E-07	1.00E+00	2.00E-05	6.3E-08	9.9%	2.4E-02	95.5%
Alpha-chlordane	0.13	0.04	3.27E-10	2.54E-09	3.50E-01	5.00E-04	1.1E-10	0.0%	5.1E-06	0.0%
Dieldrin	0.24	NA	NA	NA	1.60E+01	5.00E-05	NA	NA	NA	NA
Antimony	7.3	0.03	1.38E-08	1.07E-07	NA	4.00E-04	NA	NA	2.7E-04	1.1%
Arsenic	13.1	0.03	2.47E-08	1.92E-07	1.50E+00	3.00E-04	3.7E-08	5.9%	6.4E-04	2.5%
Barium	2180	NA	NA	NA	NA	4.90E-03	NA	NA	NA	NA
Cadmium	2.5	0.01	1.57E-09	1.22E-08	NA	5.00E-05	NA	NA	2.4E-04	1.0%
Chromium (total)	332	NA	NA	NA	NA	7.50E-05	NA	NA	NA	NA
Manganese	295	NA	NA	NA	NA	8.40E-03	NA	NA	NA	NA
Mercury	1.2	NA	NA	NA	NA	2.10E-05	NA	NA	NA	NA
Nickel	58.1	NA	NA	NA	NA	8.00E-04	NA	NA	NA	NA
Thallium	1.3	NA	NA	NA	NA	6.60E-05	NA	NA	NA	NA
Vanadium	69.3	NA	NA	NA	NA	1.80E-04	NA	NA	NA	NA
Zinc	400	NA	NA	NA	NA	3.00E-01	NA	NA	NA	NA
TEQ - Dioxins/Furans	0.00012	0.03	2.26E-13	1.76E-12	1.50E+05	NA	3.4E-08	5.4%	NA	NA
						Total	**6.3E-07**	**100.0%**	**2.5E-02**	**100.0%**

RISK ASSESSMENT SPREADSHEET - SUMMARY

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: FUTURE COMMERCIAL/INDUSTRIAL WORKER - CTE - AREA #2
MEDIA: ALL SOIL
DATE: AUGUST 3, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
Benzo(a)anthracene	8.7E-08	1.1E-08	NA	9.9E-08	1.3%	NA	NA	NA	NA	NA
Benzo(a)pyrene	3.3E-06	4.2E-07	NA	3.7E-06	48.9%	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1.1E-07	1.4E-08	NA	1.2E-07	1.7%	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	7.0E-10	NA	NA	7.0E-10	0.0%	2.0E-05	NA	NA	2.0E-05	0.0%
Dibenzo(a,h)anthracene	2.8E-07	3.7E-08	NA	3.2E-07	4.3%	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	9.2E-08	1.2E-08	NA	1.0E-07	1.4%	NA	NA	NA	NA	NA
Aroclor, total	4.5E-07	6.3E-08	NA	5.1E-07	6.8%	1.7E-01	2.4E-02	NA	2.0E-01	61.5%
Alpha-chlordane	2.9E-09	1.1E-10	NA	3.0E-09	0.0%	1.3E-04	5.1E-06	NA	1.3E-04	0.0%
Dieldrin	2.4E-07	NA	NA	2.4E-07	3.2%	2.3E-03	NA	NA	2.3E-03	0.7%
Antimony	NA	NA	NA	NA	NA	8.9E-03	2.7E-04	NA	9.2E-03	2.9%
Arsenic	1.2E-06	3.7E-08	NA	1.3E-06	16.9%	2.1E-02	6.4E-04	NA	2.2E-02	6.8%
Barium	NA	NA	NA	NA	NA	1.5E-02	NA	NA	1.5E-02	4.7%
Cadmium	NA	NA	NA	NA	NA	1.2E-03	2.4E-04	NA	1.5E-03	0.5%
Chromium (total)	NA	NA	NA	NA	NA	5.4E-02	NA	NA	5.4E-02	16.8%
Manganese	NA	NA	NA	NA	NA	1.0E-03	NA	NA	1.0E-03	0.3%
Mercury	NA	NA	NA	NA	NA	2.0E-03	NA	NA	2.0E-03	0.6%
Nickel	NA	NA	NA	NA	NA	1.4E-03	NA	NA	1.4E-03	0.4%
Thallium	NA	NA	NA	NA	NA	9.6E-03	NA	NA	9.6E-03	3.0%
Vanadium	NA	NA	NA	NA	NA	4.8E-03	NA	NA	4.8E-03	1.5%
Zinc	NA	NA	NA	NA	NA	6.5E-04	NA	NA	6.5E-04	0.2%
TEQ - Dioxins/Furans	1.1E-06	3.4E-08	NA	1.2E-06	15.5%	NA	NA	NA	NA	NA
Total	**6.9E-06**	**6.3E-07**	**NA**	**7.5E-06**	**100.0%**	**3.0E-01**	**2.5E-02**	**NA**	**3.2E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INCIDENTAL INGESTION OF SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Intake} = \frac{Cs \times IR \times CF \times FI \times EF \times ED}{BW \times AT}$$

WHERE:			
	Cs = :		Concentration in soil (mg/kg)
	IR = :	100	Soil Ingestion Rate (mg/day)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	20	Exposure Frequency (days/year)
	ED = :	24	Exposure Duration (years)
	BW = :	70	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	8,760	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Intake = 2.7E-08 kg-soil/kg-wt/day
Chronic Daily Intake = : 7.8E-08 kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	3	8.1E-08	2.3E-07	7.30E-01	NA	5.9E-08	2.1%	NA	NA
Benzo(a)pyrene	3.1	8.3E-08	2.4E-07	7.30E+00	NA	6.1E-07	21.5%	NA	NA
Benzo(b)fluoranthene	5.4	1.4E-07	4.2E-07	7.30E-01	NA	1.1E-07	3.7%	NA	NA
Bis(2-ethylhexyl)phthalate	39	1.0E-06	3.1E-06	1.40E-02	2.00E-02	1.5E-08	0.5%	1.5E-04	0.2%
Dibenzo(a,h)anthracene	1.8	4.8E-08	1.4E-07	7.30E+00	NA	3.5E-07	12.5%	NA	NA
Indeno(1,2,3-cd)pyrene	2.2	5.9E-08	1.7E-07	7.30E-01	NA	4.3E-08	1.5%	NA	NA
Aroclor, total	18	4.8E-07	1.4E-06	2.00E+00	2.00E-05	9.7E-07	34.2%	7.0E-02	83.6%
Dieldrin	0.035	9.4E-10	2.7E-09	1.60E+01	5.00E-05	1.5E-08	0.5%	5.5E-05	0.1%
Antimony	6.8	1.8E-07	5.3E-07	NA	4.00E-04	NA	NA	1.3E-03	1.6%
Arsenic	9.5	2.5E-07	7.4E-07	1.50E+00	3.00E-04	3.8E-07	13.5%	2.5E-03	2.9%
Barium	717	1.9E-05	5.6E-05	NA	7.00E-02	NA	NA	8.0E-04	1.0%
Cadmium	12	3.2E-07	9.4E-07	NA	1.00E-03	NA	NA	9.4E-04	1.1%
Chromium (total)	255	6.8E-06	2.0E-05	NA	3.00E-03	NA	NA	6.7E-03	7.9%
Manganese	422	1.1E-05	3.3E-05	NA	1.40E-01	NA	NA	2.4E-04	0.3%
Mercury	1.2	3.2E-08	9.4E-08	NA	3.00E-04	NA	NA	3.1E-04	0.4%
Nickel	89.1	2.4E-06	7.0E-06	NA	2.00E-02	NA	NA	3.5E-04	0.4%
Vanadium	49.1	1.3E-06	3.8E-06	NA	7.00E-03	NA	NA	5.5E-04	0.7%
TEQ - Dioxins/Furans	0.00007	1.9E-12	5.5E-12	1.50E+05	NA	2.8E-07	10.0%	NA	NA
					Total	**2.8E-06**	**100.0%**	**8.4E-02**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION:

$$\text{AbsorbedDose} = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:			
	Cs = :		Concentration in soil (mg/kg)
	CF = :	1.0E-06	Conversion factor (kg/mg)
	SA = :	5,700	Skin surface available for contact (cm^2/event)
	AF = :	0.3	Soil to skin adherence factor (mg/cm^2)
	ABS = :		Absorption factor (unitless)
	EF = :	20	Exposure frequency (events/year)
	ED = :	24	Exposure duration (years)
	BW = :	70	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	8,760	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Intake : 4.6E-07 kg-soil/kg-wt/day
Chronic Daily Intake = : 1.3E-06 kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	ABS (unitless)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	3	0.13	1.79E-07	5.22E-07	7.30E-01	NA	1.3E-07	2.5%	NA	NA
Benzo(a)pyrene	3.1	0.13	1.85E-07	5.39E-07	7.30E+00	NA	1.4E-06	25.7%	NA	NA
Benzo(b)fluoranthene	5.4	0.13	3.22E-07	9.40E-07	7.30E-01	NA	2.4E-07	4.5%	NA	NA
Bis(2-ethylhexyl)phthalate	39	NA	NA	NA	1.40E-02	2.00E-02	NA	NA	NA	NA
Dibenzo(a,h)anthracene	1.8	0.13	1.07E-07	3.13E-07	7.30E+00	NA	7.8E-07	14.9%	NA	NA
Indeno(1,2,3-cd)pyrene	2.2	0.13	1.31E-07	3.83E-07	7.30E-01	NA	9.6E-08	1.8%	NA	NA
Aroclor, total	18	0.14	1.16E-06	3.37E-06	2.00E+00	2.00E-05	2.3E-06	44.1%	1.7E-01	97.4%
Dieldrin	0.035	NA	NA	NA	1.60E+01	5.00E-05	NA	NA	NA	NA
Antimony	6.8	NA	NA	NA	NA	6.00E-05	NA	NA	NA	NA
Arsenic	9.5	0.03	1.31E-07	3.81E-07	1.50E+00	3.00E-04	2.0E-07	3.7%	1.3E-03	0.7%
Barium	717	NA	NA	NA	NA	4.90E-03	NA	NA	NA	NA
Cadmium	12	0.01	5.51E-08	1.61E-07	NA	5.00E-05	NA	NA	3.2E-03	1.9%
Chromium (total)	255	NA	NA	NA	NA	7.50E-05	NA	NA	NA	NA
Manganese	422	NA	NA	NA	NA	8.40E-03	NA	NA	NA	NA
Mercury	1.2	NA	NA	NA	NA	2.10E-05	NA	NA	NA	NA
Nickel	89.1	NA	NA	NA	NA	8.00E-04	NA	NA	NA	NA
Vanadium	49.1	NA	NA	NA	NA	1.80E-04	NA	NA	NA	NA
TEQ - Dioxins/Furans	0.00007	0.03	9.64E-13	2.81E-12	1.50E+05	NA	1.4E-07	2.8%	NA	NA
						Total	**5.2E-06**	**100.0%**	**1.7E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - SUMMARY

