

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Michigan Smelter - Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region V

Subject: POLREP #4
Progress
Michigan Smelter
B5XF
Houghton, MI
Latitude: 47.1223147 Longitude: -88.6065189

To: Mark Johnson, ATSDR
Valencia Darby, Department of Interior
Dan Wyant, MDEQ
Bill Schuette, Michigan Department of Attorney General
Rodney Stokes, Michigan DNR
Todd Goeks, NOAA
Laurie Lee, NOAA
Wayne Babcock, U.S. Department of Interior
Robert Burr, U.S. Department of Interior
Sam Borries, U.S. EPA
Yolanda Bouchee-Cureton, U.S. EPA
Mindy Clements, U.S. EPA
Mark Durno, U.S. EPA
Jason El-Zein, U.S. EPA
Sherry Fielding, U.S. EPA
Charlie Gebien, U.S. EPA
John Glover, U.S. EPA
Thomas Marks, U.S. EPA
Mike Ribordy, U.S. EPA
Carol Ropski, U.S. EPA
Annette Trowbridge, U.S. Fish & Wildlife

From: Elizabeth Nightingale, OSC

Date: 10/4/2013

Reporting Period: 9/30/13 - 10/4/13

1. Introduction

1.1 Background

Site Number:	B5XF	Contract Number:	
D.O. Number:		Action Memo Date:	8/5/2013
Response Authority:	CERCLA	Response Type:	Time-Critical
Response Lead:	EPA	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	9/9/2013	Start Date:	9/10/2013
Demob Date:		Completion Date:	
CERCLIS ID:	MIN000510458	RCRIS ID:	
ERNS No.:		State Notification:	Yes
FPN#:		Reimbursable Account #:	

1.1.1 Incident Category

Time Critical Removal Action

1.1.2 Site Description

Please see initial POLREP.

1.1.2.1 Location

Please see initial POLREP.

1.1.2.2 Description of Threat

Please see initial POLREP.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

Please see initial POLREP.

2. Current Activities

2.1 Operations Section

Narrative:

Week's Activities Overview

Over the week beginning the September 30th, 2013 work focused primarily on the following activities:

- Initiated and completed excavation of contaminated soil from 4 hillside waste pile areas
- Initiated and completed backfilling of 1 hillside waste pile area
- Initiated backfilling of another hillside waste pile area
- Staged waste from hillside waste pile areas for disposal
- Evaluated treatment vs disposal options for lead contaminated soil from the battery pile area

Update by geographic area:

Below is an update on the status of action for each of the focus areas on site.

1. Contaminated Soils

A number of areas on site were identified where surficial soils exceeded state residential direct contact criteria (RDCC) and site specific action levels (SSALs) for lead (400 ppm and 5,184 ppm, respectively), arsenic (7.6 ppm and 389 ppm, respectively), and copper (20,000 ppm and 93,900 ppm, respectively). The status of our work to address each of these areas is summarized below.

- a) Battery debris pile. Battery pile adjacent to Coles Creek that was approximately 800 square feet in size. Lead had been detected at a concentration of 157,000 ppm in a surface soil sample collected from this area, and leachable lead was 950 ppm.

(1) Status: Excavation of pile complete. Reached native sand at base of excavation that tested below RDCC for lead, copper and arsenic. The excavation hole area has been backfilled with clean sand, covered with topsoil and graded. Waste has been covered and staged for treatment.

- b) Mercury knob waste pile. A pile of smelter waste that was approximately 900 square feet, and 4-5 feet high. Arsenic was detected at a concentration of 2,430 ppm in a surface soil sample collected from the mound. Copper exceeded 100,000 ppm. Lead levels were also found to exceed SSALs.

(1) Status: Excavation of pile complete. Reached native sand at base of excavation that tested below RDCC for lead and copper, and below the SSAL for arsenic. The excavation area has been backfilled with clean sand, covered with topsoil and graded. Waste has been staged for disposal.

- c) Hillside Waste Piles:

- (1) Easternmost hillside waste pile: Smelter waste pile that was approximately 64 square feet in size. Arsenic was detected in surface soil at concentrations up to 4,970 ppm.

(a) Status: Excavation of pile complete. Native sand was reached at base of excavation that tested below RDCC for lead and copper, and below the SSAL for arsenic. The excavation area has been backfilled with clean sand and graded. Waste has been staged for disposal.

- (2) Hillside waste pile area #1: Small area in smelter ruins on Terrace 4, where prior XRF screening indicated that lead levels exceeded site specific criteria.

