

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRAinfo code (CA725)

Current Human Exposures Under Control

Facility Name: Revere Smelting and Refining
Facility Address: 65 Ballard Road, Middletown, NY 10940
Facility EPA ID #: NYD030485288

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

Site Description:

Revere operates a secondary lead smelter on Ballard Road in Middletown, New York. The site is a Transportation, Storage, Disposal site (TSD) that operates under a 373 Permit. The facility was constructed on farmland and scrub land in the early 1970s as a secondary lead smelter. Revere acquired the facility in 1972 and has operated the facility continuously since purchasing the plant.

The facility is in a primarily rural area of south-eastern New York and occupies a 55 acre parcel of land - approximately one third of which is used for plant operations, and the remainder consists mainly of undeveloped property containing overgrown fields, mature woodlands, and a small pond, Figure 1.

During the late 1970's and early 1980's large quantities of fill material containing lead slag, battery parts and other waste was buried at this site. The surface layer of soil extending beyond the fill areas was also contaminated with windblown lead particles from plant yard operations and stack emissions. Contaminated fill material can be found to a depth of 20 feet below grade. Surficial contamination extends from a few inches to two feet below grade.

The total quantity of contaminated soil had been estimated to be about 100,000 cubic yards. Remedial actions conducted to date have removed about one third of that material, and about two thirds still resides at the site.

Site Responsibility and Legal Instruments:

Corrective action for the lead contaminated soil and groundwater was being implemented through a NYS Part 373 Permit until 1998. Corrective Action was also being implemented through a Consent Order signed in 1997 that established four Temporary Corrective Action Management Units (CAMUs) at the site for management of contaminated soil during the stabilization process and a 1999 Consent Order that established a fifth CAMU for the temporary storage and treatment of contaminated soil. The latter Order also included a schedule for building a slurry wall around the main plant to reduce the amount of groundwater that would flow into the excavation site and divert groundwater that would contact the highly leachable lead contaminated soil under the plants containment building. Revere is currently in violation of both these Orders due to missed deadlines. At this time all corrective action work

for contaminated soils surrounding the facility are being addressed by the Division of Environmental Remediation.

Potential Threats and Contaminants:

Contaminants.

Lead has been detected at concentrations greater than 500 parts per million (and up to the 200,000 ppm range) in soils in three distinct areas at the site: 1) inaccessible soils beneath the containment building, 2) subsurface fill located on the east, west, and south sides of the main plant, and 3) in some surficial soils (generally six inches to two feet) scattered across the Revere property. The highest total lead and TCLP lead concentrations have consistently been encountered in the deeper fill material. Soils beneath the containment building are not included in this corrective action and are to be addressed in the closure plan for the containment building. Other contaminants in the soil are cadmium, antimony, and arsenic, but these contaminants are found at much lower levels than that of lead since they are a trace elements in the lead alloy produced at Revere.

Revere ceased corrective action work without DEC approval in the summer of 1999. Up to that point they had removed most of the surficial contamination West of the plant. They had started the process of excavating, chemically stabilizing and disposing of the contaminated soil on the East side of the plant. No work had been done on soils South of the plant. An estimated 100,000 cubic yards of contaminated soil had been planned to be stabilized and removed from the site. To date only about half this quantity has been chemically stabilized and one third of the 100,000 cubic yards has been taken to landfills in Pennsylvania.

Ambient air monitoring is not carried-out routinely within the buildings located onsite. However workers in the containment building are required to use particulate filter masks. Such monitoring is conducted for off-site air emissions from the stack. During field investigations and all corrective action work, Revere is required to follow a Health and Safety plan that includes monitoring the air in the vicinity of the workers for lead dust.

Potential Threats From Contaminated Groundwater.

Revere is located in Orange County and is on a public water supply. Groundwater is not used for any purpose onsite or off-site. However, the State considers all its groundwater to be a potential source of potable water and should be remediated to its Groundwater Quality Protection Standards. It is likely that contaminated groundwater migrates off-site. At this time no off-site private or municipal wells have been affected by contaminated groundwater from RSR. Trespassers are kept off the main Plant area and much of the surrounding area by fencing and would not be expected to come in contact with contaminated groundwater if they should gain access to the site. Workers sampling and managing contaminated groundwater corrective measures will do so following an appropriate health and safety plan.