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
Benzo(a)anthracene	5.9E-08	1.3E-07	NA	1.9E-07	2.3%	NA	NA	NA	NA	NA
Benzo(a)pyrene	6.1E-07	1.4E-06	NA	2.0E-06	24.2%	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1.1E-07	2.4E-07	NA	3.4E-07	4.2%	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	1.5E-08	NA	NA	1.5E-08	0.2%	1.5E-04	NA	NA	1.5E-04	0.1%
Dibenzo(a,h)anthracene	3.5E-07	7.8E-07	NA	1.1E-06	14.1%	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	4.3E-08	9.6E-08	NA	1.4E-07	1.7%	NA	NA	NA	NA	NA
Aroclor, total	9.7E-07	2.3E-06	NA	3.3E-06	40.6%	7.0E-02	1.7E-01	NA	2.4E-01	92.9%
Dieldrin	1.5E-08	NA	NA	1.5E-08	0.2%	5.5E-05	NA	NA	5.5E-05	0.0%
Antimony	NA	NA	NA	NA	NA	1.3E-03	NA	NA	1.3E-03	0.5%
Arsenic	3.8E-07	2.0E-07	NA	5.8E-07	7.2%	2.5E-03	1.3E-03	NA	3.8E-03	1.5%
Barium	NA	NA	NA	NA	NA	8.0E-04	NA	NA	8.0E-04	0.3%
Cadmium	NA	NA	NA	NA	NA	9.4E-04	3.2E-03	NA	4.2E-03	1.6%
Chromium (total)	NA	NA	NA	NA	NA	6.7E-03	NA	NA	6.7E-03	2.6%
Manganese	NA	NA	NA	NA	NA	2.4E-04	NA	NA	2.4E-04	0.1%
Mercury	NA	NA	NA	NA	NA	3.1E-04	NA	NA	3.1E-04	0.1%
Nickel	NA	NA	NA	NA	NA	3.5E-04	NA	NA	3.5E-04	0.1%
Vanadium	NA	NA	NA	NA	NA	5.5E-04	NA	NA	5.5E-04	0.2%
TEQ - Dioxins/Furans	2.8E-07	1.4E-07	NA	4.3E-07	5.3%	NA	NA	NA	NA	NA
Total	**2.8E-06**	**5.2E-06**	**NA**	**8.1E-06**	**100.0%**	**8.4E-02**	**1.7E-01**	**NA**	**2.6E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INCIDENTAL INGESTION OF SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Intake} = \frac{Cs \times IR \times CF \times FI \times EF \times ED}{BW \times AT}$$

WHERE:			
	Cs = :		Concentration in soil (mg/kg)
	IR = :	50	Soil Ingestion Rate (mg/day)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	20	Exposure Frequency (days/year)
	ED = :	7	Exposure Duration (years)
	BW = :	70	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	2,555	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Intake = 3.9E-09 kg-soil/kg-wt/day
Chronic Daily Intake = : 3.9E-08 kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	3	1.2E-08	1.2E-07	7.30E-01	NA	8.6E-09	2.6%	NA	NA
Benzo(a)pyrene	3.1	1.2E-08	1.2E-07	7.30E+00	NA	8.9E-08	26.8%	NA	NA
Benzo(b)fluoranthene	5.4	2.1E-08	2.1E-07	7.30E-01	NA	1.5E-08	4.7%	NA	NA
Bis(2-ethylhexyl)phthalate	12	4.7E-08	4.7E-07	1.40E-02	2.00E-02	6.6E-10	0.2%	2.3E-05	0.1%
Dibenzo(a,h)anthracene	1.5	5.9E-09	5.9E-08	7.30E+00	NA	4.3E-08	13.0%	NA	NA
Indeno(1,2,3-cd)pyrene	1.5	5.9E-09	5.9E-08	7.30E-01	NA	4.3E-09	1.3%	NA	NA
Aroclor, total	18	7.0E-08	7.0E-07	1.00E+00	2.00E-05	7.0E-08	21.4%	3.5E-02	83.7%
Dieldrin	0.035	1.4E-10	1.4E-09	1.60E+01	5.00E-05	2.2E-09	0.7%	2.7E-05	0.1%
Antimony	6.8	2.7E-08	2.7E-07	NA	4.00E-04	NA	NA	6.7E-04	1.6%
Arsenic	9.5	3.7E-08	3.7E-07	1.50E+00	3.00E-04	5.6E-08	16.9%	1.2E-03	2.9%
Barium	717	2.8E-06	2.8E-05	NA	7.00E-02	NA	NA	4.0E-04	1.0%
Cadmium	12	4.7E-08	4.7E-07	NA	1.00E-03	NA	NA	4.7E-04	1.1%
Chromium (total)	255	1.0E-06	1.0E-05	NA	3.00E-03	NA	NA	3.3E-03	7.9%
Manganese	422	1.7E-06	1.7E-05	NA	1.40E-01	NA	NA	1.2E-04	0.3%
Mercury	1.2	4.7E-09	4.7E-08	NA	3.00E-04	NA	NA	1.6E-04	0.4%
Nickel	89.1	3.5E-07	3.5E-06	NA	2.00E-02	NA	NA	1.7E-04	0.4%
Vanadium	49.1	1.9E-07	1.9E-06	NA	7.00E-03	NA	NA	2.7E-04	0.7%
TEQ - Dioxins/Furans	0.00007	2.7E-13	2.7E-12	1.50E+05	NA	4.1E-08	12.5%	NA	NA
					Total	**3.3E-07**	**100.0%**	**4.2E-02**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: **AREA B, DELBUONO WETLANDS**
LOCATION: **FERRY CREEK, STRATFORD, CT**
EXPOSURE SCENARIO: **WETLAND/MARSH RECEPTOR - ADULT - CTE**
MEDIA: **SURFACE SOIL**
DATE: **AUGUST 3, 2000**

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION:

$$\text{Absorbed Dose} = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:			
	Cs = :		Concentration in soil (mg/kg)
	CF = :	1.0E-06	Conversion factor (kg/mg)
	SA = :	5,700	Skin surface available for contact (cm^2/event)
	AF = :	0.04	Soil to skin adherence factor (mg/cm^2)
	ABS = :		Absorption factor (unitless)
	EF = :	20	Exposure frequency (events/year)
	ED = :	7	Exposure duration (years)
	BW = :	70	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	2,555	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Intake : 1.8E-08 kg-soil/kg-wt/day
Chronic Daily Intake = : 1.8E-07 kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	ABS (unitless)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	3	0.13	6.96E-09	6.96E-08	7.30E-01	NA	5.1E-09	3.3%	NA	NA
Benzo(a)pyrene	3.1	0.13	7.19E-09	7.19E-08	7.30E+00	NA	5.3E-08	34.3%	NA	NA
Benzo(b)fluoranthene	5.4	0.13	1.25E-08	1.25E-07	7.30E-01	NA	9.1E-09	6.0%	NA	NA
Bis(2-ethylhexyl)phthalate	12	NA	NA	NA	1.40E-02	2.00E-02	NA	NA	NA	NA
Dibenzo(a,h)anthracene	1.5	0.13	3.48E-09	3.48E-08	7.30E+00	NA	2.5E-08	16.6%	NA	NA
Indeno(1,2,3-cd)pyrene	1.5	0.13	3.48E-09	3.48E-08	7.30E-01	NA	2.5E-09	1.7%	NA	NA
Aroclor, total	18	0.14	4.50E-08	4.50E-07	1.00E+00	2.00E-05	4.5E-08	29.4%	2.2E-02	97.4%
Dieldrin	0.035	NA	NA	NA	1.60E+01	5.00E-05	NA	NA	NA	NA
Antimony	6.8	NA	NA	NA	NA	6.00E-05	NA	NA	NA	NA
Arsenic	9.5	0.03	5.09E-09	5.09E-08	1.50E+00	3.00E-04	7.6E-09	5.0%	1.7E-04	0.7%
Barium	717	NA	NA	NA	NA	4.90E-03	NA	NA	NA	NA
Cadmium	12	0.01	2.14E-09	2.14E-08	NA	5.00E-05	NA	NA	4.3E-04	1.9%
Chromium (total)	255	NA	NA	NA	NA	7.50E-05	NA	NA	NA	NA
Manganese	422	NA	NA	NA	NA	8.40E-03	NA	NA	NA	NA
Mercury	1.2	NA	NA	NA	NA	2.10E-05	NA	NA	NA	NA
Nickel	89.1	NA	NA	NA	NA	8.00E-04	NA	NA	NA	NA
Vanadium	49.1	NA	NA	NA	NA	1.80E-04	NA	NA	NA	NA
TEQ - Dioxins/Furans	0.00007	0.03	3.75E-14	3.75E-13	1.50E+05	NA	5.6E-09	3.7%	NA	NA
						Total	**1.5E-07**	**100.0%**	**2.3E-02**	**100.0%**

RISK ASSESSMENT SPREADSHEET - SUMMARY

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
Benzo(a)anthracene	8.6E-09	5.1E-09	NA	1.4E-08	2.8%	NA	NA	NA	NA	NA
Benzo(a)pyrene	8.9E-08	5.3E-08	NA	1.4E-07	29.2%	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1.5E-08	9.1E-09	NA	2.5E-08	5.1%	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	6.6E-10	NA	NA	6.6E-10	0.1%	2.3E-05	NA	NA	2.3E-05	0.0%
Dibenzo(a,h)anthracene	4.3E-08	2.5E-08	NA	6.8E-08	14.1%	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	4.3E-09	2.5E-09	NA	6.8E-09	1.4%	NA	NA	NA	NA	NA
Aroclor, total	7.0E-08	4.5E-08	NA	1.2E-07	23.9%	3.5E-02	2.2E-02	NA	5.8E-02	88.5%
Dieldrin	2.2E-09	NA	NA	2.2E-09	0.5%	2.7E-05	NA	NA	2.7E-05	0.0%
Antimony	NA	NA	NA	NA	NA	6.7E-04	NA	NA	6.7E-04	1.0%
Arsenic	5.6E-08	7.6E-09	NA	6.3E-08	13.1%	1.2E-03	1.7E-04	NA	1.4E-03	2.2%
Barium	NA	NA	NA	NA	NA	4.0E-04	NA	NA	4.0E-04	0.6%
Cadmium	NA	NA	NA	NA	NA	4.7E-04	4.3E-04	NA	9.0E-04	1.4%
Chromium (total)	NA	NA	NA	NA	NA	3.3E-03	NA	NA	3.3E-03	5.1%
Manganese	NA	NA	NA	NA	NA	1.2E-04	NA	NA	1.2E-04	0.2%
Mercury	NA	NA	NA	NA	NA	1.6E-04	NA	NA	1.6E-04	0.2%
Nickel	NA	NA	NA	NA	NA	1.7E-04	NA	NA	1.7E-04	0.3%
Vanadium	NA	NA	NA	NA	NA	2.7E-04	NA	NA	2.7E-04	0.4%
TEQ - Dioxins/Furans	4.1E-08	5.6E-09	NA	4.7E-08	9.7%	NA	NA	NA	NA	NA
Total	**3.3E-07**	**1.5E-07**	**NA**	**4.8E-07**	**100.0%**	**4.2E-02**	**2.3E-02**	**NA**	**6.5E-02**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - PRE-ADOLESCENT - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INCIDENTAL INGESTION OF SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Intake} = \frac{Cs \times IR \times CF \times FI \times EF \times ED}{BW \times AT}$$

WHERE:			
	Cs = :		Concentration in soil (mg/kg)
	IR = :	100	Soil Ingestion Rate (mg/day)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	20	Exposure Frequency (days/year)
	ED = :	6	Exposure Duration (years)
	BW = :	31	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	2,190	Averaging time for noncarcinogenic exposures (days)

