UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

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APR 04 2006

ACTION MEMORANDUM AMENDMENT

SUBJECT: Request for Change in the Scope of Work and Ceiling Increase for the Washington County Lead District – Potosi Area Site in Washington County, Missouri Time-Critical Removal

FROM: Jeffrey G. Weatherford, P.E.
On-Scene Coordinator

THRU: Scott Hayes, Chief
Emergency Response & Removal Branch

TO: Cecilia Tapia, Director
Superfund Division

Site ID#: A78D

40240361
SUPERFUND RECORDS

I. PURPOSE

The purpose of this Action Memorandum Amendment is to request and document approval of the proposed change in Scope of Work and Ceiling Increase described herein for the Washington County Lead District – Potosi Area Site. In the original Action Memorandum, EPA proposed to address contaminated drinking water and residential properties or other high child impact areas (day cares, parks, playgrounds, etc.) where the soil contains lead concentrations equal to or greater than 400 milligrams per kilogram (mg/kg) and where children with Elevated Blood Lead (EBL) levels reside or play. This amendment proposes to expand the soil removal to include any residential property where the soil contains lead concentrations equal to or greater than 1,200 mg/kg regardless of whether an EBL child resides in the home.

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Removal Site Evaluation

The Washington County Lead District Site consists of high concentrations of lead contamination from nearly 285 years of mining activities. The primary problem areas at this site which require action are lead contaminated soils in yards and lead contaminated drinking water.

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SUPR:ER&R:WEATHERFORD:DLR:7596:03/27/06:G:ER&R:WEATHERFORD:Potosi Area Action Memo 3.16.06.final.doc

ER&R	CNSL	CNSL	ER&R	FFSE	SDDD	SDDD	SUPR
WEATHERFORD	MEYER	MICINSKI	HAYES	GUNN	HANKINS	JACKSON	TAPIA
3/27/06	3/28/06	4-3-06	4/3/06	4/3/06	4-4-06	4-4-06	4-4-06

2. Physical Location and Site Characteristics

The Washington County Lead District – Potosi Area Site is located in a heavily mined region of eastern Missouri known as the Washington County Lead District. The Potosi Area Site primarily includes residential areas within and around the towns of Potosi, Mineral Point, and Cadet and is only a portion of the larger Washington County Lead Mining District.

Although lead was known to be in Southeast Missouri as early as the 1600s, serious mining did not begin until around 1720 when Phillipe Francois Renault established Mine La Motte in present day Madison County, Missouri (part of Madison County Mines NPL Site). By 1725, Old Mines and Mine Renault were opened in present day Washington County. The smelted lead was molded (lead pigs) and transported to Ste. Genevieve, Missouri on the Mississippi River where it was shipped to France via New Orleans. Lead mining in Southeast Missouri has been continuous until the present day where lead is still mined in the Viburnum Trend which includes part of Washington County (Doe Run's Viburnum Mine 29).

In Washington County, Mine Au Breton (current day Potosi) was established in the late 1700s and eventually was taken over by Moses F. Austin (father of Stephen F. Austin of Texas fame) whose mining and reverberatory furnace smelting techniques significantly increased lead production which at this time was shipped to Spain. During the years of 1798 to 1804, Mine Au Breton produced more lead than all of the other Upper Louisiana mines combined.

Toward the end of the American Civil War, lead deposits in Washington County ran low and the industry declined. It was soon replaced by the surface mining of Barite (Barium Sulfate) which was used in rubber, paint, soap, drilling fluids and medical products. Many lead mines were "overmined" for the barite which was also associated with Galena (lead Sulfide). The Barite was separated from the clay initially by hand washing and then by mechanical Barite washing plants which were introduced into the area in the 1920s. In 1941, Missouri accounted for 40 percent of United States Barite production.

Mines in the Potosi Area include the following:

Hornsey Brothers Boars Head Lodge Mine
Hornsey Brothers Cadet Mine
Hornsey Brothers Gun Club Mine
Milchem Settle Mine
Milchem Keyes Branch Mine
Dresser Minerals Potosi Mine
Dempsey Mine
Pfizer Mineral Point Mine
Imco Apex Mine
NL Baroid Fountain Farm Mine
NL Baroid Cadet Mine

In June 2005, the Missouri Department of Natural Resources (MDNR) began an integrated assessment which included soil and groundwater sampling in the Potosi area. During this sampling event, MDNR sampled the soil at 359 residences located on or near mining or mine waste disposal areas. Based on this data, approximately 65 percent of these residential properties had soils which exceeded 400 mg/kg and roughly 18 percent had soils which exceeded 1,200 parts per million for lead. The MDNR also sampled approximately 172 private drinking water wells in the Potosi area in June 2005. Of these 172 wells sampled, 36 exceeded 15 parts per billion (ppb) for lead and one well exceeded 5 ppb cadmium which are the current Maximum Contaminant Levels (MCLs) for lead and cadmium in drinking water.