(a) Status: This area is completely within smelter ruins and cannot safely and practically be accessed for cleanup, so will be included in the area posted with signage regarding the presence of contamination.

- (3) Hillside waste pile area #2: Small area in smelter ruins next to smoke tunnel on Terrace 4, where prior XRF screening indicated that arsenic levels exceeded site specific criteria.

(a) Status: This area is completely within smelter ruins and cannot safely and practically be accessed for cleanup, so will be included in the area posted with signage regarding the presence of contamination.

- (4) Hillside waste pile area #3: Smelter waste pile on Terrace 3 that was approximately 4,275 square feet in size. Arsenic was found to exceed RDCC and SSALs and detected in surface soil at a concentration of 2,820 ppm during XRF screening.

(a) Status: Excavation of pile complete. Native sand was reached at base of excavation that tested below RDCC for lead and copper, and below the SSAL for arsenic. Backfilling and grading of the excavation area is ongoing. Waste has been staged for disposal.

- (5) Hillside waste pile area #4: Smelter waste pile on Terrace 3 that was

approximately 600 square feet. Arsenic was found to exceed RDCC and SSALs in surface soil.

- (a) Status: Excavation of pile complete. Native sand was reached at base of excavation that tested below RDCC for lead and copper, and below the SSAL for arsenic. Backfilling and grading of the excavation area has not yet been completed. Waste has been staged for disposal.
- (6) Hillside waste pile area #5: Smelter waste pile on Terrace 3 that was approximately 1,225 square feet. Arsenic was found to exceed RDCC and SSALS and detected in surface soil at a concentration of 6,037 ppm during XRF screening.
 - (a) Status: Excavation of pile complete. Native sand was reached at base of excavation that tested below RDCC for lead and copper, and below the SSALs for arsenic. Backfilling and grading of the excavation area has not yet been completed. Waste has been staged for disposal.
- (7) Hillside waste pile area #6: A small area at the base of the foundation of the former smelter chimney on Terrace 2 that was shown to exceed arsenic SSALS during XRF screening in 2010. EPA was unable to detect any exceedences of SSALs during rescreening. Because of this, no excavation is being done in this area. If SSAL exceedances had been detected, we would still be unable to excavate because this area cannot safely and practically be accessed for cleanup. This area will be included in the area posted with signage regarding the presence of contamination, as it is within the smelter ruins.
- d) 1.5 acre open area: This open area near the property entrance was found to have levels of total arsenic and lead in surface soils that exceed the SSALs in a number of discrete areas within a 1.5 acre area, and exceed the RDCCs throughout the area. In surface soil samples from within that area, total lead of up to 31,600 parts per million (ppm) was detected, as well as total arsenic of up to 4,130 ppm. Leachable lead was detected at 16 milligrams per liter (mg/L). To address direct contact threats in this area, an approximately 6-inch thick clean fill cover will be installed across the area over metal-contaminated soil.
 - (1) Status: Clearing of the area continues. Work to install cover not yet started.
- e) Smelter Ruins: Smelter ruins make up an approximately 2.5 acre area of the site. A number of places within this area have been found to exceed RDCCs for lead and/or arsenic. Several areas (Hillside waste piles #1 and #2) exceed both RDCCs and SSALs. This area is completely within smelter ruins and cannot safely and practically be accessed for cleanup. Therefore, the entire perimeter of the ruins will be included in the area posted with signage regarding the presence of contamination.
 - (1) Status: Signage has been designed and ordered, but has not yet been installed.

2. Asbestos Containing Materials

Several areas of known or suspect asbestos containing materials (ACM) have been identified on site.

- a) Rear asbestos pile: Samples from an approximately 20 square foot area of old siding were found to contain up to 10% chrysotile. This material was located along Coles Creek about 30 feet upstream from the battery pile.
 - (1) Status: This area has been excavated, and the material has been removed and staged for disposal. Material is covered in plastic.
- b) Second suspected rear asbestos pile: An additional debris pile of suspected asbestos containing materials, possible transite siding, were identified approximately 10 feet north of the haul road, east of the battery debris pile.
 - (1) Status: The crew excavated the suspect building debris and underlying soil and transferred the waste to the staging area. Material is covered in plastic.
- c) Transite piles: Another area with gray fibrous material on the soil surface in smelter ruins was found to contain up to 50% chrysotile. Chrysotile is the most common form of asbestos.
 - (1) Status: This material has not yet been removed.
- d) Asphaltic roofing material: Asphaltic roofing material has been found throughout the site. This material was sampled from 3 locations on site and found to be Category I non-friable ACM.
 - (1) Status: The crew has made several passes through the site and has collected visible asphaltic roofing material. This material has been staged for disposal. Material is covered in plastic.
- e) Roofing material on metal shed debris: A sample of this was collected and submitted for

analysis to determine if it contains asbestos.