Unit Dose

Lifetime Chronic Daily Int	1.5E-08	kg-soil/kg-wt/day
Chronic Daily Intake = :	1.8E-07	kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - PRE-ADOLESCENT - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	3	4.5E-08	5.3E-07	7.30E-01	NA	3.3E-08	2.1%	NA	NA
Benzo(a)pyrene	3.1	4.7E-08	5.5E-07	7.30E+00	NA	3.4E-07	21.5%	NA	NA
Benzo(b)fluoranthene	5.4	8.2E-08	9.5E-07	7.30E-01	NA	6.0E-08	3.7%	NA	NA
Bis(2-ethylhexyl)phthalate	39	5.9E-07	6.9E-06	1.40E-02	2.00E-02	8.3E-09	0.5%	3.4E-04	0.2%
Dibenzo(a,h)anthracene	1.8	2.7E-08	3.2E-07	7.30E+00	NA	2.0E-07	12.5%	NA	NA
Indeno(1,2,3-cd)pyrene	2.2	3.3E-08	3.9E-07	7.30E-01	NA	2.4E-08	1.5%	NA	NA
Aroclor, total	18	2.7E-07	3.2E-06	2.00E+00	2.00E-05	5.5E-07	34.2%	1.6E-01	89.9%
Dieldrin	0.035	5.3E-10	6.2E-09	1.60E+01	5.00E-05	8.5E-09	0.5%	1.2E-04	0.1%
Antimony	6.8	1.0E-07	1.2E-06	NA	4.00E-04	NA	NA	3.0E-03	1.7%
Arsenic	9.5	1.4E-07	1.7E-06	1.50E+00	3.00E-04	2.2E-07	13.5%	5.6E-03	3.2%
Barium	717	1.1E-05	1.3E-04	NA	7.00E-02	NA	NA	1.8E-03	1.0%
Cadmium	12	1.8E-07	2.1E-06	NA	1.00E-03	NA	NA	2.1E-03	1.2%
Chromium (total)	255	3.9E-06	4.5E-05	NA	2.00E-02	NA	NA	2.3E-03	1.3%
Manganese	422	6.4E-06	7.5E-05	NA	1.40E-01	NA	NA	5.3E-04	0.3%
Mercury	1.2	1.8E-08	2.1E-07	NA	3.00E-03	NA	NA	7.1E-05	0.0%
Nickel	89.1	1.3E-06	1.6E-05	NA	2.00E-02	NA	NA	7.9E-04	0.4%
Vanadium	49.1	7.4E-07	8.7E-06	NA	7.00E-03	NA	NA	1.2E-03	0.7%
TEQ - Dioxins/Furans	0.00007	1.1E-12	1.2E-11	1.50E+05	NA	1.6E-07	10.0%	NA	NA
					Total	**1.6E-06**	**100.0%**	**1.8E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - PRE-ADOLESCENT - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Absorbed Dose} = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:			
	Cs = :		Concentration in soil (mg/kg)
	CF = :	1.0E-06	Conversion factor (kg/mg)
	SA = :	3,200	Skin surface available for contact (cm^2/event)
	AF = :	1.0	Soil to skin adherence factor (mg/cm^2)
	ABS = :		Absorption factor (unitless)
	EF = :	20	Exposure frequency (events/year)
	ED = :	6	Exposure duration (years)
	BW = :	31	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	2,190	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Intake 4.8E-07 kg-soil/kg-wt/day
Chronic Daily Intake = : 5.7E-06 kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - PRE-ADOLESCENT - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	ABS (unitless)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	3	0.13	1.89E-07	2.21E-06	7.30E-01	NA	1.4E-07	2.5%	NA	NA
Benzo(a)pyrene	3.1	0.13	1.95E-07	2.28E-06	7.30E+00	NA	1.4E-06	25.7%	NA	NA
Benzo(b)fluoranthene	5.4	0.13	3.40E-07	3.97E-06	7.30E-01	NA	2.5E-07	4.5%	NA	NA
Bis(2-ethylhexyl)phthalate	39	NA	NA	NA	1.40E-02	2.00E-02	NA	NA	NA	NA
Dibenzo(a,h)anthracene	1.8	0.13	1.13E-07	1.32E-06	7.30E+00	NA	8.3E-07	14.9%	NA	NA
Indeno(1,2,3-cd)pyrene	2.2	0.13	1.39E-07	1.62E-06	7.30E-01	NA	1.0E-07	1.8%	NA	NA
Aroclor, total	18	0.14	1.22E-06	1.43E-05	2.00E+00	2.00E-05	2.4E-06	44.1%	7.1E-01	97.4%
Dieldrin	0.035	NA	NA	NA	1.60E+01	5.00E-05	NA	NA	NA	NA
Antimony	6.8	NA	NA	NA	NA	6.00E-05	NA	NA	NA	NA
Arsenic	9.5	0.03	1.38E-07	1.61E-06	1.50E+00	3.00E-04	2.1E-07	3.7%	5.4E-03	0.7%
Barium	717	NA	NA	NA	NA	4.90E-03	NA	NA	NA	NA
Cadmium	12	0.01	5.82E-08	6.79E-07	NA	5.00E-05	NA	NA	1.4E-02	1.9%
Chromium (total)	255	NA	NA	NA	NA	5.00E-04	NA	NA	NA	NA
Manganese	422	NA	NA	NA	NA	8.40E-03	NA	NA	NA	NA
Mercury	1.2	NA	NA	NA	NA	2.10E-04	NA	NA	NA	NA
Nickel	89.1	NA	NA	NA	NA	8.00E-04	NA	NA	NA	NA
Vanadium	49.1	NA	NA	NA	NA	1.80E-04	NA	NA	NA	NA
TEQ - Dioxins/Furans	0.00007	0.03	1.02E-12	1.19E-11	1.50E+05	NA	1.5E-07	2.8%	NA	NA
						Total	**5.5E-06**	**100.0%**	**7.3E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - SUMMARY

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - PRE-ADOLESCENT - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
Benzo(a)anthracene	3.3E-08	1.4E-07	NA	1.7E-07	2.4%	NA	NA	NA	NA	NA
Benzo(a)pyrene	3.4E-07	1.4E-06	NA	1.8E-06	24.8%	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	6.0E-08	2.5E-07	NA	3.1E-07	4.3%	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	8.3E-09	NA	NA	8.3E-09	0.1%	3.4E-04	NA	NA	3.4E-04	0.0%
Dibenzo(a,h)anthracene	2.0E-07	8.3E-07	NA	1.0E-06	14.4%	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	2.4E-08	1.0E-07	NA	1.3E-07	1.8%	NA	NA	NA	NA	NA
Aroclor, total	5.5E-07	2.4E-06	NA	3.0E-06	41.9%	1.6E-01	7.1E-01	NA	8.7E-01	95.9%
Dieldrin	8.5E-09	NA	NA	8.5E-09	0.1%	1.2E-04	NA	NA	1.2E-04	0.0%
Antimony	NA	NA	NA	NA	NA	3.0E-03	NA	NA	3.0E-03	0.3%
Arsenic	2.2E-07	2.1E-07	NA	4.2E-07	5.9%	5.6E-03	5.4E-03	NA	1.1E-02	1.2%
Barium	NA	NA	NA	NA	NA	1.8E-03	NA	NA	1.8E-03	0.2%
Cadmium	NA	NA	NA	NA	NA	2.1E-03	1.4E-02	NA	1.6E-02	1.7%
Chromium (total)	NA	NA	NA	NA	NA	2.3E-03	NA	NA	2.3E-03	0.2%
Manganese	NA	NA	NA	NA	NA	5.3E-04	NA	NA	5.3E-04	0.1%
Mercury	NA	NA	NA	NA	NA	7.1E-05	NA	NA	7.1E-05	0.0%
Nickel	NA	NA	NA	NA	NA	7.9E-04	NA	NA	7.9E-04	0.1%
Vanadium	NA	NA	NA	NA	NA	1.2E-03	NA	NA	1.2E-03	0.1%
TEQ - Dioxins/Furans	1.6E-07	1.5E-07	NA	3.1E-07	4.4%	NA	NA	NA	NA	NA
Total	**1.6E-06**	**5.5E-06**	**NA**	**7.1E-06**	**100.0%**	**1.8E-01**	**7.3E-01**	**NA**	**9.1E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - PRE-ADOLESCENT - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INCIDENTAL INGESTION OF SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $\text{Intake} = \frac{Cs \times IR \times CF \times FI \times EF \times ED}{BW \times AT}$

WHERE:			
	Cs = :		Concentration in soil (mg/kg)
	IR = :	50	Soil Ingestion Rate (mg/day)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	20	Exposure Frequency (days/year)
	ED = :	2	Exposure Duration (years)
	BW = :	31	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	730	Averaging time for noncarcinogenic exposures (days)

Unit Dose		
Lifetime Chronic Daily Int	2.5E-09	kg-soil/kg-wt/day
Chronic Daily Intake = :	8.8E-08	kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - PRE-ADOLESCENT - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	3	7.6E-09	2.7E-07	7.30E-01	NA	5.5E-09	2.6%	NA	NA
Benzo(a)pyrene	3.1	7.8E-09	2.7E-07	7.30E+00	NA	5.7E-08	26.8%	NA	NA
Benzo(b)fluoranthene	5.4	1.4E-08	4.8E-07	7.30E-01	NA	1.0E-08	4.7%	NA	NA
Bis(2-ethylhexyl)phthalate	12	3.0E-08	1.1E-06	1.40E-02	2.00E-02	4.2E-10	0.2%	5.3E-05	0.1%
Dibenzo(a,h)anthracene	1.5	3.8E-09	1.3E-07	7.30E+00	NA	2.8E-08	13.0%	NA	NA
Indeno(1,2,3-cd)pyrene	1.5	3.8E-09	1.3E-07	7.30E-01	NA	2.8E-09	1.3%	NA	NA
Aroclor, total	18	4.5E-08	1.6E-06	1.00E+00	2.00E-05	4.5E-08	21.4%	8.0E-02	90.0%
Dieldrin	0.035	8.8E-11	3.1E-09	1.60E+01	5.00E-05	1.4E-09	0.7%	6.2E-05	0.1%
Antimony	6.8	1.7E-08	6.0E-07	NA	4.00E-04	NA	NA	1.5E-03	1.7%
Arsenic	9.5	2.4E-08	8.4E-07	1.50E+00	3.00E-04	3.6E-08	16.9%	2.8E-03	3.2%
Barium	717	1.8E-06	6.3E-05	NA	7.00E-02	NA	NA	9.1E-04	1.0%
Cadmium	12	3.0E-08	1.1E-06	NA	1.00E-03	NA	NA	1.1E-03	1.2%
Chromium (total)	255	6.4E-07	2.3E-05	NA	2.00E-02	NA	NA	1.1E-03	1.3%
Manganese	422	1.1E-06	3.7E-05	NA	1.40E-01	NA	NA	2.7E-04	0.3%
Mercury	1.2	3.0E-09	1.1E-07	NA	3.00E-03	NA	NA	3.5E-05	0.0%
Nickel	89.1	2.2E-07	7.9E-06	NA	2.00E-02	NA	NA	3.9E-04	0.4%
Vanadium	49.1	1.2E-07	4.3E-06	NA	7.00E-03	NA	NA	6.2E-04	0.7%
TEQ - Dioxins/Furans	0.00007	1.8E-13	6.2E-12	1.50E+05	NA	2.7E-08	12.5%	NA	NA
					Total	**2.1E-07**	**100.0%**	**8.8E-02**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - PRE-ADOLESCENT - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION:

$$\text{Absorbed Dose} = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:			
	Cs = :		Concentration in soil (mg/kg)
	CF = :	1.0E-06	Conversion factor (kg/mg)
	SA = :	3,200	Skin surface available for contact (cm^2/event)
	AF = :	0.2	Soil to skin adherence factor (mg/cm^2)
	ABS = :		Absorption factor (unitless)
	EF = :	20	Exposure frequency (events/year)
	ED = :	2	Exposure duration (years)
	BW = :	31	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	730	Averaging time for noncarcinogenic exposures (days)

Unit Dose		
Lifetime Chronic Daily Intake	3.2E-08	kg-soil/kg-wt/day
Chronic Daily Intake = :	1.1E-06	kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - PRE-ADOLESCENT - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	ABS (unitless)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	3	0.13	1.26E-08	4.41E-07	7.30E-01	NA	9.2E-09	3.3%	NA	NA
Benzo(a)pyrene	3.1	0.13	1.30E-08	4.56E-07	7.30E+00	NA	9.5E-08	34.3%	NA	NA
Benzo(b)fluoranthene	5.4	0.13	2.27E-08	7.94E-07	7.30E-01	NA	1.7E-08	6.0%	NA	NA
Bis(2-ethylhexyl)phthalate	12	NA	NA	NA	1.40E-02	2.00E-02	NA	NA	NA	NA
Dibenzo(a,h)anthracene	1.5	0.13	6.30E-09	2.21E-07	7.30E+00	NA	4.6E-08	16.6%	NA	NA
Indeno(1,2,3-cd)pyrene	1.5	0.13	6.30E-09	2.21E-07	7.30E-01	NA	4.6E-09	1.7%	NA	NA
Aroclor, total	18	0.14	8.14E-08	2.85E-06	1.00E+00	2.00E-05	8.1E-08	29.4%	1.4E-01	97.4%
Dieldrin	0.035	NA	NA	NA	1.60E+01	5.00E-05	NA	NA	NA	NA
Antimony	6.8	NA	NA	NA	NA	6.00E-05	NA	NA	NA	NA
Arsenic	9.5	0.03	9.21E-09	3.22E-07	1.50E+00	3.00E-04	1.4E-08	5.0%	1.1E-03	0.7%
Barium	717	NA	NA	NA	NA	4.90E-03	NA	NA	NA	NA
Cadmium	12	0.01	3.88E-09	1.36E-07	NA	5.00E-05	NA	NA	2.7E-03	1.9%
Chromium (total)	255	NA	NA	NA	NA	5.00E-04	NA	NA	NA	NA
Manganese	422	NA	NA	NA	NA	8.40E-03	NA	NA	NA	NA
Mercury	1.2	NA	NA	NA	NA	2.10E-04	NA	NA	NA	NA
Nickel	89.1	NA	NA	NA	NA	8.00E-04	NA	NA	NA	NA
Vanadium	49.1	NA	NA	NA	NA	1.80E-04	NA	NA	NA	NA
TEQ - Dioxins/Furans	0.00007	0.03	6.79E-14	2.38E-12	1.50E+05	NA	1.0E-08	3.7%	NA	NA
						Total	2.8E-07	100.0%	1.5E-01	100.0%

