

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: ENVIRITE CORPORATION
Facility Address: Old Waterbury Road, Thomaston, CT
Facility EPA ID #: CTD093616613

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

If yes - check here and continue with #2 below.

If no - re-evaluate existing data, or

if data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air **media known or reasonably suspected** to be **“contaminated”**¹ above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	<u> x </u>	<u> </u>	<u> </u>	_____
Air (indoors) ²	<u> </u>	<u> x </u>	<u> </u>	_____
Surface Soil (e.g., <2 ft)	<u> </u>	<u> x </u>	<u> </u>	_____
Surface Water	<u> </u>	<u> x </u>	<u> </u>	_____
Sediment	<u> </u>	<u> x </u>	<u> </u>	_____
Subsurf. Soil (e.g., >2 ft)	<u> x </u>	<u> </u>	<u> </u>	_____
Air (outdoors)	<u> </u>	<u> x </u>	<u> </u>	_____

_____ If no (for all media) - skip to #6, and enter “YE,” status code after providing or citing appropriate “levels,” and referencing sufficient supporting documentation demonstrating that these “levels” are not exceeded.

 x If yes (for any media) - continue after identifying key contaminants in each “contaminated” medium, citing appropriate “levels” (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter “IN” status code.

Rationale and Reference(s):

Much of the contamination at the site can be attributed to the “Pre-Envirite Waster Materials” (PEWM). Based on the available information, the PEWM appears to be a release of still bottom sludges and is comprised of a gamut of contaminants including halogenated and aromatic VOCs and metals, among others. The available information suggests that this release may be the result of the now defunct Solvents Recovery Service (SRS) as the waste pre-dates Envirite’s presence on the site. Envirite is currently considering the excavation and removal of all or part of this waste pile as the presence of portions of the waste in the vadose zone is contrary to CTDEP groundwater policy. Another source of contamination may be Envirite’s metal hydroxide/sulfide sludges wastes (a.k.a. landfilled treatment residues (LTR)). The future impact of the LTR on the site is currently under consideration although Synthetic Precipitation Leaching Procedure (SPLP) data from the RCRA Facility Investigation (RFI) and quarterly post-closure groundwater monitoring data collected since January of 1991 indicate no increasing trend in dissolved-phase contaminant concentrations. See June 2001 draft report entitled, *Statistical Trend Analysis of COPCs in Groundwater and Conceptual Source Model for PEWM*. Finally, an acid spill which occurred in the late 1980s or early 1990’s caused the release of metals to groundwater. In general, it would appear that metals concentrations are decreasing. Finally, Envirite has completed its **risk assessment**: although the proposed Media Protection Standards (MPS) have not yet been approved by EPA, it would appear that human health (and ecological) risks have been adequately delineated.

Footnotes:

¹ “Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

² Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential Human Receptors (Under Current Conditions)

“Contaminated” Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	<u>_y_</u>	___	___	___			___
Air (indoors)	___	___	___	___			___
Soil (surface, e.g., <2 ft)	___	<u>_y_</u>	___	___	<u>_y_</u>	___	___
Surface Water	___	___	___	___	___	<u>_y_</u>	___
Sediment	___	___	___	___	___	<u>_y_</u>	___
Soil (subsurface e.g., >2 ft)	___	___	<u>_y_</u>	___	___	___	___
Air (outdoors)	___	___	___	___	___	___	___

* See Explanation Below *

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated”) as identified in #2 above.

2. enter “yes” or “no” for potential “completeness” under each “Contaminated” Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces (“___”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

_____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter “YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

__x__ If yes (pathways are complete for any “Contaminated” Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any “Contaminated” Media - Human Receptor combination) - skip to #6 and enter “IN” status code

Rationale and Reference(s):

The exposure pathways above are extracted from Envirite’s revised risk assessment, entitled Public Health and Environmental Risk Evaluation (**PHERE**), Envirite Corporation, Thomaston, Connecticut, dated May 1997 (revised February 2000). First, the identified groundwater pathway is not for on-site residents, but off-site residents. Second, the above-identified pathways reflect current and future human health risk. To understand current human health risk better, the pathways are described in more detail below:

Groundwater. 1. On-site. There are no current uses of groundwater on-site. See note below. 2. Off-Site Worker. There are currently no known uses of groundwater within the area. See note below. 3. Off-Site Resident. The off-site resident was evaluated under a future use scenario b/c there are no known wells immediately downgradient of the site.