- (1) Status: This material has not yet been removed pending receipt of analysis results.

Soil Monitoring:

Throughout the site, after excavation of predesignated waste piles, remaining soil will be screened with the XRF to determine the amount of lead, copper, and arsenic remaining in the soil, if any. If levels of metals in remaining soil exceed the site specific direct contact criteria, soil will be demarcated before backfilling.

Air Monitoring and Sampling:

Every day that excavation and loading of contaminated soils is ongoing air monitoring is being conducted to ensure public and worker safety. This work (and therefore air monitoring and sampling) began on 9/16/13.

Perimeter Air Monitoring:

Datarams (DR4) are deployed daily along three of the perimeter boundaries where off-site receptors are most at risk to exposure from fugitive emissions. The smelter facilities were built into the northwest facing hillside, therefore monitors have been placed along the north, east, and west site boundaries. Real-time particulate data is transmitted back to the site command post where it will be monitored continuously.

A website has been established to view the current and past perimeter air monitoring data for the site. To view the data go to the web address: vipr.ert.org. You have to create a login on your first visit to the site. Once you have logged in, go to the R05 Michigan Smelter Deployment to view site data.

The perimeter action level for particulate has been set at 500 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Should a DR4 unit detect sustained particulate concentrations greater than 500 $\mu\text{g}/\text{m}^3$, the source of emissions will be investigated, and administrative and/or engineering controls will be initiated to reduce the particulate emissions.

During the week of September 30, 2013, no exceedances of the perimeter action level were recorded.

Exclusion Zone Air Monitoring and Sampling:

Air Monitoring:

Two personal DR (PDR) particulate air monitors are deployed daily in the exclusion zone during active excavation and capping activities. The particulate monitors data-log instantaneous and time weighted average (TWA) particulate concentrations during operations.

The concentrations of contaminants identified in the removal assessment analytical results were used to establish a site-specific action level of 95 $\mu\text{g}/\text{m}^3$ for total particulates for the exclusion zone. The crew will implement appropriate engineering control measures if an exceedance of the established action level is sustained for more than 60 seconds. Action level exceedances will be managed by setting the monitor to alarm at the established action level to notify on-site personnel.

During the week of September 30, 2013, one exceedance of 95 $\mu\text{g}/\text{m}^3$ was detected in the exclusion zone on October 1, 2013. Levels reached 230 $\mu\text{g}/\text{m}^3$ but were not sustained. Wind gusted strongly most of the day - likely causing the exceedance during excavation of the hillside waste area #3. Engineering controls were utilized to mitigate dust.

Air Sampling:

Integrated air sampling for personnel exposure characterization is being performed by ERRS for inorganic contaminants and asbestos in the breathing zone. ERRS collects samples from personnel with the greatest potential for exposure within the exclusion zone for each job classification over for a full shift (minimum of seven hours) over the first three days of intrusive activities. If the exposure assessment reveals employee exposures to be below the action level, further exposure determination will be discontinued. If there is a change of equipment, process, control, or a new task has been initiated that may potentially result in an employee being exposed at or above the action level, additional air monitoring will be conducted. Should the sample results indicate exposures over the OSHA permissible exposure limits and site-specific action levels, engineering controls will be adjusted and an additional three days of air sampling will be conducted.

Results that have been received back to date show no detections of lead or arsenic.

Battery Pile Soil Treatability Study Results

A composite sample of lead contaminated soil from the battery waste pile was sent to the lab for treatability analysis. Results of the study were received this week. The treatability study was performed to evaluate stabilization reagents capable of reducing the leachability of lead as determined by the Toxicity Characteristic Leaching Procedure (TCLP). Nine treatment designs for the soil were prepared utilizing reagents including EnviroBlend® 90/10, TerraBond TS, and TerraBond FBA. Treated samples of the mixtures were sent for TCLP lead analysis by USEPA Method 1311/6010C.

The results of the treatability study indicate that a 4%, 5%, and 6% dry addition mixture of EnviroBlend® 90/10 per wet weight of untreated soil is effective in reducing the leachability of lead in the soil to levels acceptable for disposal at a RCRA Subtitle D Landfill (5.0 mg/L).

Based on these results, we have determined that we should be able to successfully treat the battery pile waste to render it non-hazardous and dispose of it for approximately one third the cost of disposing of it as hazardous waste.

Specific activities completed each day are described in further detail below.