RISK ASSESSMENT SPREADSHEET - SUMMARY

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - PRE-ADOLESCENT - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
Benzo(a)anthracene	5.5E-09	9.2E-09	NA	1.5E-08	3.0%	NA	NA	NA	NA	NA
Benzo(a)pyrene	5.7E-08	9.5E-08	NA	1.5E-07	31.1%	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1.0E-08	1.7E-08	NA	2.7E-08	5.4%	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	4.2E-10	NA	NA	4.2E-10	0.1%	5.3E-05	NA	NA	5.3E-05	0.0%
Dibenzo(a,h)anthracene	2.8E-08	4.6E-08	NA	7.4E-08	15.0%	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	2.8E-09	4.6E-09	NA	7.4E-09	1.5%	NA	NA	NA	NA	NA
Aroclor, total	4.5E-08	8.1E-08	NA	1.3E-07	25.9%	8.0E-02	1.4E-01	NA	2.2E-01	94.6%
Dieldrin	1.4E-09	NA	NA	1.4E-09	0.3%	6.2E-05	NA	NA	6.2E-05	0.0%
Antimony	NA	NA	NA	NA	NA	1.5E-03	NA	NA	1.5E-03	0.6%
Arsenic	3.6E-08	1.4E-08	NA	5.0E-08	10.2%	2.8E-03	1.1E-03	NA	3.9E-03	1.7%
Barium	NA	NA	NA	NA	NA	9.1E-04	NA	NA	9.1E-04	0.4%
Cadmium	NA	NA	NA	NA	NA	1.1E-03	2.7E-03	NA	3.8E-03	1.6%
Chromium (total)	NA	NA	NA	NA	NA	1.1E-03	NA	NA	1.1E-03	0.5%
Manganese	NA	NA	NA	NA	NA	2.7E-04	NA	NA	2.7E-04	0.1%
Mercury	NA	NA	NA	NA	NA	3.5E-05	NA	NA	3.5E-05	0.0%
Nickel	NA	NA	NA	NA	NA	3.9E-04	NA	NA	3.9E-04	0.2%
Vanadium	NA	NA	NA	NA	NA	6.2E-04	NA	NA	6.2E-04	0.3%
TEQ - Dioxins/Furans	2.7E-08	1.0E-08	NA	3.7E-08	7.5%	NA	NA	NA	NA	NA
Total	**2.1E-07**	**2.8E-07**	**NA**	**4.9E-07**	**100.0%**	**8.8E-02**	**1.5E-01**	**NA**	**2.3E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: ADOLESCENT TRESPASSER - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INCIDENTAL INGESTION OF SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $\text{Intake} = \frac{Cs \times IR \times CF \times FI \times EF \times ED}{BW \times AT}$

WHERE:			
	Cs = :		Concentration in soil (mg/kg)
	IR = :	100	Soil Ingestion Rate (mg/day)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	52	Exposure Frequency (days/year)
	ED = :	10	Exposure Duration (years)
	BW = :	51	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	3,650	Averaging time for noncarcinogenic exposures (days)

Unit Dose		
Lifetime Chronic Daily Int	4.0E-08	kg-soil/kg-wt/day
Chronic Daily Intake = :	2.8E-07	kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: ADOLESCENT TRESPASSER - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	6.1	2.4E-07	1.7E-06	7.30E-01	NA	1.8E-07	3.6%	NA	NA
Benzo(a)pyrene	4	1.6E-07	1.1E-06	7.30E+00	NA	1.2E-06	23.4%	NA	NA
Benzo(b)fluoranthene	10	4.0E-07	2.8E-06	7.30E-01	NA	2.9E-07	5.8%	NA	NA
Bis(2-ethylhexyl)phthalate	5.1	2.0E-07	1.4E-06	1.40E-02	2.00E-02	2.8E-09	0.1%	7.1E-05	0.1%
Dibenzo(a,h)anthracene	0.73	2.9E-08	2.0E-07	7.30E+00	NA	2.1E-07	4.3%	NA	NA
Indeno(1,2,3-cd)pyrene	1.7	6.8E-08	4.7E-07	7.30E-01	NA	5.0E-08	1.0%	NA	NA
Aroclor, total	4	1.6E-07	1.1E-06	2.00E+00	2.00E-05	3.2E-07	6.4%	5.6E-02	52.7%
Dieldrin	0.0061	2.4E-10	1.7E-09	1.60E+01	5.00E-05	3.9E-09	0.1%	3.4E-05	0.0%
Antimony	8.3	3.3E-07	2.3E-06	NA	4.00E-04	NA	NA	5.8E-03	5.5%
Arsenic	11.2	4.5E-07	3.1E-06	1.50E+00	3.00E-04	6.7E-07	13.4%	1.0E-02	9.8%
Barium	1010	4.0E-05	2.8E-04	NA	7.00E-02	NA	NA	4.0E-03	3.8%
Cadmium	1.8	7.2E-08	5.0E-07	NA	1.00E-03	NA	NA	5.0E-04	0.5%
Chromium (total)	270	1.1E-05	7.5E-05	NA	3.00E-03	NA	NA	2.5E-02	23.7%
Manganese	239	9.5E-06	6.7E-05	NA	1.40E-01	NA	NA	4.8E-04	0.4%
Mercury	0.95	3.8E-08	2.7E-07	NA	3.00E-04	NA	NA	8.8E-04	0.8%
Nickel	44.9	1.8E-06	1.3E-05	NA	2.00E-02	NA	NA	6.3E-04	0.6%
Vanadium	55.6	2.2E-06	1.6E-05	NA	7.00E-03	NA	NA	2.2E-03	2.1%
TEQ - Dioxins/Furans	0.00035	1.4E-11	9.8E-11	1.50E+05	NA	2.1E-06	42.0%	NA	NA
					Total	**5.0E-06**	**100.0%**	**1.1E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: ADOLESCENT TRESPASSER - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Absorbed Dose} = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:			
	Cs = :		Concentration in soil (mg/kg)
	CF = :	1.0E-06	Conversion factor (kg/mg)
	SA = :	3,500	Skin surface available for contact (cm^2/event)
	AF = :	0.07	Soil to skin adherence factor (mg/cm^2)
	ABS = :		Absorption factor (unitless)
	EF = :	52	Exposure frequency (events/year)
	ED = :	10	Exposure duration (years)
	BW = :	51	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	3,650	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Intake : 9.8E-08 kg-soil/kg-wt/day
Chronic Daily Intake = : 6.8E-07 kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: ADOLESCENT TRESPASSER - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	ABS (unitless)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	6.1	0.13	7.75E-08	5.43E-07	7.30E-01	NA	5.7E-08	6.2%	NA	NA
Benzo(a)pyrene	4	0.13	5.08E-08	3.56E-07	7.30E+00	NA	3.7E-07	40.5%	NA	NA
Benzo(b)fluoranthene	10	0.13	1.27E-07	8.90E-07	7.30E-01	NA	9.3E-08	10.1%	NA	NA
Bis(2-ethylhexyl)phthalate	5.1	NA	NA	NA	1.40E-02	2.00E-02	NA	NA	NA	NA
Dibenzo(a,h)anthracene	0.73	0.13	9.28E-09	6.49E-08	7.30E+00	NA	6.8E-08	7.4%	NA	NA
Indeno(1,2,3-cd)pyrene	1.7	0.13	2.16E-08	1.51E-07	7.30E-01	NA	1.6E-08	1.7%	NA	NA
Aroclor, total	4	0.14	5.48E-08	3.83E-07	2.00E+00	2.00E-05	1.1E-07	11.9%	1.9E-02	95.0%
Dieldrin	0.0061	NA	NA	NA	1.60E+01	5.00E-05	NA	NA	NA	NA
Antimony	8.3	NA	NA	NA	NA	6.00E-05	NA	NA	NA	NA
Arsenic	11.2	0.03	3.29E-08	2.30E-07	1.50E+00	3.00E-04	4.9E-08	5.4%	7.7E-04	3.8%
Barium	1010	NA	NA	NA	NA	4.90E-03	NA	NA	NA	NA
Cadmium	1.8	0.01	1.76E-09	1.23E-08	NA	5.00E-05	NA	NA	2.5E-04	1.2%
Chromium (total)	270	NA	NA	NA	NA	7.50E-05	NA	NA	NA	NA
Manganese	239	NA	NA	NA	NA	8.40E-03	NA	NA	NA	NA
Mercury	0.95	NA	NA	NA	NA	2.10E-05	NA	NA	NA	NA
Nickel	44.9	NA	NA	NA	NA	8.00E-04	NA	NA	NA	NA
Vanadium	55.6	NA	NA	NA	NA	1.80E-04	NA	NA	NA	NA
TEQ - Dioxins/Furans	0.00035	0.03	1.03E-12	7.19E-12	1.50E+05	NA	1.5E-07	16.8%	NA	NA
						Total	**9.2E-07**	**100.0%**	**2.0E-02**	**100.0%**

RISK ASSESSMENT SPREADSHEET - SUMMARY

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: ADOLESCENT TRESPASSER - RME
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
Benzo(a)anthracene	1.8E-07	5.7E-08	NA	2.3E-07	4.0%	NA	NA	NA	NA	NA
Benzo(a)pyrene	1.2E-06	3.7E-07	NA	1.5E-06	26.0%	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	2.9E-07	9.3E-08	NA	3.8E-07	6.5%	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	2.8E-09	NA	NA	2.8E-09	0.0%	7.1E-05	NA	NA	7.1E-05	0.1%
Dibenzo(a,h)anthracene	2.1E-07	6.8E-08	NA	2.8E-07	4.7%	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	5.0E-08	1.6E-08	NA	6.5E-08	1.1%	NA	NA	NA	NA	NA
Aroclor, total	3.2E-07	1.1E-07	NA	4.3E-07	7.3%	5.6E-02	1.9E-02	NA	7.5E-02	59.4%
Dieldrin	3.9E-09	NA	NA	3.9E-09	0.1%	3.4E-05	NA	NA	3.4E-05	0.0%
Antimony	NA	NA	NA	NA	NA	5.8E-03	NA	NA	5.8E-03	4.6%
Arsenic	6.7E-07	4.9E-08	NA	7.2E-07	12.2%	1.0E-02	7.7E-04	NA	1.1E-02	8.9%
Barium	NA	NA	NA	NA	NA	4.0E-03	NA	NA	4.0E-03	3.2%
Cadmium	NA	NA	NA	NA	NA	5.0E-04	2.5E-04	NA	7.5E-04	0.6%
Chromium (total)	NA	NA	NA	NA	NA	2.5E-02	NA	NA	2.5E-02	19.9%
Manganese	NA	NA	NA	NA	NA	4.8E-04	NA	NA	4.8E-04	0.4%
Mercury	NA	NA	NA	NA	NA	8.8E-04	NA	NA	8.8E-04	0.7%
Nickel	NA	NA	NA	NA	NA	6.3E-04	NA	NA	6.3E-04	0.5%
Vanadium	NA	NA	NA	NA	NA	2.2E-03	NA	NA	2.2E-03	1.8%
TEQ - Dioxins/Furans	2.1E-06	1.5E-07	NA	2.2E-06	38.1%	NA	NA	NA	NA	NA
Total	**5.0E-06**	**9.2E-07**	**NA**	**5.9E-06**	**100.0%**	**1.1E-01**	**2.0E-02**	**NA**	**1.3E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: ADOLESCENT TRESPASSER - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INCIDENTAL INGESTION OF SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $\text{Intake} = \frac{Cs \times IR \times CF \times FI \times EF \times ED}{BW \times AT}$

