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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region V

Subject: **POLREP #6**
Progress
Michigan Smelter
B5XF
Houghton, MI
Latitude: 47.1223147 Longitude: -88.6065189

To:
From: Elizabeth Nightingale, OSC
Date: 10/21/2013
Reporting Period: 10/14/13 - 10/19/13

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 October 14th, 2013 work focused primarily on the following activities:

- Completed backfilling, grading and seeding of hillside waste pile area #5
- Continued work to install the protective cover over 1.5 acre area of metal contaminated soil
- Initiated transportation of waste from smelting operations (Bevill waste) offsite for disposal (approx. 1374 tons to date)
- Shipped asbestos containing waste offsite for disposal (approx. 52 tons)
- Received lab results confirming that the Enviroblend® 90/10 treatment of lead contaminated soil from the battery pile area successfully reduced leachable lead to undetectable levels
- Initiated and completed shipment of treated battery pile waste offsite for disposal (approx. 520 tons)
- Initiated installation of advisory signage around perimeter of smelter ruins area

Update by geographic area:

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

I. Areas with contaminated soil

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). SSALs development methodology is available upon request and is included in site administrative record. 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. Approximately 520 tons of waste was generated from this pile. 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, graded and seeded. This waste has been treated with a 6% concentration of Enviroblend®. Enviroblend® is a white powder comprised of magnesium oxide and calcium phostphates used to stabilize waste materials. The mixture is homogenized using heavy equipment. The Enviroblend® will stabilize the contaminated soil, reducing its capacity to leach lead and rendering it non-hazardous. Approximately 41 tons of Enviroblend® was required to stabilize the lead contaminated soil based on bench-scale laboratory testing. Samples of treated waste verified that leachable lead has been reduced to undetectable levels. This waste is now non-hazardous. Waste has been shipped offsite for disposal.

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, graded and seeded. Waste is part of the Bevill Exempt waste stream. Shipment of waste offsite for disposal is ongoing.

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, graded and seeded. Waste is part of the Bevill Exempt waste stream. Waste has been shipped off site 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, covering with topsoil, grading and seeding of the excavation area has been completed. Waste is part of the Bevill Exempt waste stream. Waste has been shipped off site 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, covering with topsoil, grading and seeding of the excavation area has been completed. Waste is part of the Bevill Exempt waste stream. Waste has been shipped off site 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 been completed. Waste is part of the Bevill Exempt waste stream. Waste has been shipped off site 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. Therefore, no excavation is being done in this area.

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 has been completed. Work to install the cover is ongoing.

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 was acquired, signage posting locations were established, installation of signage has been initiated. 15 signs will be 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 shipped off site for disposal.

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 was subsequently shipped offsite for disposal.

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: The crew excavated the suspect building debris and underlying soil and transferred the waste to the staging area. Material was subsequently shipped offsite for disposal.

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 was staged, and has now been shipped off site for disposal.

e) ***Roofing material on metal shed debris***: A crushed metal building with roofing was discovered west of the battery pile area. A composite sample of the was collected and submitted for analysis to determine if it contains asbestos.

(1) Status: Lab analysis results indicate that this roofing material does not contain asbestos. Therefore, this material will not be removed.

Waste Disposal:
Stockpiled contaminated soil and asbestos containing materials are being transported to K&W Landfill in Ontonagon County, Michigan. K&W Landfill is a licensed and CERCLA-approved landfill.

Soil Monitoring:
Throughout the site, after excavation of predesignated waste piles, remaining soil was 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 had exceeded the site specific direct contact criteria, soil would have been demarcated before backfilling, but all screening of excavation pits indicated levels below site specific criteria.

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: viper.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 (µg/m3). Should a DR4 unit detect sustained particulate concentrations greater than 500 µg/m3, the source of emmisions will be investigated, and administrative and/or engineering controls will be initiated to reduce the particulate emissions.

During the week of October 14, 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 µg/m3 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 October 14, 2013, no exceedances of 95 ug/m3 occurred.

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.

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

Activities on 10/14/13
- Site shut down for Columbus Day Holiday

Activities on 10/15/13
- Crew remobilized to Houghton

Activities on 10/16/13
- Initiated shipment of Bevill exempt waste stream (smelter derived metal contaminated soil) off site for disposal. Approximately 950 tons of contaminated soil was transported to the landfill for disposal.
- Continued installation of the 1.5 acre clean fill cover
- Dust control measures were not needed due to wet conditions.

- Particulate air monitors deployed in the vicinity of the work measured particulate concentrations ranging from 0.0 µg/m^3 to 20.21 µg/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 10/17/13
- Continued shipment of Bevill exempt waste stream (smelter derived metal contaminated soil) off site for

disposal. Approximately 435 tons of contaminated soil was transported to the landfill for disposal.
- Shipped asbestos containing material off site for disposal (approx. 52 tons). Asbestos containing waste material was sealed in plastic, placarded, and transported to K&W Landfill for disposal. The loading and handling of asbestos contaminated waste material was conducted in Level C personal protective equipment.
- Continued installation of the 1.5 acre clean fill cover
- Continued backfilling and grading excavation of hillside waste area #5, and installed topsoil
- Dust control measures were not needed due to wet conditions

- Particulate air monitors deployed in the vicinity of the work measured particulate concentrations ranging from 0.01 µg/m3 to 47.52 µg/m3. 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 10/18/13
- Initiated transportation and disposal of the stockpiled waste generated from the Battery Debris Pile. The lead-contaminated soil was stabilized with Enviroblend® reducing its capacity to leach lead and rendering it non-hazardous based on post-treatment analytical results. Stockpiled contaminated soil was loaded into haul trucks and transported to K&W Landfill in Ontonagon County, Michigan. Approximately 520 tons of contaminated soil was transported to the landfill for disposal.
- Continued installation of the 1.5 acre clean fill cover
- Continued backfilling and grading excavation of hillside waste area #5, and installed topsoil
- Dust control measures were not needed due to wet conditions.