Activities on 9/30/13

- Completed backfilling and grading easternmost hillside waste pile located on Terrace 3.
- Initiated and completed excavation of hillside waste area #4 located on Terrace 3, and staged waste for disposal. The excavation was approximately 12 to 18 inches deep and covered an area of approximately 600 square feet. The waste material was transferred to an area of the site scheduled for cap placement to await disposal. Excavation work was conducted in Level C personal protective equipment. The floor and limits of the excavation were screened with an XRF to verify cleanup prior to the placement of backfill.
- Initiated excavation of hillside waste area #3 located on Terrace 3 and staged waste for disposal. The waste material was transferred to an area of the site scheduled for cap placement to await disposal. Excavation work was conducted in Level C personal protective equipment. The floor and limits of the excavation were screened with an XRF to determine excavation extent.
- Began collection of visible suspected asbestos containing roofing material throughout the site.
- Implemented dust control measures.
- Particulate air monitors deployed in the vicinity of the work measured particulate concentrations ranging from 0.07 $\mu\text{g}/\text{m}^3$ to 85.71 $\mu\text{g}/\text{m}^3$. Exceedances of Site action levels were not recorded.
- Particulate air monitors along the Site perimeter did not record any exceedances of Site action levels.

Activities on 10/1/13

- Continued excavation of hillside waste area #3 located on Terrace 3 and staged waste for disposal. The excavation averaged approximately 12 to 18 inches in depth and is progressing westward along Terrace 3 within the limits defined by XRF screening results.
- A team continued collection of visible suspected asbestos containing roofing material throughout the site.
- Implemented dust control measures.
- Particulate air monitors deployed in the vicinity of the work measured particulate concentrations ranging from 0.33 $\mu\text{g}/\text{m}^3$ to 229.82 $\mu\text{g}/\text{m}^3$. Exceedances were not sustained and were recorded over an interval of 1 minute.
- Particulate air monitors along the Site perimeter did not record any exceedances of Site action levels.

Activities on 10/2/13

- Continued excavation of hillside waste area #3 located on terrace 3 and staged waste for disposal. The excavation progressed westward along Terrace 3 within the limits defined by XRF screening results.
- A team continued collection of visible suspected asbestos containing material throughout the site.
- Implemented dust control measures.
- Particulate air monitors deployed in the vicinity of the work measured particulate concentrations ranging from 0 $\mu\text{g}/\text{m}^3$ to 35.52 $\mu\text{g}/\text{m}^3$. Exceedances of Site action levels were not recorded.
- Particulate air monitors along the Site perimeter did not record any exceedances of Site action levels.

Activities on 10/3/13

- Completed excavation of hillside waste area #3 located on terrace 3, staged waste for disposal, and began placing backfill in the excavation.
- Hillside waste area #5 was screened with the XRF to delineate excavation limits. Rough excavation limits had been initially established based on historical screening and sampling data and maps.
- Initiated excavation of hillside waste area #5 located on Terrace 3 and staged waste for disposal. The waste material was transferred to an area of the site scheduled for cap placement to await disposal. Excavation work was conducted in Level C personal protective equipment. The floor and limits of the excavation were screened with an XRF to determine excavation extent.
- A team continued collection of visible suspected asbestos containing roofing material throughout the site.
- Dust control was not needed due to rainy weather.
- Particulate air monitors deployed in the vicinity of the work measured particulate concentrations ranging from 0.1 $\mu\text{g}/\text{m}^3$ to 8.52 $\mu\text{g}/\text{m}^3$. Exceedances of Site action levels were not recorded.
- Particulate air monitors along the Site perimeter did not record any exceedances of Site action levels.

Activities on 10/4/13

- Continued backfilling the hillside waste area #3 excavation.
- Continued and completed excavation of hillside waste area #5 located on Terrace 3 and staging waste for disposal. The floor and limits of the excavation were screened with an XRF to determine excavation extent.
- Dust control was not needed due to rainy weather.
- Distributed postcards about clean up to nearby residents
- Particulate air monitors along the Site perimeter did not record any exceedances of Site action levels.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

A general notice letter was issued to the Copper Range Company on November 5, 2012. A response was received from indicating that they were unsure about their liability and do not have the financial resources to conduct the removal action at the site. Investigation is ongoing.