WHERE:	Cs = :		Concentration in soil (mg/kg)
	IR = :	50	Soil Ingestion Rate (mg/day)
	CF = :	1.0E-06	Conversion Factor (kg/mg)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	52	Exposure Frequency (days/year)
	ED = :	5	Exposure Duration (years)
	BW = :	51	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	1,825	Averaging time for noncarcinogenic exposures (days)

Unit Dose		
Lifetime Chronic Daily Int	1.0E-08	kg-soil/kg-wt/day
Chronic Daily Intake = :	1.4E-07	kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INCIDENTAL INGESTION OF SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: ADOLESCENT TRESPASSER - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	6.1	6.1E-08	8.5E-07	7.30E-01	NA	4.4E-08	6.0%	NA	NA
Benzo(a)pyrene	4	4.0E-08	5.6E-07	7.30E+00	NA	2.9E-07	39.4%	NA	NA
Benzo(b)fluoranthene	2.5	2.5E-08	3.5E-07	7.30E-01	NA	1.8E-08	2.5%	NA	NA
Bis(2-ethylhexyl)phthalate	5.1	5.1E-08	7.1E-07	1.40E-02	2.00E-02	7.1E-10	0.1%	3.6E-05	0.1%
Dibenzo(a,h)anthracene	0.73	7.3E-09	1.0E-07	7.30E+00	NA	5.3E-08	7.2%	NA	NA
Indeno(1,2,3-cd)pyrene	0.65	6.5E-09	9.1E-08	7.30E-01	NA	4.7E-09	0.6%	NA	NA
Aroclor, total	4	4.0E-08	5.6E-07	1.00E+00	2.00E-05	4.0E-08	5.4%	2.8E-02	66.6%
Dieldrin	0.0061	6.1E-11	8.5E-10	1.60E+01	5.00E-05	9.7E-10	0.1%	1.7E-05	0.0%
Antimony	8.3	8.3E-08	1.2E-06	NA	4.00E-04	NA	NA	2.9E-03	6.9%
Arsenic	11.2	1.1E-07	1.6E-06	1.50E+00	3.00E-04	1.7E-07	22.7%	5.2E-03	12.4%
Barium	1010	1.0E-05	1.4E-04	NA	7.00E-02	NA	NA	2.0E-03	4.8%
Cadmium	1.8	1.8E-08	2.5E-07	NA	1.00E-03	NA	NA	2.5E-04	0.6%
Chromium (total)	270	2.7E-06	3.8E-05	NA	2.00E-02	NA	NA	1.9E-03	4.5%
Manganese	239	2.4E-06	3.3E-05	NA	1.40E-01	NA	NA	2.4E-04	0.6%
Mercury	0.95	9.5E-09	1.3E-07	NA	3.00E-03	NA	NA	4.4E-05	0.1%
Nickel	44.9	4.5E-07	6.3E-06	NA	2.00E-02	NA	NA	3.1E-04	0.7%
Vanadium	55.6	5.5E-07	7.8E-06	NA	7.00E-03	NA	NA	1.1E-03	2.6%
TEQ - Dioxins/Furans	0.000079	7.9E-13	1.1E-11	1.50E+05	NA	1.2E-07	16.0%	NA	NA
					Total	**7.4E-07**	**100.0%**	**4.2E-02**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: ADOLESCENT TRESPASSER - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH SOIL ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION:

$$\text{Absorbed Dose} = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:			
	Cs = :		Concentration in soil (mg/kg)
	CF = :	1.0E-06	Conversion factor (kg/mg)
	SA = :	3,500	Skin surface available for contact (cm^2/event)
	AF = :	0.01	Soil to skin adherence factor (mg/cm^2)
	ABS = :		Absorption factor (unitless)
	EF = :	52	Exposure frequency (events/year)
	ED = :	5	Exposure duration (years)
	BW = :	51	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	1,825	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Intake : 7.0E-09 kg-soil/kg-wt/day
Chronic Daily Intake = : 9.8E-08 kg-soil/kg-wt/day

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH SOIL (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: ADOLESCENT TRESPASSER - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

CHEMICAL	Cs (mg/kg)	ABS (unitless)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	6.1	0.13	5.54E-09	7.75E-08	7.30E-01	NA	4.0E-09	8.5%	NA	NA
Benzo(a)pyrene	4	0.13	3.63E-09	5.08E-08	7.30E+00	NA	2.7E-08	55.9%	NA	NA
Benzo(b)fluoranthene	2.5	0.13	2.27E-09	3.18E-08	7.30E-01	NA	1.7E-09	3.5%	NA	NA
Bis(2-ethylhexyl)phthalate	5.1	NA	NA	NA	1.40E-02	2.00E-02	NA	NA	NA	NA
Dibenzo(a,h)anthracene	0.73	0.13	6.63E-10	9.28E-09	7.30E+00	NA	4.8E-09	10.2%	NA	NA
Indeno(1,2,3-cd)pyrene	0.65	0.13	5.90E-10	8.26E-09	7.30E-01	NA	4.3E-10	0.9%	NA	NA
Aroclor, total	4	0.14	3.91E-09	5.48E-08	1.00E+00	2.00E-05	3.9E-09	8.3%	2.7E-03	95.0%
Dieldrin	0.0061	NA	NA	NA	1.60E+01	5.00E-05	NA	NA	NA	NA
Antimony	8.3	NA	NA	NA	NA	6.00E-05	NA	NA	NA	NA
Arsenic	11.2	0.03	2.35E-09	3.29E-08	1.50E+00	3.00E-04	3.5E-09	7.4%	1.1E-04	3.8%
Barium	1010	NA	NA	NA	NA	4.90E-03	NA	NA	NA	NA
Cadmium	1.8	0.01	1.26E-10	1.76E-09	NA	5.00E-05	NA	NA	3.5E-05	1.2%
Chromium (total)	270	NA	NA	NA	NA	5.00E-04	NA	NA	NA	NA
Manganese	239	NA	NA	NA	NA	8.40E-03	NA	NA	NA	NA
Mercury	0.95	NA	NA	NA	NA	2.10E-04	NA	NA	NA	NA
Nickel	44.9	NA	NA	NA	NA	8.00E-04	NA	NA	NA	NA
Vanadium	55.6	NA	NA	NA	NA	1.80E-04	NA	NA	NA	NA
TEQ - Dioxins/Furans	0.000079	0.03	1.66E-14	2.32E-13	1.50E+05	NA	2.5E-09	5.2%	NA	NA
						Total	**4.7E-08**	**100.0%**	**2.9E-03**	**100.0%**

RISK ASSESSMENT SPREADSHEET - SUMMARY

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: ADOLESCENT TRESPASSER - CTE
MEDIA: SURFACE SOIL
DATE: AUGUST 3, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
Benzo(a)anthracene	4.4E-08	4.0E-09	NA	4.8E-08	6.2%	NA	NA	NA	NA	NA
Benzo(a)pyrene	2.9E-07	2.7E-08	NA	3.2E-07	40.4%	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1.8E-08	1.7E-09	NA	2.0E-08	2.5%	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	7.1E-10	NA	NA	7.1E-10	0.1%	3.6E-05	NA	NA	3.6E-05	0.1%
Dibenzo(a,h)anthracene	5.3E-08	4.8E-09	NA	5.8E-08	7.4%	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	4.7E-09	4.3E-10	NA	5.2E-09	0.7%	NA	NA	NA	NA	NA
Aroclor, total	4.0E-08	3.9E-09	NA	4.4E-08	5.6%	2.8E-02	2.7E-03	NA	3.1E-02	68.4%
Dieldrin	9.7E-10	NA	NA	9.7E-10	0.1%	1.7E-05	NA	NA	1.7E-05	0.0%
Antimony	NA	NA	NA	NA	NA	2.9E-03	NA	NA	2.9E-03	6.5%
Arsenic	1.7E-07	3.5E-09	NA	1.7E-07	21.8%	5.2E-03	1.1E-04	NA	5.3E-03	11.9%
Barium	NA	NA	NA	NA	NA	2.0E-03	NA	NA	2.0E-03	4.5%
Cadmium	NA	NA	NA	NA	NA	2.5E-04	3.5E-05	NA	2.9E-04	0.6%
Chromium (total)	NA	NA	NA	NA	NA	1.9E-03	NA	NA	1.9E-03	4.2%
Manganese	NA	NA	NA	NA	NA	2.4E-04	NA	NA	2.4E-04	0.5%
Mercury	NA	NA	NA	NA	NA	4.4E-05	NA	NA	4.4E-05	0.1%
Nickel	NA	NA	NA	NA	NA	3.1E-04	NA	NA	3.1E-04	0.7%
Vanadium	NA	NA	NA	NA	NA	1.1E-03	NA	NA	1.1E-03	2.5%
TEQ - Dioxins/Furans	1.2E-07	2.5E-09	NA	1.2E-07	15.3%	NA	NA	NA	NA	NA
Total	**7.4E-07**	**4.7E-08**	**NA**	**7.9E-07**	**100.0%**	**4.2E-02**	**2.9E-03**	**NA**	**4.5E-02**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH WATER

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - RME
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH WATER ARE CONSIDERED. ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATIONS:

$$\text{Absorbed Dose} = \frac{DAevent \times EV \times EF \times ED \times SA}{BW \times AT}$$

For Inorganics DAevent = Kp x Cw x CF x tevent

For Organics If tevent $\leq t^*$, then : $DAevent = 2 \times Kp \times Cw \times CF \times \sqrt{\frac{6 \times tau \times tevent}{\pi}}$

If tevent $> t^*$, then : $DAevent = Kp \times Cw \times CF \times \left[\frac{tevent}{1+B} + 2 \times tau \times \left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]$

Where:	SA = :	4,500	Skin surface available for contact (cm^2)
	DAevent = :		Chemical specific absorbed dose per event (mg/cm^2-event)
	EV = :	1	Event frequency (events/days)
	EF = :	20	Exposure frequency (days/year)
	ED = :	24	Exposure duration (years)
	BW = :	70	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	8,760	Averaging time for noncarcinogenic exposures (days)
	CF = :	0.001	Conversion Factor (L/m^3)
	Kp =:		Chemical specific permeability coefficient (cm/hr)
	Cw = :		Concentration of chemical in water (mg/L)
	tevent = :	1	duration of event (hr/event)
	tau = :		Chemical specific lag time (hr)
	t* = :		Chemical specific time it takes to reach steady state (hr)
	B = :		Chemical specific dimensionless constant
	Dsc = :		Effective diffusivity for chemical transfer through skin (cm^2/hr)
	b, c = :		chemical specific constants

Unit Dose

Lifetime Chronic Daily Intake =	1.2E+00	cm^2-event/(kg-day)
Chronic Daily Intake = :	3.5E+00	cm^2-event/(kg-day)

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH WATER (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - RME
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

CHEMICAL	Cw (mg/L)	Organic or Inorganic	Molecular Weight	Estimated Kp (cm/hr)	tau-event (hr)	B	b	c	Dsc (cm^2/hr)	t* (hr)	DAevent (mg/cm^2 - event)
1,1,1-Trichloroethane	0.016	O	133.4	1.30E-02	5.86E-01	5.77E-02	3.39E-01	3.73E-01	2.84E-07	1.41E+00	4.40E-07
1,1-Dichloroethene	0.008	O	96.9	1.20E-02	3.66E-01	4.54E-02	3.32E-01	3.64E-01	4.54E-07	8.79E-01	1.65E-07
1,2-Dichloroethene (total)	0.011	O	96.9	7.80E-03	3.66E-01	2.95E-02	3.21E-01	3.53E-01	4.54E-07	8.79E-01	1.48E-07
Trichloroethene	0.006	O	131.4	1.20E-02	5.72E-01	5.29E-02	3.36E-01	3.69E-01	2.91E-07	1.37E+00	1.50E-07
Vinyl Chloride	0.005	O	62.5	5.60E-03	2.35E-01	1.70E-02	3.14E-01	3.45E-01	7.08E-07	5.64E-01	4.09E-08
Bis (2-ethylhexyl) phthalate	0.011	O	391	4.56E-02	1.62E+01	3.47E-01	5.60E-01	5.94E-01	1.02E-08	3.90E+01	5.59E-06
Antimony	0.0274	I	121.8	1.00E-03	5.05E-01	4.24E-03	3.06E-01	3.36E-01	3.30E-07	1.21E+00	2.74E-08
Arsenic	0.0057	I	74.9	1.00E-03	2.76E-01	3.33E-03	3.05E-01	3.36E-01	6.03E-07	6.62E-01	5.70E-09
Chromium	0.0138	I	51.9	1.00E-03	2.05E-01	2.77E-03	3.05E-01	3.35E-01	8.12E-07	4.92E-01	1.38E-08
Manganese	0.289	I	54.9	1.00E-03	2.13E-01	2.85E-03	3.05E-01	3.35E-01	7.81E-07	5.11E-01	2.89E-07
Mercury	0.0019	I	200.6	1.00E-03	1.39E+00	5.45E-03	3.07E-01	3.37E-01	1.19E-07	3.35E+00	1.90E-09
Thallium	0.0044	I	204.4	1.00E-03	1.46E+00	5.50E-03	3.07E-01	3.37E-01	1.14E-07	3.52E+00	4.40E-09

