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: **Handy and Harman Tube Company, Inc.**
Facility Address: **701 E. Township Line Road, Norristown, PA 19403**
Facility EPA ID #: **PAD 002335222**

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?

   [X] 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).

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	?	Rationale/Key Contaminants
Groundwater	X			Groundwater sampling 1980 – 2019/TCE, DCE, VC
Air (indoors)[2]	X			Soil gas/vapor sampling 2018 – 2019/TCE
Surface Soil (e.g., <2 ft)	X			Soil sampling 1992 – 2006/TCE, DCE, VC
Surface Water	X			Surface water sampling 1980 – 2019/TCE, DCE, VC
Sediment	X			Sediment sampling 2006/TCE
Subsurf. Soil (e.g., >2 ft)	X			Soil sampling 1992 – 2006/TCE, DCE, VC
Air (outdoors)		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.

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):

There are no records of suspected releases to outdoor air that are above protective risk-based "levels" by the facility.

Groundwater beneath and downgradient of the facility is contaminated with trichloroethene and its degradation products (dichloroethenes and vinyl chloride) above MCLs. Maximum concentrations of TCE in shallow groundwater remain over three orders of magnitude above its MCL; maximum concentrations of cis-1,2-DCE and VC in shallow groundwater remain over two orders of magnitude above their MCLs.

TCE in soil vapor sampling exceeded target soil gas screening levels from EPA's Vapor Intrusion Screening Level calculator, suggesting that indoor air contamination is possible.

[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.

Surface and subsurface soil in limited areas of the facility are contaminated with TCE and its degradation products above Industrial Soil RSLs.

Surface water of the unnamed tributary north of the parking lot is contaminated with TCE and its degradation products above Pennsylvania Ambient Water Quality Criteria (AWQC), with maximum concentrations under two orders of magnitude above the AWQC.

Sediment in the unnamed tributary north of the parking lot is contaminated with TCE above EPA Region III's Freshwater Sediment Screening Benchmark.

References:
Site Characterization/Cleanup Plan Report, Handy & Harman Tube Company Site, prepared by Penn E&R, January 2012.
November 2018 monitoring results as reported in Project Status Meeting presentation, prepared by Penn E&R, April 11, 2019.
Summary Report of Findings for the Vapor Sampling Activities Implemented at 2599 Township Line Rd, prepared by Penn E&R, August 20, 2019.

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	YES	NO	NO	YES	NO	NO	NO
Air (indoors)	YES	NO	NO	NO	NO	NO	NO
Soil (surface, e.g., <2 ft.)	NO	NO	NO	YES	NO	NO	NO
Surface Water	YES	NO	NO	YES	YES	NO	YES
Sediment	YES	NO	NO	YES	YES	NO	YES
Soil (subsurface e.g., >2 ft.)	NO	NO	NO	YES	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.

____ 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):

Residents may be exposed to contaminated groundwater through potable use of an impacted well. Construction workers may be exposed to contaminated groundwater during intrusive operations.

Residential properties near the area of the downgradient contaminant plume in shallow groundwater may be exposed to contamination via vapor intrusion into indoor air. Although vapor intrusion into the facility building is possible, the facility is currently vacant.

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

Construction workers may be exposed to contaminated soil during intrusive operations. Trespassers are not expected to be exposed to remaining soil contamination due to caps (buildings, asphalt, pavement, etc.) that cover remaining areas of surface soil contamination.

Trespassers and residents may be exposed to contaminated surface water/sediment along the contaminated stretch of the unnamed tributary and along the stretch of the unnamed tributary within their property, respectively. Food sources on residential properties/farmland that the unnamed tributary crosses may also be exposed to contamination. Construction workers may be exposed to surface water and sediment contamination if construction operations were required in the unnamed tributary. Recreational pathways of exposure to contamination are not expected due to the small size of the unnamed tributary and the limited reach of contamination within it.

Reference:
Site Characterization/Cleanup Plan Report, Handy & Harman Tube Company Site, prepared by Penn E&R, January 2012.

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):

Residential exposures to groundwater (currently two wells on one residential property within the historical contaminant plume in deep groundwater) have been mitigated with point-of-use carbon filtration systems, exposures to indoor air (currently one residential property within proximity of the current contaminant plume in shallow groundwater) have been mitigated with the installation of a vapor mitigation system, and exposures to surface water and sediment are not expected to be of sufficient frequency and duration to constitute a significant exposure.

Construction worker exposures to remaining contamination are not expected to be significant due to the expected implementation of best management practices such as the use of appropriate protective equipment and safe work practices to minimize any exposures to remaining contamination.

Surface water/sediment exposures to trespassers and food sources are not expected to be of sufficient frequency, duration, or likelihood to constitute a significant exposure.

References:
Site Characterization/Cleanup Plan Report, Handy & Harman Tube Company Site, prepared by Penn E&R, January 2012.
Semi-Annual Progress Report (Oct-Dec 2017), prepared by Penn E&R, April 17, 2018.
Project Status Meeting presentation, prepared by Penn E&R, April 11, 2019.
Summary Report of Findings for the Vapor Sampling Activities Implemented at 2599 Township Line Rd, prepared by Penn E&R, August 20, 2019.

[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.

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):

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):

X 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 **Handy and Harman Tube Company, Inc.** facility, EPA ID # **PAD002335222**, located at **701 E Township Line Rd Norristown, PA 19403** 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) /Griff E. Miller/ Date 2/28/20

(print) Griff Miller

(title) Remedial Project Manager

Supervisor (signature) /Paul Gotthold/ Date 2/28/20

(print) Paul Gotthold

(title) Chief, RCRA Corrective Action Branch 2

(EPA Region or State) EPA Region III

Locations where References may be found:

USEPA Region III
Land, Chemicals, & Redevelopment Division
1650 Arch Street
Philadelphia, PA 19103

PADEP
Bureau of Waste Management
2 East Main Street
Norristown, PA 19401

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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.