Groundwater elevations measured in the seventeen wells at the site indicate that shallow groundwater consistently flows south-southeast. Groundwater samples have been collected quarterly since August 1991 to evaluate the extent of groundwater contamination in the surficial aquifer. The results show significant heavy metal contamination in the fill area. Maximum contaminant concentrations detected in the groundwater are as follows:

1. 616,000 ug/l for lead
2. 12,000 ug/l for antimony
3. 220 ug/l for cadmium
4. 150 ug/l for chromium
5. 4,720 ug/l for arsenic
6. 2,900 ug/l for sulfates
7. The pH of some groundwater at the site was 3.

In the past 4 years groundwater levels of contaminants have been found to be much lower, often under groundwater standards except for sulfates which continue to be detected at levels over 2,000 ug/l.

Potential Threats From Contaminated Soil.

Areas of contaminated soil under buildings or asphalt precludes direct or indirect contact with the contaminated soils by human receptors. Other areas of the site have contaminated soil that is exposed, but surrounded by security fencing. Any investigation or corrective action construction to be implemented at the site will require the application of an appropriate health and safety plan to protect construction personnel and facility workers.

Potential Threats From Air Contamination.

Workers in the buildings at Revere could be potential receptors to lead dust from plant operations. They are tested for lead blood levels on a regular basis, and must follow a health and safety plan to reduce their exposure.

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>	___	___	<u>8/93 RFI accepted 9/23/93 described lead in the GW</u>
Air (indoors) ²	<u>X</u>	___	___	<u>This is a secondary lead smelter</u>
Surface Soil (e.g., <2 ft)	<u>X</u>	___	___	<u>8/93 RFI, 8/27/04 plan for fence - installed 9/04</u>
Surface Water	<u>X</u>	___	___	<u>8/93 RFI and Quarterly sampling reports</u>
Sediment	<u>X</u>	___	___	<u>8/93 RFI and Quarterly sampling reports</u>
Subsurf. Soil (e.g., >2 ft)	<u>X</u>	___	___	<u>8/93 RFI described lead, heavy metals in deep soil</u>
Air (outdoors)	___	<u>X</u>	___	<u>Air is monitored quarterly - no concerns at this time</u>

___ 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): Groundwater standard is 15 ppb, well data has had more than 28,000 ppb (or 28ppm) in the groundwater. Air (indoor) is contaminated due to the production process, but workers are required to wear masks. Surface soil standards are 500 ppm for lead (the indicator parameter), but levels over 50,000 ppm were found. Surface water has a 15 ppb standard, but 1600ppb was found in the pond in 1984 report. Sediment standard for lead is 110ppm for severe effects levels, but a Jan 1997 report showed levels up to 450,000ppm. Subsurface soil standards are 500ppm for lead, but has been found more than 200,000ppm. Outdoor air has exceeded ambient air standards in the past and the Division of Air Resources has fined Revere, but levels have been within standards more recently.

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)

“Contaminated” Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>
Air (indoors)	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>
Soil (surface, e.g., <2 ft)	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>
Surface Water	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>YES</u>	<u>NO</u>	<u>NO</u>
Sediment	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>YES</u>	<u>NO</u>	<u>NO</u>
Soil (subsurface e.g., >2 ft)	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<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).
- ³ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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):

Contaminants of Concern:

Groundwater, air (indoors), surface soil (e.g., <2 ft), surface water, sediment and subsurface soil (e.g., >2 ft) is contaminated with lead, arsenic, antimony, and cadmium. Since lead is by far the most significant contaminant, and if it is not found in a particular medium, other metals are not found at levels of concern in that medium, lead is considered to be an “indicator parameter”. This means that if lead is addressed for a particular medium, all other contaminants (unless noted) are also addressed.