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH WATER (PAGE THREE)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - RME
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

CHEMICAL	DAevent (mg/cm^2 - event)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
1,1,1-Trichloroethane	4.40E-07	5.32E-07	1.55E-06	NA	2.00E-02	NA	NA	7.8E-05	1.6%
1,1-Dichloroethene	1.65E-07	2.00E-07	5.82E-07	6.00E-01	9.00E-03	1.2E-07	37.4%	6.5E-05	1.3%
1,2-Dichloroethene (total)	1.48E-07	1.79E-07	5.22E-07	NA	9.00E-03	NA	NA	5.8E-05	1.2%
Trichloroethene	1.50E-07	1.82E-07	5.30E-07	1.10E-02	6.00E-03	2.0E-09	0.6%	8.8E-05	1.8%
Vinyl Chloride	4.09E-08	4.94E-08	1.44E-07	1.90E+00	NA	9.4E-08	29.3%	NA	NA
Bis (2-ethylhexyl) phthalate	5.59E-06	6.75E-06	1.97E-05	1.40E-02	2.00E-02	9.4E-08	29.5%	9.8E-04	20.2%
Antimony	2.74E-08	3.31E-08	9.65E-08	NA	6.00E-05	NA	NA	1.6E-03	33.0%
Arsenic	5.70E-09	6.88E-09	2.01E-08	1.50E+00	3.00E-04	1.0E-08	3.2%	6.7E-05	1.4%
Chromium	1.38E-08	1.67E-08	4.86E-08	NA	7.50E-05	NA	NA	6.5E-04	13.3%
Manganese	2.89E-07	3.49E-07	1.02E-06	NA	1.40E-03	NA	NA	7.3E-04	14.9%
Mercury	1.90E-09	2.29E-09	6.69E-09	NA	2.10E-05	NA	NA	3.2E-04	6.5%
Thallium	4.40E-09	5.31E-09	1.55E-08	NA	6.60E-05	NA	NA	2.3E-04	4.8%
					Total	**3.2E-07**	**100.0%**	**4.9E-03**	**100.0%**

RISK ASSESSMENT SPREADSHEET - SUMMARY OF CANCER RISKS AND HAZARD INDICES

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - RME
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	7.8E-05	NA	7.8E-05	1.6%
1,1-Dichloroethene	NA	1.2E-07	NA	1.2E-07	37.4%	NA	6.5E-05	NA	6.5E-05	1.3%
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	5.8E-05	NA	5.8E-05	1.2%
Trichloroethene	NA	2.0E-09	NA	2.0E-09	0.6%	NA	8.8E-05	NA	8.8E-05	1.8%
Vinyl Chloride	NA	9.4E-08	NA	9.4E-08	29.3%	NA	NA	NA	NA	NA
Bis (2-ethylhexyl) phthalate	NA	9.4E-08	NA	9.4E-08	29.5%	NA	9.8E-04	NA	9.8E-04	20.2%
Antimony	NA	NA	NA	NA	NA	NA	1.6E-03	NA	1.6E-03	33.0%
Arsenic	NA	1.0E-08	NA	1.0E-08	3.2%	NA	6.7E-05	NA	6.7E-05	1.4%
Chromium	NA	NA	NA	NA	NA	NA	6.5E-04	NA	6.5E-04	13.3%
Manganese	NA	NA	NA	NA	NA	NA	7.3E-04	NA	7.3E-04	14.9%
Mercury	NA	NA	NA	NA	NA	NA	3.2E-04	NA	3.2E-04	6.5%
Thallium	NA	NA	NA	NA	NA	NA	2.3E-04	NA	2.3E-04	4.8%
Total	**NA**	**3.2E-07**	**NA**	**3.2E-07**	**100.0%**	NA	**4.9E-03**	**NA**	**4.9E-03**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH WATER

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - CTE
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH WATER ARE CONSIDERED. ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATIONS:

$$\text{Absorbed Dose} = \frac{DAevent \times EV \times EF \times ED \times SA}{BW \times AT}$$

For Inorganics $DAevent = Kp \times Cw \times CF \times tevent$

For Organics If $tevent \le t^*$, then : $DAevent = 2 \times Kp \times Cw \times CF \times \sqrt{\frac{6 \times tau \times tevent}{\pi}}$

If $tevent > t^*$, then : $DAevent = Kp \times Cw \times CF \times \left[\frac{tevent}{1+B} + 2 \times tau \times \left(\frac{1 + 3B + 3B^2}{(1+B)^2}\right)\right]$

Where:	SA = :	4,500	Skin surface available for contact (cm^2)
	DAevent = :		Chemical specific absorbed dose per event (mg/cm^2-event)
	EV = :	1	Event frequency (events/days)
	EF = :	20	Exposure frequency (days/year)
	ED = :	7	Exposure duration (years)
	BW = :	70	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	2,555	Averaging time for noncarcinogenic exposures (days)
	CF = :	0.001	Conversion Factor (L/m^3)
	Kp =:		Chemical specific permeability coefficient (cm/hr)
	Cw = :		Concentration of chemical in water (mg/L)
	tevent = :	1	duration of event (hr/event)
	tau = :		Chemical specific lag time (hr)
	t* = :		Chemical specific time it takes to reach steady state (hr)
	B = :		Chemical specific dimensionless constant
	Dsc = :		Effective diffusivity for chemical transfer through skin (cm^2/hr)
	b, c = :		chemical specific constants

Unit Dose

Lifetime Chronic Daily Intake =	3.5E-01	cm^2-event/(kg-day)
Chronic Daily Intake = :	3.5E+00	cm^2-event/(kg-day)

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH WATER (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - CTE
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

CHEMICAL	Cw (mg/L)	Organic or Inorganic	Molecular Weight	Estimated Kp (cm/hr)	tau-event (hr)	B	b	c	Dsc (cm^2/hr)	t* (hr)	DAevent (mg/cm^2 - event)
1,1,1-Trichloroethane	0.0078	O	133.4	1.30E-02	5.86E-01	5.77E-02	3.39E-01	3.73E-01	2.84E-07	1.41E+00	2.15E-07
1,1-Dichloroethene	0.0057	O	96.9	1.20E-02	3.66E-01	4.54E-02	3.32E-01	3.64E-01	4.54E-07	8.79E-01	1.18E-07
1,2-Dichloroethene (total)	0.0065	O	96.9	7.80E-03	3.66E-01	2.95E-02	3.21E-01	3.53E-01	4.54E-07	8.79E-01	8.75E-08
Trichloroethene	0.0052	O	131.4	1.20E-02	5.72E-01	5.29E-02	3.36E-01	3.69E-01	2.91E-07	1.37E+00	1.30E-07
Vinyl Chloride	0.005	O	62.5	5.60E-03	2.35E-01	1.70E-02	3.14E-01	3.45E-01	7.08E-07	5.64E-01	4.09E-08
Bis (2-ethylhexyl) phthalate	0.0065	O	391	4.56E-02	1.62E+01	3.47E-01	5.60E-01	5.94E-01	1.02E-08	3.90E+01	3.30E-06
Antimony	0.0161	I	121.8	1.00E-03	5.05E-01	4.24E-03	3.06E-01	3.36E-01	3.30E-07	1.21E+00	1.61E-08
Arsenic	0.0036	I	74.9	1.00E-03	2.76E-01	3.33E-03	3.05E-01	3.36E-01	6.03E-07	6.62E-01	3.60E-09
Chromium	0.0106	I	51.9	1.00E-03	2.05E-01	2.77E-03	3.05E-01	3.35E-01	8.12E-07	4.92E-01	1.06E-08
Manganese	0.111	I	54.9	1.00E-03	2.13E-01	2.85E-03	3.05E-01	3.35E-01	7.81E-07	5.11E-01	1.11E-07
Mercury	0.00077	I	200.6	1.00E-03	1.39E+00	5.45E-03	3.07E-01	3.37E-01	1.19E-07	3.35E+00	7.70E-10
Thallium	0.0031	I	204.4	1.00E-03	1.46E+00	5.50E-03	3.07E-01	3.37E-01	1.14E-07	3.52E+00	3.10E-09

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH WATER (PAGE THREE)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - CTE
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

CHEMICAL	DAevent (mg/cm^2 - event)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
1,1,1-Trichloroethane	2.15E-07	7.56E-08	7.56E-07	NA	2.00E-02	NA	NA	3.8E-05	1.3%
1,1-Dichloroethene	1.18E-07	4.15E-08	4.15E-07	6.00E-01	9.00E-03	2.5E-08	35.1%	4.6E-05	1.6%
1,2-Dichloroethene (total)	8.75E-08	3.08E-08	3.08E-07	NA	9.00E-03	NA	NA	3.4E-05	1.2%
Trichloroethene	1.30E-07	4.59E-08	4.59E-07	1.10E-02	6.00E-03	5.1E-10	0.7%	7.7E-05	2.7%
Vinyl Chloride	4.09E-08	1.44E-08	1.44E-07	1.90E+00	NA	2.7E-08	38.6%	NA	NA
Bis (2-ethylhexyl) phthalate	3.30E-06	1.16E-06	1.16E-05	1.40E-02	2.00E-02	1.6E-08	22.9%	5.8E-04	20.5%
Antimony	1.61E-08	5.67E-09	5.67E-08	NA	6.00E-05	NA	NA	9.5E-04	33.3%
Arsenic	3.60E-09	1.27E-09	1.27E-08	1.50E+00	3.00E-04	1.9E-09	2.7%	4.2E-05	1.5%
Chromium	1.06E-08	3.73E-09	3.73E-08	NA	7.50E-05	NA	NA	5.0E-04	17.6%
Manganese	1.11E-07	3.91E-08	3.91E-07	NA	1.40E-03	NA	NA	2.8E-04	9.8%
Mercury	7.70E-10	2.71E-10	2.71E-09	NA	2.10E-05	NA	NA	1.3E-04	4.6%
Thallium	3.10E-09	1.09E-09	1.09E-08	NA	6.60E-05	NA	NA	1.7E-04	5.8%
					Total	7.1E-08	100.0%	2.8E-03	100.0%

RISK ASSESSMENT SPREADSHEET - SUMMARY OF CANCER RISKS AND HAZARD INDICES

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR - ADULT - CTE
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	3.8E-05	NA	3.8E-05	1.3%
1,1-Dichloroethene	NA	2.5E-08	NA	2.5E-08	35.1%	NA	4.6E-05	NA	4.6E-05	1.6%
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	3.4E-05	NA	3.4E-05	1.2%
Trichloroethene	NA	5.1E-10	NA	5.1E-10	0.7%	NA	7.7E-05	NA	7.7E-05	2.7%
Vinyl Chloride	NA	2.7E-08	NA	2.7E-08	38.6%	NA	NA	NA	NA	NA
Bis (2-ethylhexyl) phthalate	NA	1.6E-08	NA	1.6E-08	22.9%	NA	5.8E-04	NA	5.8E-04	20.5%
Antimony	NA	NA	NA	NA	NA	NA	9.5E-04	NA	9.5E-04	33.3%
Arsenic	NA	1.9E-09	NA	1.9E-09	2.7%	NA	4.2E-05	NA	4.2E-05	1.5%
Chromium	NA	NA	NA	NA	NA	NA	5.0E-04	NA	5.0E-04	17.6%
Manganese	NA	NA	NA	NA	NA	NA	2.8E-04	NA	2.8E-04	9.8%
Mercury	NA	NA	NA	NA	NA	NA	1.3E-04	NA	1.3E-04	4.6%
Thallium	NA	NA	NA	NA	NA	NA	1.7E-04	NA	1.7E-04	5.8%
Total	**NA**	**7.1E-08**	**NA**	**7.1E-08**	**100.0%**	**NA**	**2.8E-03**	**NA**	**2.8E-03**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH WATER