2.1.4 Progress Metrics

<i>Waste Stream</i>	<i>Medium</i>	<i>Quantity</i>	<i>Manifest #</i>	<i>Treatment</i>	<i>Disposal</i>

2.2 Planning Section

2.2.1 Anticipated Activities

The following activities have been planned for this removal action:

1. Developing and implementing a site-specific Health and Safety Plan, including an Air Monitoring Plan, and a site Emergency Contingency Plan;
2. Developing and implementing a site Work Plan that includes a Site Security Plan;
3. Removing the mercury knob waste pile, hillside waste piles, and the battery debris pile;
4. Posting boundaries of terraces that contain contamination, and which cannot safely and practically be accessed for cleanup, with signage regarding the presence of contamination;
5. Delineating subsurface contamination and installing an approximately 6-inch thick cover over metal-contaminated soil within an approximately 1.5-acre area;
6. Removing piles of asbestos-containing materials for off-site disposal;
7. Consolidating and packaging all materials containing hazardous substances, pollutants and contaminants for transportation and off-site disposal;
8. Backfilling and restoring excavated and disturbed areas;
9. Transporting and disposing of all characterized or identified hazardous substances, pollutants, wastes, or contaminants that pose a substantial threat of release at a Resource Conservation and Recovery Act/CERCLA-approved disposal facility in accordance with EPA's Off-site Rule (40 C.F.R. § 300.440); and
10. Addressing releases from other contaminated media in accordance with applicable, appropriate, and relevant requirements to the extent practicable.

The response action proposed will mitigate the threats at the site by properly identifying, consolidating, and packaging hazardous materials, pollutants, and contaminants on-site. The consolidated materials will be removed and ultimately disposed of off-site. Additional site activities may include security, perimeter air monitoring, and decontamination on the site, as needed to complete the removal action. This response action will be conducted in accordance with Section 104(a)(1) of CERCLA, 42 U.S.C. § 9604(a)(1) and Section 300.415 of the NCP, 40 C.F.R. § 300.415, to abate or eliminate the immediate threat posed to public health and/or the environment by the presence of the hazardous substances. Direct contact threats with hazardous substances are expected to be minimized at the site once the removal action is completed.

2.2.1.1 Planned Response Activities

2.2.1.2 Next Steps

Next week, primary tasks planned are backfilling of hillside waste piles, and treating battery debris pile waste.

2.2.2 Issues

None.

2.3 Logistics Section

ERRS is managing site logistics.

2.4 Finance Section

2.4.1 Narrative

ERRS costs are estimated through October 3, 2013. START costs are estimated through October 4, 2013.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	\$600,000.00	\$224,767.94	\$375,232.06	62.54%
TAT/START	\$58,000.00	\$29,800.00	\$28,200.00	48.62%
Intramural Costs				
Total Site Costs	\$658,000.00	\$254,567.94	\$403,432.06	61.31%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the

government may include in any claim for cost recovery.

2.5 Other Command Staff

2.5.1 Safety Officer

OSC is serving in this roll.

2.5.2 Liaison Officer

OSC is serving in this roll.

2.5.3 Information Officer

OSC is serving in this roll.

3. Participating Entities

3.1 Unified Command

n/a

3.2 Cooperating Agencies

MDEQ

MDNR

4. Personnel On Site

9/30/13:

EPA: 1

START: 1

ERRS: 6

MDEQ: 0

10/1/13:

EPA: 1

START: 1

ERRS: 6

MDEQ: 0

10/2/13:

EPA: 1

START: 1

ERRS: 6

MDEQ: 0

10/3/13:

EPA: 1

START: 1

ERRS: 6

MDEQ: 0

10/4/13:

EPA: 1

START: 1

ERRS: 6

MDEQ: 1

5. Definition of Terms

ATSDR	Agency for Toxic Substances and Disease Registry
BZ	Breathing Zone
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
DNR	Department of Natural Resources
EPA	Environmental Protection Agency
ERNS	Emergency Response Notification System
ERRS	Emergency and Rapid Response Service
MDEQ	Michigan Department of Environmental Quality
NG/M ³	nanograms per cubic meter
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priorities List
NRC	National Response Center
OSC	On Scene Coordinator
PPE	Personal Protective Equipment
PPM	Parts per million
RCRIS	Resource Conservation and Recovery Act Information System
RP	Responsible Party

RRT Regional Response Team
START Superfund Technical Assessment and Response Team
US FWS United States Fish and Wildlife Service
USCG United States Coast Guard

6. Additional sources of information

6.1 Internet location of additional information/report [epaosc.org/michigansmelter](http://epaossc.org/michigansmelter)

vipser.ert.org -- R05 Michigan Smelter Deployment

6.2 Reporting Schedule

POLREPs will be issued weekly during the removal action.

7. Situational Reference Materials

n/a

POLREP #4 Last Updated 10/25/2013