DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name:	Former Union Switch & Signal Division
Facility Address:	1789 South Braddock Avenue, Pittsburgh, Pennsylvania 15218
Facility EPA ID #:	PAD 000001115

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 Controls" 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	?	Rationale/Key Contaminants
Groundwater	X			See below.
Air (indoors)[2]		X		See below.
Surface Soil (e.g., <2 ft)		X		See below.
Surface Water		X		See below.
Sediment		X		See below.
Subsurface Soil (e.g., >2 ft)	X			See below.
Air (outdoors)		X		See below.

_____ If no (for all media) – skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient support 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):

WABCO Holdings Company (WABCO) is the current corporate company responsible for the former Union Switch & Signal Division (USSD) facility. Currently, the property at the former USSD facility has been redeveloped into the Edgewood Towne Center located in the Boroughs of Swissvale and Edgewood in Allegheny County, Pennsylvania.

Groundwater:

A Phase II Environmental Site Assessment was performed in July 2016 including the installation of temporary monitoring wells. Groundwater analytical results screened against EPA Regional Screening Levels and Safe Drinking Water Act Maximum Contaminant Levels yielded identification of the following constituents of concerns (COCs) in exceedance:

GW-1: Cadmium, Iron, Manganese, Nickel, Selenium, Zinc, Cobalt
GW-2: Trichloroethene (TCE), Naphthalene, Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Cadmium, Manganese, Nickel, Zinc, Antimony, Cobalt, Total Cyanide
GW-3: Benzo(a)anthracene, Benzo(b)fluoranthene, Cadmium, Manganese, Cobalt, Total Cyanide

[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 isa 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 Soils (0-2 feet) and Subsurface Soil (>2 feet):
A Phase II Environmental Site Assessment was performed in July 2016 includingsoil sampling in areas of possible impacts. The work plan called for sample collection at locations exhibiting elevated PID readings. No surface soil (0-2 feet) locations exhibited elevated PID readings, therefore, sample collection was determined to be unnecessary. Considering this, the additional surface soil added, and regrading activities performed during redevelopment, surface soils are not reasonably suspected to be contaminated.

Subsurface soil analytical results identified the following constituents of concerns (COCs) in exceedance of EPA Regional Screening Levels: Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Arsenic, Cobalt, Lead, Manganese, and Total Cyanide.

Indoor Air:
Soil gas samples were collected as part of the 2016 Phase II Environmental Site Assessment and used to evaluate possible indoor air exposures. Sample results were evaluated using the EPA Vapor Intrusion Screening Level (VISL) Calculator. Comparing sample results to VISL settings for both Commercial/Industrial and Residential (to capture possible off-site concerns) use, Target Risk of 10^{-6}, and a Hazard Quotient of 0.1 identified the following constituents of concerns (COCs) in exceedance: 1,3-Butadiene, Chloroform, Carbon Tetrachloride, and TCE. Additionally, the groundwater concentration of TCE resulted in an HQ of 2.9 using the VISL calculator which could represent indoor air exposures for the Commercial/Industrial use.

All residential locations are greater than the recommended approximate buffer distance (100 feet) from impacted media, therefore residential indoor air is not reasonably suspected to be contaminated above appropriately protective risk-based levels. One on-site commercial building is less than default acceptable distance (100 feet) from impacted groundwater at GW-2. EPA re-evaluated this data using site specific boring log data which allowed for use of an attenuation factor of 0.0005, as opposed to the default 0.001. Applying this to the VISL resulted in an HQ result of 1.4 which is much closer to the desired HQ<1. Furthermore, the distance form GW-2 to the on-site commercial building is approximately 90 feet, just slightly less than the recommended 100 feet. This distance would result in additional attenuation of possible vapors from migrating into the indoor air of the on-site commercial building. Therefore, EPA concludes that commercial/industrial indoor air is currently not reasonably suspected to be contaminated above appropriately protective risk-based levels.

Surface Water/Sediment:
Nine Mile Run is the closest surface water body, located approximately 650 feet northwest of the property. Groundwater fate and transport modeling of potential discharge to Nine Mile Run was presented in a Conceptual Site Model (CSM) submitted on February 2, 2018. Utilizing concentrations in the central property well (highest concentrations), GW-2, no COCs would discharge into Nine Mile Run above surface water quality criteria. Furthermore, GW-3, located farther downgradient of GW-2 and closer to Nine Mile Run had non-detect or lower concentrations of the COCs evaluated in the fate and transport modeling. Therefore, neither surface water nor sediments are reasonably suspected to be contaminated above appropriately protective risk-based levels from releases subject to RCRA Corrective Action at the facility.