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR -PRE-ADOLESCENT - RME
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH WATER ARE CONSIDERED. ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATIONS:

$$\text{Absorbed Dose} = \frac{DAevent \times EV \times EF \times ED \times SA}{BW \times AT}$$

For Inorganics DAevent = Kp x Cw x CF x tevent

For Organics If tevent $\leq t^*$, then : $DAevent = 2 \times Kp \times Cw \times CF \times \sqrt{\frac{6 \times tau \times tevent}{\pi}}$

If tevent $> t^*$, then : $DAevent = Kp \times Cw \times CF \times \left[\frac{tevent}{1+B} + 2 \times tau \times \left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]$

Where:	SA = :	2,500	Skin surface available for contact (cm^2)
	DAevent = :		Chemical specific absorbed dose per event (mg/cm^2-event)
	EV = :	1	Event frequency (events/days)
	EF = :	20	Exposure frequency (days/year)
	ED = :	6	Exposure duration (years)
	BW = :	31	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	2,190	Averaging time for noncarcinogenic exposures (days)
	CF = :	0.001	Conversion Factor (L/m^3)
	Kp =:		Chemical specific permeability coefficient (cm/hr)
	Cw = :		Concentration of chemical in water (mg/L)
	tevent = :	1	duration of event (hr/event)
	tau = :		Chemical specific lag time (hr)
	t* = :		Chemical specific time it takes to reach steady state (hr)
	B = :		Chemical specific dimensionless constant
	Dsc = :		Effective diffusivity for chemical transfer through skin (cm^2/hr)
	b, c = :		chemical specific constants

Unit Dose

Lifetime Chronic Daily Intake =	3.8E-01	cm^2-event/(kg-day)
Chronic Daily Intake = :	4.4E+00	cm^2-event/(kg-day)

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH WATER (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR -PRE-ADOLESCENT - RME
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

CHEMICAL	Cw (mg/L)	Organic or Inorganic	Molecular Weight	Estimated Kp (cm/hr)	tau-event (hr)	B	b	c	Dsc (cm^2/hr)	t* (hr)	DAevent (mg/cm^2 - event)
1,1,1-Trichloroethane	0.016	O	133.4	1.30E-02	5.86E-01	5.77E-02	3.39E-01	3.73E-01	2.84E-07	1.41E+00	4.40E-07
1,1-Dichloroethene	0.008	O	96.9	1.20E-02	3.66E-01	4.54E-02	3.32E-01	3.64E-01	4.54E-07	8.79E-01	1.65E-07
1,2-Dichloroethene (total)	0.011	O	96.9	7.80E-03	3.66E-01	2.95E-02	3.21E-01	3.53E-01	4.54E-07	8.79E-01	1.48E-07
Trichloroethene	0.006	O	131.4	1.20E-02	5.72E-01	5.29E-02	3.36E-01	3.69E-01	2.91E-07	1.37E+00	1.50E-07
Vinyl Chloride	0.005	O	62.5	5.60E-03	2.35E-01	1.70E-02	3.14E-01	3.45E-01	7.08E-07	5.64E-01	4.09E-08
Bis (2-ethylhexyl) phthalate	0.011	O	391	4.56E-02	1.62E+01	3.47E-01	5.60E-01	5.94E-01	1.02E-08	3.90E+01	5.59E-06
Antimony	0.0274	I	121.8	1.00E-03	5.05E-01	4.24E-03	3.06E-01	3.36E-01	3.30E-07	1.21E+00	2.74E-08
Arsenic	0.0057	I	74.9	1.00E-03	2.76E-01	3.33E-03	3.05E-01	3.36E-01	6.03E-07	6.62E-01	5.70E-09
Chromium	0.0138	I	51.9	1.00E-03	2.05E-01	2.77E-03	3.05E-01	3.35E-01	8.12E-07	4.92E-01	1.38E-08
Manganese	0.289	I	54.9	1.00E-03	2.13E-01	2.85E-03	3.05E-01	3.35E-01	7.81E-07	5.11E-01	2.89E-07
Mercury	0.0019	I	200.6	1.00E-03	1.39E+00	5.45E-03	3.07E-01	3.37E-01	1.19E-07	3.35E+00	1.90E-09
Thallium	0.0044	I	204.4	1.00E-03	1.46E+00	5.50E-03	3.07E-01	3.37E-01	1.14E-07	3.52E+00	4.40E-09

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH WATER (PAGE THREE)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR -PRE-ADOLESCENT - RME
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

CHEMICAL	DAevent (mg/cm^2 - event)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
1,1,1-Trichloroethane	4.40E-07	1.67E-07	1.95E-06	NA	2.00E-02	NA	NA	9.7E-05	2.0%
1,1-Dichloroethene	1.65E-07	6.26E-08	7.31E-07	6.00E-01	9.00E-03	3.8E-08	37.4%	8.1E-05	1.7%
1,2-Dichloroethene (total)	1.48E-07	5.61E-08	6.54E-07	NA	9.00E-03	NA	NA	7.3E-05	1.5%
Trichloroethene	1.50E-07	5.70E-08	6.65E-07	1.10E-02	6.00E-03	6.3E-10	0.6%	1.1E-04	2.3%
Vinyl Chloride	4.09E-08	1.55E-08	1.81E-07	1.90E+00	NA	2.9E-08	29.3%	NA	NA
Bis (2-ethylhexyl) phthalate	5.59E-06	2.12E-06	2.47E-05	1.40E-02	2.00E-02	3.0E-08	29.5%	1.2E-03	25.7%
Antimony	2.74E-08	1.04E-08	1.21E-07	NA	6.00E-05	NA	NA	2.0E-03	42.0%
Arsenic	5.70E-09	2.16E-09	2.52E-08	1.50E+00	3.00E-04	3.2E-09	3.2%	8.4E-05	1.7%
Chromium	1.38E-08	5.23E-09	6.10E-08	NA	5.00E-04	NA	NA	1.2E-04	2.5%
Manganese	2.89E-07	1.09E-07	1.28E-06	NA	1.40E-03	NA	NA	9.1E-04	19.0%
Mercury	1.90E-09	7.20E-10	8.40E-09	NA	2.10E-04	NA	NA	4.0E-05	0.8%
Thallium	4.40E-09	1.67E-09	1.94E-08	NA	6.60E-04	NA	NA	2.9E-05	0.6%
					Total	1.0E-07	100.0%	4.8E-03	100.0%

RISK ASSESSMENT SPREADSHEET - SUMMARY OF CANCER RISKS AND HAZARD INDICES

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR -PRE-ADOLESCENT - RME
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	9.7E-05	NA	9.7E-05	2.0%
1,1-Dichloroethene	NA	3.8E-08	NA	3.8E-08	37.4%	NA	8.1E-05	NA	8.1E-05	1.7%
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	7.3E-05	NA	7.3E-05	1.5%
Trichloroethene	NA	6.3E-10	NA	6.3E-10	0.6%	NA	1.1E-04	NA	1.1E-04	2.3%
Vinyl Chloride	NA	2.9E-08	NA	2.9E-08	29.3%	NA	NA	NA	NA	NA
Bis (2-ethylhexyl) phthalate	NA	3.0E-08	NA	3.0E-08	29.5%	NA	1.2E-03	NA	1.2E-03	25.7%
Antimony	NA	NA	NA	NA	NA	NA	2.0E-03	NA	2.0E-03	42.0%
Arsenic	NA	3.2E-09	NA	3.2E-09	3.2%	NA	8.4E-05	NA	8.4E-05	1.7%
Chromium	NA	NA	NA	NA	NA	NA	1.2E-04	NA	1.2E-04	2.5%
Manganese	NA	NA	NA	NA	NA	NA	9.1E-04	NA	9.1E-04	19.0%
Mercury	NA	NA	NA	NA	NA	NA	4.0E-05	NA	4.0E-05	0.8%
Thallium	NA	NA	NA	NA	NA	NA	2.9E-05	NA	2.9E-05	0.6%
Total	**NA**	**1.0E-07**	**NA**	**1.0E-07**	**100.0%**	**NA**	**4.8E-03**	**NA**	**4.8E-03**	**100.0%**

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH WATER

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR -PRE-ADOLESCENT - CTE
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH DERMAL CONTACT WITH WATER ARE CONSIDERED. ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATIONS:

$$\text{Absorbed Dose} = \frac{DAevent \times EV \times EF \times ED \times SA}{BW \times AT}$$

For Inorganics DAevent = Kp x Cw x CF x tevent

For Organics If tevent $\leq t^*$, then : $DAevent = 2 \times Kp \times Cw \times CF \times \sqrt{\frac{6 \times tau \times tevent}{\pi}}$

If tevent $> t^*$, then : $DAevent = Kp \times Cw \times CF \times \left[\frac{tevent}{1+B} + 2 \times tau \times \left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]$

Where:	SA = :	2,500	Skin surface available for contact (cm^2)
	DAevent = :		Chemical specific absorbed dose per event (mg/cm^2-event)
	EV = :	1	Event frequency (events/days)
	EF = :	20	Exposure frequency (days/year)
	ED = :	2	Exposure duration (years)
	BW = :	31	Body weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	730	Averaging time for noncarcinogenic exposures (days)
	CF = :	0.001	Conversion Factor (L/m^3)
	Kp =:		Chemical specific permeability coefficient (cm/hr)
	Cw = :		Concentration of chemical in water (mg/L)
	tevent = :	1	duration of event (hr/event)
	tau = :		Chemical specific lag time (hr)
	t* = :		Chemical specific time it takes to reach steady state (hr)
	B = :		Chemical specific dimensionless constant
	Dsc = :		Effective diffusivity for chemical transfer through skin (cm^2/hr)
	b, c = :		chemical specific constants

Unit Dose

Lifetime Chronic Daily Intake =	1.3E-01	cm^2-event/(kg-day)
Chronic Daily Intake = :	4.4E+00	cm^2-event/(kg-day)

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH WATER (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR -PRE-ADOLESCENT - CTE
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

CHEMICAL	Cw (mg/L)	Organic or Inorganic	Molecular Weight	Estimated Kp (cm/hr)	tau-event (hr)	B	b	c	Dsc (cm^2/hr)	t* (hr)	DAevent (mg/cm^2 - event)
1,1,1-Trichloroethane	0.0078	O	133.4	1.30E-02	5.86E-01	5.77E-02	3.39E-01	3.73E-01	2.84E-07	1.41E+00	2.15E-07
1,1-Dichloroethene	0.0057	O	96.9	1.20E-02	3.66E-01	4.54E-02	3.32E-01	3.64E-01	4.54E-07	8.79E-01	1.18E-07
1,2-Dichloroethene (total)	0.0065	O	96.9	7.80E-03	3.66E-01	2.95E-02	3.21E-01	3.53E-01	4.54E-07	8.79E-01	8.75E-08
Trichloroethene	0.0052	O	131.4	1.20E-02	5.72E-01	5.29E-02	3.36E-01	3.69E-01	2.91E-07	1.37E+00	1.30E-07
Vinyl Chloride	0.005	O	62.5	5.60E-03	2.35E-01	1.70E-02	3.14E-01	3.45E-01	7.08E-07	5.64E-01	4.09E-08
Bis (2-ethylhexyl) phthalate	0.0065	O	391	4.56E-02	1.62E+01	3.47E-01	5.60E-01	5.94E-01	1.02E-08	3.90E+01	3.30E-06
Antimony	0.0161	I	121.8	1.00E-03	5.05E-01	4.24E-03	3.06E-01	3.36E-01	3.30E-07	1.21E+00	1.61E-08
Arsenic	0.0036	I	74.9	1.00E-03	2.76E-01	3.33E-03	3.05E-01	3.36E-01	6.03E-07	6.62E-01	3.60E-09
Chromium	0.0106	I	51.9	1.00E-03	2.05E-01	2.77E-03	3.05E-01	3.35E-01	8.12E-07	4.92E-01	1.06E-08
Manganese	0.111	I	54.9	1.00E-03	2.13E-01	2.85E-03	3.05E-01	3.35E-01	7.81E-07	5.11E-01	1.11E-07
Mercury	0.00077	I	200.6	1.00E-03	1.39E+00	5.45E-03	3.07E-01	3.37E-01	1.19E-07	3.35E+00	7.70E-10
Thallium	0.0031	I	204.4	1.00E-03	1.46E+00	5.50E-03	3.07E-01	3.37E-01	1.14E-07	3.52E+00	3.10E-09

