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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: Former Superior Electric Facility
 Facility Address: 383 Middle Street, Bristol, Connecticut
 Facility EPA ID #: CTD001145267

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).

RCRA RECORDS CENTER
 FACILITY Superior Electric
 I.D. NO. CTD001145267
 FILE LOC. R-13
 OTHER # 109735

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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>	___	___	Cadmium
Air (indoors) ²	___	<u>X</u>	___	
Surface Soil (e.g., <2 ft)	___	<u>X</u>	___	
Surface Water	___	<u>X</u>	___	
Sediment	<u>X</u>	___	___	Cadmium
Subsurf. Soil (e.g., >2 ft)	<u>X</u>	___	___	Cyanide, TPH
Air (outdoors)	___	<u>X</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):

- PCE in groundwater does not exceed RVC beneath building [most recent sample (May 2010) contained 91.5 µg/L]
- Cadmium in groundwater exceeds SWPC on-site, but historically has not exceeded detection limits at the down-gradient property line (ERM-8), indicating the plume dissipates before it leaves the Site
- Cyanide and TPH in soils exceed GB PMC, beneath the former gold plating line beneath the building, as described in the 2004 Annual report, dated April 2005.
- PCE was found above PMC in surface soil beneath the former machine shop, and adjacent to the facility dumpsters, and leachable lead was found above the PMC in a small section of the on-site drainage channel. All areas were remediated in 2004, with post-excavation data showing leachable lead less than detection limits, while residual PCE in all post-excavation soil samples was found at concentrations less than 10 µg/Kg. The remedial efforts were summarized in the 2004 Annual Report, dated April 2005.
- One sediment sample contained cadmium in excess of the 880 ppm site-specific DEC (1,930 ppm); all other samples were below the DEC (see 2009 Annual Report, dated November 2009).

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)

<u>'Contaminated' Media</u>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	No	No	No	No	No	No	No
Air (indoors)	---	---	---	---	---	---	---
Soil (surface, e.g., <2 ft)	---	---	---	---	---	---	---
Surface Water	---	---	---	---	---	---	---
Sediment	No	No	No	No	No	No	No
Soil (subsurface e.g., >2 ft)	No	No	No	No	No	No	No
Air (outdoors)	---	---	---	---	---	---	---

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.

- X 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).
- 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):

- Groundwater is not used for consumption on the Site. The cadmium plume dissipates before it leaves

the Site, as shown in the February 2011 Annual Report.

- Sediment does contain cadmium in excess of the DEC, but is located in a area essentially inaccessible (swamp and heavily vegetated) to workers and/or nearby residents, as described in the November 18, 2009 Annual Report. Pathway is incomplete.
- Surface soils have been remediated via excavation, and no parameters remain above appropriate regulatory criteria. The remedial efforts were summarized in the 2004 Annual Report, dated April 2005.
- Subsurface soils contain petroleum (near the petroleum USTs) and cyanide (beneath the former gold plating line) above the GB PMC. This contamination is located beneath pavement and floor slab (respectively), and is inaccessible (described in the 2009 Annual report). An ELUR is proposed to preclude disturbance of these soils.

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)?

_____ 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):

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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5 Can the 'significant' exposures (identified in #4) be shown to be within acceptable limits?

_____ If yes (all 'significant' exposures have been shown to be within acceptable limits) - continue and enter AYE@ after summarizing and referencing documentation justifying why all 'significant' exposures to 'contamination' are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be 'unacceptable') - continue and enter 'NO' status code after providing a description of each potentially 'unacceptable' exposure.

_____ If unknown (for any potentially 'unacceptable' exposure) - continue and enter 'IN' status code

Rationale and Reference(s):

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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 _____ facility, EPA ID # _____, located at _____ 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) [Signature] Date 9/29/11
(print) Robert J. Drake, PE, Ph.D., LEP
(title) Senior Project Manager

Supervisor (signature) [Signature] Date 9-29-11
(print) DAVID RINQUIST
(title) Supervising Environmental Analyst
(EPA Region or State) CT DEEP

*Reviewed by
William Loveley
on 12/5/11
William Loveley*

Locations where References may be found:

Media contamination documentation provided in Annual Reports for 2005, 2006, 2007, on file with CT DEP

Contact telephone and e-mail numbers

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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.