

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: GE Lancaster (formerly RCA)
Facility Address: Pleasure Road, Lancaster, PA 17601
Facility EPA ID #: PAD 00 302 6903

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)?

	Yes	No	?	<u>Rationale / Key Contaminants</u>
Groundwater	X			See below Rationale
Air (indoors) ²		X		All buildings other than for air stripping have been removed
Surface Soil (e.g., <2 ft)		X		RCRA landfill closed and capped. See below Rationale
Surface Water		X		CMS - See below Rationale
Sediment		X		CMS - See below Rationale
Subsurf. Soil (e.g., >2 ft)		X		RCRA landfill closed and capped. See below Rationale
Air (outdoors)		X		RCRA landfill closed and capped. See below Rationale

_____ 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): GE investigated the site under an EPA Consent Order, executed December 16, 1988 (Docket No. RCRA-III-08-CA). The required RFI and CMS were approved April 29, 1992 and September 10, 1992, respectively. EPA selected the final remedy for contaminated groundwater in the August 28, 1992 Statement of Basis and the September 30, 1992 Final Decision and Response to Comments document. GE and EPA agreed to implement the final remedy under the “Additional Work” provision of the Consent Order instead of negotiating a new Order.

Investigation of impacts to the soils, groundwater and surface water bodies was undertaken by GE during the RFI phase of clean-up. Results from the RFI determined that no contaminants above risk based levels were found on site, other than the groundwater and the two land disposal units which are the sources of the groundwater contamination. Off-site contamination is limited to a stabilized groundwater plume.

The EPA-selected final remedy required GE to design, operate and maintain a groundwater pump and treat system. GE built and began operating a groundwater recovery system in 1987. Modifications were made over time and the final design of the Groundwater Recovery and Treatment System (GWRTS) was approved by EPA December 3, 1993. The GWRTS is designed to capture on-site contaminated groundwater as well as reverse the migration of the off-site plume. The recovered groundwater is then sent through two air stripping towers. Air emissions are scrubbed by carbon adsorption canisters to remove VOCs before being released to ambient air. The air stripping tower is governed by Air Quality Permit #36-0033-002. The treated water is discharged to POTW under Industrial Permit #1069, issued by the City of Lancaster on April 9, 1987.

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The primary constituents of concern in the groundwater are VOCs; TCE, PCE, 1,2-DCE, 1,1-DCE, 1,1,1-TCA vinyl chloride, and benzene. These seven constituents, as well as cadmium, are monitored on a regular basis. From 1985 to 1993, quarterly monitoring was performed, and semi-annually sampling has been conducted thereafter to monitor the quality of the groundwater as well as the effectiveness of the GWRTS. Concentrations of all monitored constituents have decreased since the start-up of the GWRTS.

The RFI, CMS, and Corrective Measure Five-Year Assessment Report provide detailed information on the contaminant plume migration and risk assessments of exposure to the groundwater. With respect to the groundwater, no potable wells exist on site. There are no direct exposure pathways to impacted groundwater between the GE facility and the Conestoga River, which is in the direction of plume migration. The only water supply well downgradient of the off-site plume is the Lancaster Water Authority intake, located across the Conestoga River from the GE site. Sampling to date has shown no organic or inorganic constituents exceeding the MCLs.

With respect to surface water, the GWRTS stops contaminated groundwater from entering McGrann Run, a small creek which runs through the GE property. Surface water sampling shows very low, intermittent, levels of contaminants, below MCLs. Risk assessments show that incidental ingestion of surface water from McGrann Run would not pose a health risk. Sampling during the RFI showed no contamination in the Conestoga River, either upgradient or downgradient of the facility. In addition, the groundwater discharge to McGrann Run and the Conestoga River does not pose a current or future threat to aquatic life.

The sources of the groundwater plumes are the two RCRA regulated land disposal units on site, the Upper Quarry (landfill) and the Lower Lagoon (surface impoundment), which are regulated under PADEP's authorized RCRA program. GE closed these units in accordance with the Closure and Post Closure Plan, Upper Quarry and Lower Lagoon, RCA Corporation, Lancaster, Pennsylvania. This Plan was approved by PADEP in September 1988. PADEP approved the final closure of the units on December 20, 1991. On August 29, 1997, PADEP issued a Post Closure Permit for the GE facility, which includes inspection and maintenance of the caps, as well as operation of the GWRTS.

The Lower Lagoon was closed by dewatering and stabilizing the sludge in-situ. Stabilized sludge from the Upper Quarry was then placed on top of the Lower Lagoon sludge. A multi-layer cap was constructed on the Lower Lagoon and the area was seeded. The Upper Quarry was closed by removing and stabilizing all sludge and installing a composite cap. The stabilized sludge was placed in the Lower Lagoon. The land disposal units are under post-closure monitoring and inspection care, provided for in PADEP's Post-Closure Permit.

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A complete investigation of the site was conducted by GE and approved by EPA. Only groundwater and two land disposal units were found to need remediation. A groundwater treatment system is in place which has stabilized the on-site and off-site plumes. The land disposal units have been closed and are under post-closure care by PADEP. There is no human exposure pathways to contaminated groundwater or landfill wastes. Therefore, there are no unacceptable human exposures to contamination. Thus, the “Human Health Exposures” Environmental Indicator has been achieved.

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	---	---	---	---	---	---	---
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 “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): See Rationale for Question #2.

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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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.