

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name: Former Exide Technologies
Facility Address: 3000 Montrose Ave., Laureldale, PA 190605
Facility EPA ID #: PAD990753089

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 #8 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	x			Elevated heavy metals detected in groundwater.
Air (indoors) ²		x		Facility is permanently shut down.
Surface Soil (e.g., <2 ft)	x			Elevated Pb detected onsite and offsite properties.
Surface Water		x		Heavy metal levels are below MCLs and aquatic stds.
Sediment	x			Elevated heavy metals detected onsite and offsite.
Subsurf. Soil (e.g., >2 ft)	x			Elevated heavy metals detected onsite
Air (outdoors)		x		Facility is permanently shut down.
☐ 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):

For many years, the former Exide Technologies (Exide) operated a lead smelter and manufactured and recycled lead batteries at the Laureldale facility (Facility). Spent lead-acid batteries were sent to a battery breaker unit where lead, plastic, and acid were separated. The recycled lead was smelted and cast into lead-alloy bars to produce new battery plates. Prior to the Clean Air Act of 1970 and the required installation of air pollution controls, Exide lead smelter operations contributed to lead emissions and releases that impacted the soils at the Facility and in the surrounding community. In 2010, Exide discontinued the battery manufacturing operations and ceased all lead recycling operations in 2013.

In May 2020, Exide filed Chapter 11 bankruptcy to liquidate its North American operations. As a result of the bankruptcy settlement in October 2020, Exide dissolved, and the court appointed a Trustee and established an Environmental Trust to manage the Facility. Because of the lack of funding in the Trust to adequately address the onsite contamination, the Superfund Removal Program interceded and stabilized the Facility for any potential offsite releases, which included the decontamination of the smelter operations, removal of hazardous wastes, and operation of the onsite wastewater treatment plant to treat stormwater runoffs. In 2023, EPA listed the offsite soil lead contamination on the National Priorities List (NPL). The Superfund Remedial Program is conducting the investigation and cleanup of the offsite soil lead contamination. The facility is currently closed. This Environmental Indicator for Human Health Exposures focuses only on the Facility and the onsite contamination.

Groundwater:

Lead is the primary contaminant in groundwater with traces of Antimony above regulatory standards. The groundwater contaminant plume is localized to the interior of the property. Below is a list of constituents of concern and the range of concentrations detected in groundwater relative to the EPA Maximum Contaminant Levels (MCLs) standard for drinking water:

Constituents	Concentration Ranges (ug/L)	MCLs (ug/L)
Antimony	ND - 13	6
Arsenic	ND - 1.9	10
Cadmium	ND - 1.2	5
Lead	1 – 187	15
Mercury	ND - 0.5	2

Surface Soil:

The former Exide facility was a secondary lead smelter and battery manufacturer. As a result of 35 years of lead smelter operation prior to the installation of air pollution controls and the advent of the Clean Air Act of 1970, Exide contributed to lead emissions and releases that impacted the soils at the Facility and the surrounding community.

The Facility is predominately covered with paved asphalt and buildings (e.g., manufacture buildings, offices, warehouses). There are some open grass areas onsite that contain soil lead levels that are above the PADEP Direct Contact Nonresidential Medium Specific Concentrations (MSCs) of 1,000 mg/kg.

Subsurface Soil:

Subsurface soils beneath the property consist of a mixture of fill materials and soil that contain elevated heavy metal concentrations. The range of concentrations of heavy metals detected in the subsurface soils are listed below relative to the Pennsylvania Medium Specific Concentrations for Non-residential Subsurface (PA MSC NR SS):

Constituents	Fill Material Concs. (mg/kg)	Soil Concs. (mg/kg)	PA MSC NR SS (mg/kg)
Antimony	ND – 6,930	ND – 23	190,000
Arsenic	5.9 – 2,810	3.-17.6	190,000
Cadmium	ND – 629	ND	190,000
Lead	160 – 163,000	ND - 54	190,000