RISK ASSESSMENT SPREADSHEET - DIRECT DERMAL CONTACT WITH WATER (PAGE THREE)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR -PRE-ADOLESCENT - CTE
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

CHEMICAL	DAevent (mg/cm^2 - event)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
1,1,1-Trichloroethane	2.15E-07	2.71E-08	9.48E-07	NA	2.00E-02	NA	NA	4.7E-05	1.8%
1,1-Dichloroethene	1.18E-07	1.49E-08	5.21E-07	6.00E-01	9.00E-03	8.9E-09	35.1%	5.8E-05	2.1%
1,2-Dichloroethene (total)	8.75E-08	1.10E-08	3.87E-07	NA	9.00E-03	NA	NA	4.3E-05	1.6%
Trichloroethene	1.30E-07	1.65E-08	5.76E-07	1.10E-02	6.00E-03	1.8E-10	0.7%	9.6E-05	3.6%
Vinyl Chloride	4.09E-08	5.17E-09	1.81E-07	1.90E+00	NA	9.8E-09	38.6%	NA	NA
Bis (2-ethylhexyl) phthalate	3.30E-06	4.17E-07	1.46E-05	1.40E-02	2.00E-02	5.8E-09	22.9%	7.3E-04	27.1%
Antimony	1.61E-08	2.03E-09	7.11E-08	NA	6.00E-05	NA	NA	1.2E-03	44.0%
Arsenic	3.60E-09	4.55E-10	1.59E-08	1.50E+00	3.00E-04	6.8E-10	2.7%	5.3E-05	2.0%
Chromium	1.06E-08	1.34E-09	4.68E-08	NA	5.00E-04	NA	NA	9.4E-05	3.5%
Manganese	1.11E-07	1.40E-08	4.90E-07	NA	1.40E-03	NA	NA	3.5E-04	13.0%
Mercury	7.70E-10	9.72E-11	3.40E-09	NA	2.10E-04	NA	NA	1.6E-05	0.6%
Thallium	3.10E-09	3.91E-10	1.37E-08	NA	6.60E-04	NA	NA	2.1E-05	0.8%
					Total	2.5E-08	100.0%	2.7E-03	100.0%

RISK ASSESSMENT SPREADSHEET - SUMMARY OF CANCER RISKS AND HAZARD INDICES

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: WETLAND/MARSH RECEPTOR -PRE-ADOLESCENT - CTE
MEDIA: SURFACE WATER
DATE: JULY 27, 2000

	Lifetime Cancer Risk					Hazard Index				
Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Total Risk	Percent Risk	Incidental Ingestion	Dermal Contact	Inhalation	Total HI	Percent HI
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	4.7E-05	NA	4.7E-05	1.8%
1,1-Dichloroethene	NA	8.9E-09	NA	8.9E-09	35.1%	NA	5.8E-05	NA	5.8E-05	2.1%
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	4.3E-05	NA	4.3E-05	1.6%
Trichloroethene	NA	1.8E-10	NA	1.8E-10	0.7%	NA	9.6E-05	NA	9.6E-05	3.6%
Vinyl Chloride	NA	9.8E-09	NA	9.8E-09	38.6%	NA	NA	NA	NA	NA
Bis (2-ethylhexyl) phthalate	NA	5.8E-09	NA	5.8E-09	22.9%	NA	7.3E-04	NA	7.3E-04	27.1%
Antimony	NA	NA	NA	NA	NA	NA	1.2E-03	NA	1.2E-03	44.0%
Arsenic	NA	6.8E-10	NA	6.8E-10	2.7%	NA	5.3E-05	NA	5.3E-05	2.0%
Chromium	NA	NA	NA	NA	NA	NA	9.4E-05	NA	9.4E-05	3.5%
Manganese	NA	NA	NA	NA	NA	NA	3.5E-04	NA	3.5E-04	13.0%
Mercury	NA	NA	NA	NA	NA	NA	1.6E-05	NA	1.6E-05	0.6%
Thallium	NA	NA	NA	NA	NA	NA	2.1E-05	NA	2.1E-05	0.8%
Total	**NA**	**2.5E-08**	**NA**	**2.5E-08**	**100.0%**	**NA**	**2.7E-03**	**NA**	**2.7E-03**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INGESTION OF FISH

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: LOCAL FISHER - RME
MEDIA: MUSSELS
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INGESTION OF FISH ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Intake} = \frac{Cf \times IR \times FI \times EF \times ED}{BW \times AT}$$

WHERE:

Cf = :		Chemical concentration in fish (mg/kg)
IR = :	0.017	Ingestion Rate (Kg/meal)
FI = :	1	Fraction from contaminated source (unitless)
EF = :	365	Exposure Frequency (meals/year)
ED = :	30	Exposure Duration (years)
BW = :	70	Body Weight (kg)
ATc = :	25,550	Averaging time for carcinogenic exposures (days)
ATn = :	10,950	Averaging time for noncarcinogenic exposures (days)

Unit Dose

Lifetime Chronic Daily Intake =	1.04E-04	kg-fish/kg-wt/day
Chronic Daily Intake = :	2.43E-04	kg-fish/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INGESTION OF FISH (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: LOCAL FISHER - RME
MEDIA: MUSSELS
DATE: AUGUST 3, 2000

CHEMICAL	Cf (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	0.01	1.0E-06	2.4E-06	7.30E-01	NA	7.6E-07	11.0%	NA	NA
Benzo(b)fluoranthene	0.015	1.6E-06	3.6E-06	7.30E-01	NA	1.1E-06	16.5%	NA	NA
Aroclor, total	0.024	2.5E-06	5.8E-06	2.00E+00	2.00E-05	5.0E-06	72.5%	2.9E-01	50.8%
Cadmium	1	1.0E-04	2.4E-04	NA	1.00E-03	NA	NA	2.4E-01	42.4%
Mercury	0.048	5.0E-06	1.2E-05	NA	3.00E-04	NA	NA	3.9E-02	6.8%
					Total	**6.9E-06**	**100.0%**	**5.7E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INGESTION OF FISH

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: LOCAL FISHER - CTE
MEDIA: MUSSELS
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INGESTION OF FISH ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION:

$$\text{Intake} = \frac{Cf \times IR \times FI \times EF \times ED}{BW \times AT}$$

WHERE:			
	Cf = :		Chemical concentration in fish (mg/kg)
	IR = :	0.017	Ingestion Rate (Kg/meal)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	365	Exposure Frequency (meals/year)
	ED = :	9	Exposure Duration (years)
	BW = :	70	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	3,285	Averaging time for noncarcinogenic exposures (days)

Unit Dose

Lifetime Chronic Daily Intake =	3.12E-05	kg-fish/kg-wt/day
Chronic Daily Intake = :	2.43E-04	kg-fish/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INGESTION OF FISH (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: LOCAL FISHER - CTE
MEDIA: MUSSELS
DATE: AUGUST 3, 2000

CHEMICAL	Cf (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(a)anthracene	0.006	1.9E-07	1.5E-06	7.30E-01	NA	1.4E-07	13.5%	NA	NA
Benzo(b)fluoranthene	0.007	2.2E-07	1.7E-06	7.30E-01	NA	1.6E-07	15.7%	NA	NA
Aroclor, total	0.023	7.2E-07	5.6E-06	1.00E+00	2.00E-05	7.2E-07	70.8%	2.8E-01	59.6%
Cadmium	0.67	2.1E-05	1.6E-04	NA	1.00E-03	NA	NA	1.6E-01	34.7%
Mercury	0.033	1.0E-06	8.0E-06	NA	3.00E-04	NA	NA	2.7E-02	5.7%
					Total	**1.0E-06**	**100.0%**	**4.7E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INGESTION OF FISH

SITE NAME: **AREA B, DELBUONO WETLANDS**
LOCATION: **FERRY CREEK, STRATFORD, CT**
EXPOSURE SCENARIO: **LOCAL FISHER - RME**
MEDIA: **OYSTERS**
DATE: **AUGUST 3, 2000**

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INGESTION OF FISH ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Intake} = \frac{Cf \times IR \times FI \times EF \times ED}{BW \times AT}$$

WHERE:			
	Cf = :		Chemical concentration in fish (mg/kg)
	IR = :	0.017	Ingestion Rate (Kg/meal)
	FI = :	1	Fraction from contaminated source (unitless)
	EF = :	365	Exposure Frequency (meals/year)
	ED = :	30	Exposure Duration (years)
	BW = :	70	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	10,950	Averaging time for noncarcinogenic exposures (days)

Unit Dose		
Lifetime Chronic Daily Intake	1.04E-04	kg-fish/kg-wt/day
Chronic Daily Intake = :	2.43E-04	kg-fish/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INGESTION OF FISH (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: LOCAL FISHER - RME
MEDIA: OYSTERS
DATE: AUGUST 3, 2000

CHEMICAL	Cf (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(b)fluoranthene	0.011	1.1E-06	2.7E-06	7.30E-01	NA	8.4E-07	13.4%	NA	NA
Aroclor, total	0.026	2.7E-06	6.3E-06	2.00E+00	2.00E-05	5.4E-06	86.6%	3.2E-01	48.9%
Cadmium	1.2	1.2E-04	2.9E-04	NA	1.00E-03	NA	NA	2.9E-01	45.1%
Mercury	0.048	5.0E-06	1.2E-05	NA	3.00E-04	NA	NA	3.9E-02	6.0%
					Total	**6.2E-06**	**100.0%**	**6.5E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INGESTION OF FISH

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: LOCAL FISHER - CTE
MEDIA: OYSTERS
DATE: AUGUST 3, 2000

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH INGESTION OF FISH ARE CONSIDERED.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Intake} = \frac{Cf \times IR \times FI \times EF \times ED}{BW \times AT}$$

WHERE:			
	Cf = :		Chemical concentration in fish (mg/kg)
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	EF = :	365	Exposure Frequency (meals/year)
	ED = :	9	Exposure Duration (years)
	BW = :	70	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	ATn = :	3,285	Averaging time for noncarcinogenic exposures (days)

Unit Dose
Lifetime Chronic Daily Intake = 3.12E-05 kg-fish/kg-wt/day
Chronic Daily Intake = : 2.43E-04 kg-fish/kg-wt/day

RISK ASSESSMENT SPREADSHEET - INGESTION OF FISH (PAGE TWO)

SITE NAME: AREA B, DELBUONO WETLANDS
LOCATION: FERRY CREEK, STRATFORD, CT
EXPOSURE SCENARIO: LOCAL FISHER - CTE
MEDIA: OYSTERS
DATE: AUGUST 3, 2000

CHEMICAL	Cf (mg/kg)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
Benzo(b)fluoranthene	0.006	1.9E-07	1.5E-06	7.30E-01	NA	1.4E-07	15.4%	NA	NA
Aroclor, total	0.024	7.5E-07	5.8E-06	1.00E+00	2.00E-05	7.5E-07	84.6%	2.9E-01	60.9%
Cadmium	0.67	2.1E-05	1.6E-04	NA	1.00E-03	NA	NA	1.6E-01	34.0%
Mercury	0.03	9.4E-07	7.3E-06	NA	3.00E-04	NA	NA	2.4E-02	5.1%
					Total	**8.9E-07**	**100.0%**	**4.8E-01**	**100.0%**