Groundwater:

Groundwater is not used for drinking water on site and off-site drinking water wells have not been impacted by any groundwater contaminants. Metal contamination of groundwater appears to have been restricted to the area with soil contamination with only minor migration downgradient. Contractors who perform sampling of the water use appropriate personal protection equipment as specified in the health and safety plan used for that activity.

There have been exceedances of sulfates in some wells that have extended to the facility boundary, but no off-site drinking water supplies have been affected.

Air (indoor):

All workers exposed to indoor lead dust are required to wear particulate filter masks and have their blood lead levels tested on a regular basis. Workers who are found to have excessive levels of lead are counseled on plant rules and disciplined until their blood lead levels are corrected.

Air (outdoors):

Air quality around this plant is monitored quarterly and no exceedances have been noted here for any contaminants from this facility for the past several years.

Soil (surface and subsurface):

Areas of contaminated soil under buildings or asphalt precludes direct or indirect contact with the contaminated soils by human receptors. On site workers/contractors who venture to unpaved areas or perform excavation activities that involve contaminated soil use appropriate personal protection equipment as specified in the health and safety plan used for that activity.

The main plant site has a fence and 24 hour security personnel, which prevents uninvited people from entering the site. The areas where contaminated soil exists outside of the main plant site will shortly have an eight foot tall fence that surrounds the contaminated soil and all the Corrective Action Management Units.. A contract for the construction of this fence has been signed and construction should be complete no later than October of 2004. This will ensure that any trespasser will be unable to come in contact with contaminated soil. (Figure 2)

Surface Water:

Workers at this site have no duties that involve the surface water. Contractors who perform sampling of the surface water use appropriate personal protection equipment as specified in the health and safety plan used for that activity.

The pond at the site is located just outside the fenced area, adjacent to the rail road tracks. Its very small size and thick tall vegetation surrounding it make it very unlikely that any trespasser will come in contact with the surface water in the pond.

Sediments:

Workers at this site have no duties that involve sediments. Contractors who perform sampling of the sediments use appropriate personal protection equipment as specified in the health and safety plan used for that activity.

The pond containing the majority of the sediments at the site is located just outside the fenced area, adjacent to the rail road tracks. Its very small size and thick tall vegetation surrounding it make it very unlikely that any trespasser will come in contact with the sediments in the pond.

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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.”

X 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): Yes, but only for sediments in the pond once the new fence is constructed by the end of October 2004. For all other media the answer is “No” - All workers have their blood levels tested on a regular basis and concerned local residents have also had this test during a blood lead level survey performed in 1994, when Reverewas emitting more lead into the environment than it does at this time. All down gradient wells used for drinking water have been tested for lead and have been found to be within drinking water standards (15ppb)

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): If such exposures have occurred they would have shown up in the blood tests that are performed on workers. As for potential off-site human receptors, there have been blood tests performed on all neighborhood people who requested such tests in 1994, and no problems were observed. Since the site has become significantly cleaner in the past decade, such exposures would be significantly lower today. With regard to the sediments in the pond, the heavy brush and other vegetation around the pond make access to the sediments of the pond very difficult.

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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 Revere Smelting and Refining facility, EPA ID # NYD030485288, located at Rt 2 Ballard Road, Middletown, NY 10940 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.

References:

1. Site wide RFI report August 1993
2. Quarterly Groundwater report June 2003

Completed by	<u>Original signed by:</u> <u>Paul Patel</u> <u>Environmental Engineer</u>	Date <u>9/30/04</u>
Supervisor	<u>Original signed by:</u> <u>Daniel J. Evans, P.E.</u> <u>Environmental Engineer 3</u>	Date <u>9/30/04</u>
Director	<u>Original signed by:</u> <u>Edwin Dasseti, P.E.</u> <u>Bureau of Hazardous Waste & Radiation</u> <u>Division of Solid and Hazardous Materials</u>	Date <u>9/30/04</u>

Locations where References may be found:

NY State Department of Environmental Conservation
625 Broadway
Albany, NY 12233

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.