Sediment:

Sediments samples were collected along the onsite unnamed tributary and drainage swales. The sediments samples were analyzed for antimony, arsenic, cadmium, and lead. Sediment lead results are compared to the EPA freshwater screening benchmark and the site-specific residential soil lead action level (650 mg/kg) for human exposure risk. Below is a list of constituents and range of concentrations detected in sediment relative to EPA freshwater screening benchmarks:

Constituents	Concentration Ranges (mg/kg)	Freshwater Screening (mg/kg)
Antimony	ND - 43	2
Arsenic	2.1 – 64	9.8
Cadmium	ND – 13.4	0.99
Lead	29 – 10,800	35.8

Reference Documents: 2008 Residential Soil Remediation Completion Report, Phase 3 RCRA Facility Investigation (RFI) Current Conditions Report (5/2013), Phase 3 RFI Report (3/2015), Groundwater Addendum Phase 3 RFI Report (1/2017)

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	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	N/A	N/A	<u>No</u>
Air (indoors)	_____	_____	_____				
Surface Soil (< 2 ft)	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>No</u>
Surface Water	_____	_____			_____	_____	_____
Sediment	<u>No</u>	<u>Yes</u>	N/A	N/A	<u>Yes</u>	<u>No</u>	<u>No</u>
Subsurface Soil (> 2 ft.)	<u>No</u>	N/A	N/A	<u>Yes</u>	N/A	N/A	<u>No</u>
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) and N/A for not applicable.

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):

Groundwater:

The groundwater contamination is contained within the property boundaries. The property is connected to public water and does not use groundwater for potable use. The surrounding residences are connected to public water. There are no direct exposures to the groundwater contamination at the property.

Surface Soil:

The property is predominately covered with paved asphalt and buildings. There are patches of open grass areas. Workers may potentially be exposed to elevated soil lead concentrations in the open grass areas. The property is fenced, but there is a low probability that trespassers may traverse or intermittently visit areas of the property containing elevated surface soil lead contamination.

Subsurface Soil:

Buildings and paved asphalt cover most of the property. These structures serve as a barrier that prevent direct exposures to the contamination in the subsurface soil. However, any onsite construction work that requires excavation below these barriers may pose an exposure health risks to construction workers.

Sediment:

Elevated lead concentrations are detected in sediment in the unnamed tributary and drainage swales located onsite. The unnamed tributary and drainage swales areas are fenced off. Workers' exposures to these areas are limited. There is a low probability that trespassers may traverse the unnamed tributary and drainage swales.

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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):

Surface Soil:

The facility is currently closed and secured with a perimeter fence. The property is predominately covered with buildings and paved asphalt with patches of open grass areas. Superfund contractors who are operating the wastewater treatment plant and trespassers may potentially be exposed to elevated soil lead concentrations in the open grass areas. These areas are restricted, and exposure frequency is minimal. Therefore, potential exposure risks are not expected to be significant.

Subsurface Soil:

Inhalation of heavy metal dusts caused by excavation work in subsurface soil is the predominate exposure pathway. Any onsite construction work that requires excavation in the subsurface soil will require proper personal protection equipment and precautionary measures to suppress dust dispersion, which will minimize potential inhalation of heavy metal dusts.

Sediment:

Elevated lead concentrations are detected in sediment at the unnamed tributary and drainage swales located onsite. There is a very low probability that trespassers may traverse the unnamed tributary and drainage swales. However, the low frequency and the mechanisms (ingestion and dermal adsorption) of direct exposures are not expected to be significant.

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 (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 **former Exide Technologies** facility, EPA ID # **PAD990753089**, located in **Laureldale, PA** 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) _____ Date: 12/19/2024
 (print) Khai Dao
 (title) RCRA CA Project Manager

Supervisor (signature) _____ Date:
 (print) Kristin Koroncai
 (title) Section Chief, RCRA Corrective Action
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Locations where References may be found:

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