Outdoor Air:
The former USSD is an inactive facility that was used for the production of electrical and mechanical components for railroad signaling and switching systems which operated from approximately 1880 until 1987. Exhaust fans in the process areas and the paint booths once existed when the site was operational. Site operations by USSD were terminated in July 1987 and site demolition (including the paint booths and stacks) occurred in 1988. Because of the termination of USSD site activity and the subsequent redevelopment into Edgewood Towne Center in 1988, there is no current exposure pathway or potential for release to outdoor air from this facility. However, a potential pathway that does exist for outdoor air is vapor off gassing from impacted groundwater and soil gas for construction workers during intrusive activities and possible trespassers.

References:
Environmental Indicator Inspection Report, URS, December 2008
Phase II Environmental Site Assessment Report, AECOM, September 5, 2016
Conceptual Site Model, ARCADIS, February 2, 2018

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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	Daycare	Construction	Trespassers	Recreation	Food[3]
Groundwater	no	no	no	yes	no	no	no
~~Air (indoors)~~	-	-	-	-	-	-	-
~~Soil (surface, e.g., <2 ft)~~	-	-	-	-	-	-	-
~~Surface Water~~	-	-	-	-	-	-	-
~~Sediment~~	-	-	-	-	-	-	-
Soil (subsurface e.g., >2 ft)	no	no	no	yes	no	no	no
Air (outdoors)	no	no	no	yes	yes	no	no

Instructions for Summary Exposure Pathway Evaluation Table

1. Strikeout 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):

Groundwater:
During the CSM, it was confirmed by the township that groundwater is not a drinking water source at the Facility or offsite within a 1-mile radius. Furthermore, no potable wells were identified within a 1-mile radius. Therefore, the groundwater ingestion pathway is incomplete for residents, workers, daycare, trespassers, recreation, and food receptors. There is complete pathway for construction workers performing intrusive activities as the depth to impacted groundwater is less than 15 feet. However, currently there are no known plans for utility or construction work in any of the on-site locations where groundwater impacts have been identified.

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

Subsurface Soil (>2 feet):
Possible receptors to on site soils (>2 feet bgs) include utility workers or future construction workers. However, currently there are no known plans for utility or construction work in any of the on-site locations where subsurface soil impacts have been identified.

A work plan for collection of additional media characterization data has been proposed to be developed by WABCO to verify the conclusions of the CSM.

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"** (i.e., potentially[4] " unacceptable" levels) 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 theremaining 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):

Construction workers and trespassers are the only complete pathway exposures between contamination and receptors that can be reasonably expected under the current conditions. Complete pathways for construction workers would be inhalation, ingestion, and/or dermal contact of groundwater, subsurface soil, and outdoor air. A complete pathway for trespassers is inhalation of outdoor air.

As mentioned, there are no known plans for utility or construction work and the timeframe of redevelopment completion at the Facility is ~30 years. The exposures from these complete pathways are not reasonably expected to be significant because the intensity, frequency and duration are expected to be significantly lower than those used in the derivation of the levels used for screening purposes (EPA R3 RSLs) which are derived from frequency and duration timeframes significantly longer than construction activity timeframes.

Trespassers are a known issue that has been mentioned by the owners but is being addressed through increased security measure (cameras, increased police presence, etc.). The exposure from this complete pathway is not reasonably expected to be significant because a comparison to the possible indoor air results using the VISL calculator with a Target Risk of 10^{-4} and a Hazard Quotient of 1 show no concern. Exposures to outdoor air from the same data would reasonably be expected to be significantly less.

[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 a "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 a "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):

X YE – Yes, "Current Human Exposures Under Control" has been verified.

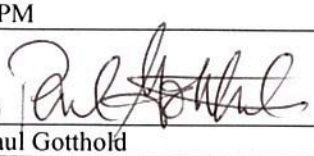
_____ NO – "Current Human Exposures" are NOT "Under Control."

_____ IN – More information is needed to make a determination.

Completed by: (signature)  Date 4/19/18

(print) Kevin Bilash

(title) RPM

Supervisor: (signature)  Date 4-19-18

print) Paul Gotthold

(title) Director, Land and Chemicals Division

(EPA Region or State) EPA Region III

Locations where References may be found:

USEPA documents referenced herein can be found at USEPA's Region III office in Philadelphia, PA.

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.