Note: The site and general area has been classified as GB by the State of Connecticut. Based on this classification, groundwater is not suitable for drinking purposes. Institutional controls, most likely in the form of an Environmental Land Use Restriction (ULUR) per CTDEP's Remediation Standard Regulations (RSR), will be put in place to ensure the prevention of future industrial use of on-site groundwater. Because GB classified groundwater could be used for industrial process and cooling water, it was assumed in the PHERE that as part of the industrial use of ground water by off-site workers, small quantities of water may be incidentally ingested. However, this assessment was conducted for future use assumptions.

Surface Soil. Surface soil exposures were evaluated under incidental ingestion or dermal contact scenarios for the on-site worker and on-site trespasser. Dermal exposure was considered negligible. The significance of this exposure pathway is discussed in Question 4.

Surface Water and Sediment. Surface water was evaluated under incidental ingestion and dermal contact scenarios for current and future recreational visitors. Sediment was evaluated similarly except that dermal contact for sediments was not considered to be significant compared to the ingestion pathway. The significance of these pathways is discussed in Question 4.

Subsurface Soil. Exposures to subsurface soil were evaluated for the utility/construction worker under a future scenario associated with excavation of the PEWM or future utility worker excavation (e.g., sewer line, etc.). The significance of this exposure pathway is discussed in Question 4.

³ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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- 4 Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be “significant”⁴ (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

 x If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

 If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

 If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and Reference(s):

Groundwater. There are no current uses of groundwater on-site, currently no known industrial/commercial uses of groundwater within the designated GB area and no known current uses of residential off-site use immediately downgradient of the site. Accordingly, exposures from this pathway are considered to be insignificant.

Surface Soil. Currently, there are no on-site workers. Because the entire site is fenced, the frequency by which an on-site trespasser could be exposed is so remote that exposures from this pathway are reasonably expected to be insignificant.

Surface Water. Due to the presence of the Naugatuck River next to the site, this is perhaps the most probable exposure pathway. The PHERE identified the most significant potential risks from surface water were associated with the ingestion of PCBs and tetrachloroethylene (PCE). The 95% Upper concentration Limit (UCL) for PCBs and PCE are 0.3 and 0.7 ug/l, respectively. CTDEP’s RSR Surface Water Protection Criteria (SWPC) for these constituents are 0.5 and 88 ug/l, respectively. Although CTDEP’s SWPC are not dispositive on the issue of risk, they are a helpful guide. It should be noted that both of these constituents were detected in both upstream and downstream surface water samples and were considered by the PHERE as unlikely to be site related.

Notwithstanding the PHERE, the PEWM should be considered a potential source of risk because of the possibility that contaminants in the PEWM could migrate to the Naugatuck. However, certain factors tend to qualify this risk as remote. These factors are: (1) a site walkover indicated no PEWM seeps on the embankment; (2) the physical nature of the PEWM itself is such that it will not migrate. See EPA letter to Dave Nash of the Connecticut Department of Environmental Protection entitled, Pre-Envirite Waste Materials, dated December 1, 1998 [sic], In EPA December 2, 1997 Draft Comments on Final RFI Report; (3) VOCs migrating from the PEWM are diffusion-limited. As applied to the PEWM located in the saturated zone, this diffusion-limited migration has reached a low-level steady state. See June 2001 draft report entitled, *Statistical Trend Analysis of COPCs in Groundwater and Conceptual Source Model for PEWM*. Thus, both concentration and flux of VOCs from the PEWM located in the saturated zone will be limited. Although the PEWM located near Old Waterbury Road could potentially impact surface water due to the fact that a

large portion of it apparently exists in the vadose zone and has not therefore reached a low-level attenuated state as the PEWM which exists in the saturated zone, the data suggests that (a) releases caused by precipitation events are infrequent and sporadic and (b) these releases would migrate preferentially in a southwest direction across the site and away from the Naugatuck River so that, by the time these concentrations reached the southwest property boundary, they would not be of a significant risk to surface water at Branch Brook located to the west and southwest of the site; (4) again, the hydrogeological conceptual model for the site suggests that the direction of groundwater flow is south-southwest away from the Naugatuck River notwithstanding a seasonal northwest to southeast gradient; and (5) VOCs are generally recognized to attenuate significantly upon contact with a surface water body such as a river (e.g. CTDEP's RSR's). In sum, although current risk exposures from the PEWM are remotely possible, they are not probable and surface water exposures are considered to be insignificant.