- Air monitors were not deployed due to consistent rain and saturated soil conditions.

Activities on 10/19/13

- Initiated installation of advanced borings at specified locations around the smelter ruins for sign placement. In total, 15 signs advising users of the hazards present at the Site will be installed around the perimeter of the smelter ruins.

- Air monitors were not deployed due to consistent rain and saturated soil conditions.

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

Waste Stream	Medium	Quantity (Tons)	Manifest #	Disposal
Bevill Amandment Exempted Soil	Solid	41.91	313701	x
Bevill Amandment Exempted Soil	Solid	41.01	313702	x
Bevill Amandment Exempted Soil	Solid	40.65	313702	x
Bevill Amandment Exempted Soil	Solid	47.05	313704	x
Bevill Amandment Exempted Soil	Solid	47.03	313705	x
Bevill Amandment Exempted Soil	Solid	46.47	313706	x
Bevill Amandment Exempted Soil	Solid	48.84	313707	x
Bevill Amandment Exempted Soil	Solid	42.04	313708	x
Bevill Amandment Exempted Soil	Solid	46.33	313709	x
Bevill Amandment Exempted Soil	Solid	48.03	313710	x
Bevill Amandment Exempted Soil	Solid	46.88	313711	x
Bevill Amandment Exempted Soil	Solid	44.58	313712	x
Bevill Amandment Exempted Soil	Solid	35.79	313713	x
Bevill Amandment Exempted Soil	Solid	41.62	313740	x
Bevill Amandment Exempted Soil	Solid	42.55	313715	x
Bevill Amandment Exempted Soil	Solid	44.1	313716	x
Bevill Amandment Exempted Soil	Solid	approx. 42	313717	x
Bevill Amandment Exempted Soil	Solid	approx. 42	313718	x
Bevill Amandment Exempted Soil	Solid	39.11	313719	x

Bevill Amandment Exempted Soil	Solid	41.1	313720	x
Bevill Amandment Exempted Soil	Solid	31.05	313721	x
Bevill Amandment Exempted Soil	Solid	38.18	313722	x
Bevill Amandment Exempted Soil	Solid	42.2	313723	x
Bevill Amandment Exempted Soil	Solid	43.29	313724	x
Bevill Amandment Exempted Soil	Solid	47.97	313725	x
Bevill Amandment Exempted Soil	Solid	50.62	313726	x
Bevill Amandment Exempted Soil	Solid	59.09	313727	x
Bevill Amandment Exempted Soil	Solid	55.78	313728	x
Bevill Amandment Exempted Soil	Solid	46.52	313729	x
Bevill Amandment Exempted Soil	Solid	43.75	313730	x
Bevill Amandment Exempted Soil	Solid	45.85	313731	x
Asbestos Containing Material	Solid	52.53	313751	x
Stabilized lead soil/debris	Solid	41.25	313732	x
Stabilized lead soil/debris	Solid	42.25	313733	x
Stabilized lead soil/debris	Solid	41.91	313734	x
Stabilized lead soil/debris	Solid	51.38	313735	x
Stabilized lead soil/debris	Solid	50.09	313736	x
Stabilized lead soil/debris	Solid	48.98	313737	x
Stabilized lead soil/debris	Solid	51.38	313738	x
Stabilized lead soil/debris	Solid	49.13	313739	x
Stabilized lead soil/debris	Solid	48.52	313740	x
Stabilized lead soil/debris	Solid	47.13	313741	x
Stabilized lead soil/debris	Solid	47.99	313742	x

2.2 Planning Section

2.2.1 Anticipated Activities

The following activities were 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 completion of installation of 1.5 acre cover, loading out remaining waste, installation of remaining signage and site restoration. Response activities are scheduled to be completed by October 24, 2013.

2.2.2 Issues

Snow is predicted for the week of October 21, 2013. If too much snow falls, we may not be able to fully complete all site restoration activities this fall.

2.3 Logistics Section

ERRS is managing site logistics.

2.4 Finance Section

No information available at this time.

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

10/14/13:
EPA: 0
START: 0
ERRS: 0
MDEQ: 0

10/15/13:
EPA: 0
START: 0
ERRS: 0
MDEQ: 0

10/16/13:
EPA: 1
START: 1
ERRS: 5
MDEQ: 0

10/17/13:
EPA: 1
START: 1
ERRS: 5
MDEQ: 0

10/18/13:
EPA: 1
START: 1
ERRS: 5
MDEQ: 0

10/19/13:
EPA: 1
START: 1
ERRS: 5
MDEQ: 0

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

viper.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