

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: University of Vermont Environmental Safety Facility
Facility Address: 667 Spear Street, Burlington VT
Facility EPA ID #: VTD000636563

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> | ___ | |
| Air (indoors) ² | ___ | <u>X</u> | ___ | |
| Surface Soil (e.g., <2 ft) | ___ | <u>X</u> | ___ | |
| Surface Water | ___ | <u>X</u> | ___ | |
| Sediment | ___ | ___ | <u>N/A</u> | |
| Subsurf. Soil (e.g., >2 ft) | ___ | <u>X</u> | ___ | |
| Air (outdoors) | ___ | <u>X</u> | ___ | |

X 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.

___ 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):

This was an undeveloped site prior to the construction of the UVM Environmental Safety facility (ESF). A site assessment was performed before construction began to establish a baseline³. Low levels of groundwater contamination were detected in sampling done in 1994 and 1995 and additional rounds of annual groundwater sampling were performed. In the 1996 sampling round, levels of contamination were below Vermont Groundwater Enforcement Standards (VGES)⁴. An assessment by the Sites Management Section of the VTDEC in February 1997 found that no further sampling was required.⁵

In the September 1994 sampling round, total lead concentrations were detected in unfiltered groundwater samples slightly above VGES. June 1995 groundwater samples collected (both filtered and unfiltered) were found to have lead levels well below VGES⁶. Elevated total lead concentrations were found to be associated with unfiltered samples with high levels of turbidity.

In the operating history of the UVM ESF there have been no releases of hazardous waste to the environment at the facility.

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.

3 March 1990, Baseline hydrogeologic and geochemical assessments for proposed ESF Facility. Environmental Safety Facility, University of Vermont, prepared by Wagner, Heindel & Noyes Inc.

4 Vermont Groundwater Enforcement Standards (VGES), Vermont Groundwater Protection Rule and Strategy, effective September 1988.

5 Site Management Activity Complete checklist - Checklist completed by VTDEC Sites Management Section finding that no further site monitoring would be required.

6 August 1, 1995, Report on Groundwater Monitoring Environmental Safety Facility, University of Vermont, prepared by Hoffer & Associates Consulting Hydrogeologists.

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

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors= spaces for Media which are not Acontaminated”) 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).
- ___ 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):

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 “YE” 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 University of Vermont Environmental Safety Facility, EPA ID #VTD000636563, located at 667 Spear Street in Burlington, Vermont 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) *Lynn Metcalf* Date 9-25-2012
(print) Lynn Metcalf
(title) Hazardous Waste Program Coordinator

Supervisor (signature) *Marc Roy* Date 9/26/12
(print) Marc Roy
(title) Environmental Program Manager
(State) VTDEC

Locations where References may be found:

Attachment 1 - SiteManagementCompleteChecklist.pdf – Checklist completed by VTDEC Sites Management Section prior to declaring that no further site monitoring would be required.

Footnote 3 - report can be found in VTDEC, Sites Management Section files, Site number 1995.1786

Footnote 4- <http://www.vermontdrinkingwater.org/GWPRS/GWPRS2005.pdf>

Footnote 5 - See Attachment 1- Sites Management Activity Complete checklist.

Footnote 6 - report can be found in VTDEC, Sites Management Section files, Site number 1995.1786

Contact telephone and e-mail numbers

(name) Lynn Metcalf
(phone #) 802-479-8736
(e-mail) lynn.metcalf@state.vt.us

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.

Site Management Activity Completed (SMAC) Checklist

Site Number: 95-1786

Site Name: UVM - Environmental Safety

| Criteria | Yes | No | N/A |
|--|-----|----|-----|
| 1. The source(s), nature and extent has been adequately defined. | X | | |
| 2. Source(s) has been removed, remediated or adequately contained. | | | X |
| 3. Levels of contaminants in soil and groundwater shall be stable, falling, or non-detectable. | X | | |
| 4. a) Groundwater enforcement standards are met on entire property... | X | | |
| b) ...are met at compliance point. Identify compliance point: _____ | | | X |
| 5. Soil guideline levels are met... | X | | |
| ...if not, engineering or institutional controls are in place: | | | X |
| 6. No unacceptable threat to human health or the environment exists onsite. | X | | |
| 7. Site meets RCRA requirements. | | | X |
| 8. Site meets CERCLA requirements. | | | X |
| <p>Comments:</p> <p>Source of lead not determined. Could be naturally occurring.</p> | | | |

Signature: Chad Sen

Date: 2/13/97

OFFICE MEMO

To: George
Thru: Chuck *CS*
From: Linda *L*
Date: February 11, 1997
Re: SMAC Request/Explanation of Lead Levels detected at UVM-Environmental Safety Facility #951786

=====
In December 1996, I forwarded a "SMAC" request for the UVM Environmental Safety Facility located in Burlington. During your review of this site, you had questioned the historical detection of lead in groundwater, and suggested that we request UVM to identify the source of lead and to resample the groundwater for lead analysis. I have had several conversations with Milly Archer and UVM's consultant Hoffer & Associates on this issue. We have discussed a possible scenario for the differences in lead concentrations over the 2 sampling events is the differences in turbidity levels and suspended solids from the purging of the wells with a bailer, and not from an actual release of lead contamination. Milly has forwarded Jeff Hoffer's written response on this issue, and in general he concludes that the lead levels are within normal ranges for soil, and has asked the SMS to reconsider the "SMAC" request.

I have attached Jeff Hoffer's letter dated January 17, 1997 to Milly Archer along with the original SMAC request.