Sediment. The PHERE identified the most significant potential risks from sediment were associated with the ingestion of benzo(a)pyrene. The 95% Upper concentration Limit (UCL) for benzo(a)pyrene is 0.75 mg/kg. Benzo(a)pyrene was detected in both upstream and downstream sediment samples and is considered by the PHERE as likely to be site-related as not site-related. Although CTDEP does not have sediment criteria, CTDEP's RSR GB Pollutant Mobility Criteria for soils is 1 mg/kg for benzo(a)pyrene. Also, for the same reasons presented for surface water, it is unlikely that the PEWM could impact Naugatuck sediments. Sediments exposures are considered insignificant.

Subsurface Soil. Exposures to subsurface soil were evaluated for the utility/construction worker under a future scenario associated with excavation of the PEWM or future utility worker excavation (e.g., sewer line, etc.). With respect to excavation of the PEWM, because excavation is not occurring presently and would not occur without notice, it is a non-current risk. Although this risk could be deemed current upon excavation, exposures due to excavation would (1) be controlled/managed and (2) occur over a brief and finite window of time.

Although the utility worker scenario is a remote future risk, as a precaution, a letter dated June 26, 2001 was sent to the Town of Thomaston (Town) informing them the PEWM under Old Waterbury Road will present a utility worker risk until a remedy has been identified and implemented. The assumption is that notice to the Town will mitigate a future utility worker risk made current by inadvertence. In sum, exposures to subsurface soils are considered insignificant.

References

The following references were used in making this Stabilization determination:

- RCRA Facility Investigation, Phase I Report, Envirite Corporation, Thomaston, CT, dated March 1995;
- USEPA Final Comments on the Phase I Interim Report and Phase II Proposal, including the First Interim Deliverable of the Public Health and Environmental Risk Evaluation (PHERE), dated April 25, 1996;
- UST Removal Workplan, dated June 11, 1996;
- Response to EPA Comments, RCRA Facility Investigation, Phase I Report, Envirite Corporation, Thomaston, Connecticut, dated May 30, 1997;
- Response to EPA Comments, RCRA Facility Investigation, Phase I Report, Envirite Corporation, Thomaston, Connecticut, dated June 1997;
- Work Plan to Assess Potential Impacts to Groundwater from Metals and VOCs at the Envirite Landfill in Thomaston, CT, dated October 21, 1997;
- USEPA Draft Comments on Final RFI Report; Pre-Envirite Waste Materials, Envirite Facility, Thomaston, CT, dated December 2, 1997;
- LTR Study Report, dated December 21, 1998;
- Public Health and Environmental Risk Evaluation (PHERE), Envirite Corporation, Thomaston, Connecticut, dated May 1997 (revised February 2000);
- Draft Report: Statistical Trend Analysis of COPCs in Groundwater and Conceptual Model for Source Impact to Groundwater, dated June 2001

⁴ If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **Envirite Corporation** facility, EPA ID #**CTD093616613**, located at **Old Waterbury Road, Thomaston, CT** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

NO - "Current Human Exposures" are NOT "Under Control."

IN - More information is needed to make a determination.

Completed by (signature) *Raphael Cody* Date 6/22/01
(print) Raphael Cody
(title) RCRA Facility Manager

Supervisor (signature) *Matt Hoagland* Date 8/21/01
(print) Matt Hoagland
(title) Chief, RCRA Corrective Action
(EPA Region or State) Region I

Locations where References may be found:

See facility files

STATE Contact telephone and e-mail numbers

(name) _____
(phone #) _____
(e-mail) _____

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.