In October 2005, EPA began sampling in the Potosi Area to support the removal action. Currently, EPA has sampled 534 residential properties with the following results:

Properties with lead levels less than 400 ppm:	331
Properties with lead levels 400 to 1,199 ppm:	150
Properties with lead levels greater than 1,200 ppm:	52
Properties with drip zone only greater than 400 ppm:	1
Properties where drinking water exceeded RALs:	55

3. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant

The primary contaminant of concern at this site is lead and lead compounds. The MDNR and EPA have documented total lead concentrations in soil in residential yards at levels exceeding 1,200 mg/kg. MDNR and EPA have currently identified 116 residential yards in the Potosi area which exceed 1,200 mg/kg. In addition, MDNR and EPA have sampled numerous mining areas and mine waste disposal areas which had soil concentrations exceeding 1,200 mg/kg. Drinking water samples collected by MDNR and EPA indicate a significant release of heavy metal contaminants, particularly lead, into the groundwater. The MDNR and EPA sampling documented 91 private drinking water wells which exceeded 15 ppb for lead and one well which exceeded 5 ppb for cadmium.

Lead and lead compounds are hazardous substances as defined by Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and is listed at 40 C.F.R. § 302.4 and have been detected in the ground water, soils, and mining wastes at the site.

4. NPL Status

The Washington County Lead District Site is not currently on or proposed for listing on the National Priority List. The site is currently undergoing a removal assessment to identify additional lead contaminated residential yards and additional contaminated wells. The MDNR and EPA are working jointly on further site assessment activities which may lead to proposed listing on the NPL.

5. Maps, Pictures, and Other Graphic Representations

See previous Action Memorandum

B. Other Actions to Date

The EPA is currently providing bottled water to 35 residences where the lead and/or cadmium levels exceed the Removal Action Levels described in the previous Action Memorandum.

C. State and Local Authorities' Roles

See previous action memo

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES, ENDANGERMENT DETERMINATION, PROPOSED ACTIONS, AND ESTIMATED COSTS

A. Threats to Public Health or Welfare

At any release, regardless of whether the site is included on the NPL, where the lead agency makes the determination, based on factors in 40 Code of Federal Regulations (CFR) Part 300.415 (b)(2) that there is a threat to public health or welfare of the United States or the environment, the lead agency make take any appropriate removal action to abate, prevent, minimize, stabilize, mitigate, or eliminate the release or threat of release. The factors in 40 CFR Part 300.415 (b)(2) which apply to this site are:

300.415(b)(2)(i) -- Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants.

Elevated concentrations (greater than 1,200 mg/kg) of lead have been found throughout the site. Children playing in and around the contaminated areas have the highest potential to be exposed. In addition, sampling has determined that numerous private drinking water wells have been contaminated with lead.

Lead is a metal and has been listed as a hazardous waste (D008) in the regulations for the Resource Conservation and Recovery Act. Lead is classified by the EPA as a probable human carcinogen and is a cumulative toxicant. The early effects of lead poisoning are nonspecific and difficult to distinguish from the symptoms of minor seasonal illnesses. Lead poisoning causes decreased physical fitness, fatigue, sleep disturbance, headache, aching bones and muscles, digestive symptoms (particularly constipation), abdominal cramping, nausea, vomiting, and decreased appetite. With increased exposure, symptoms include anemia, pallor, a "lead line" on the gums, and decreased handgrip strength. Alcohol and physical exertion may precipitate these symptoms. The radial nerve is affected most severely causing weakness in the hands and

wrists. Central nervous system effects include severe headaches, convulsions, coma, delirium, and possibly death. The kidneys can also be damaged after long periods of exposure to lead, with loss of kidney function and progressive azotemia. Reproductive effects in women include decreased fertility, increased rates of miscarriage and stillbirth, decreased birth weight, premature rupture of membrane, and/or pre-term delivery. Reproductive effects in men include erectile dysfunction, decreased sperm count, abnormal sperm shape and size, and reduced semen volume. Lead exposure is associated with increases in blood pressure and left ventricular hypertrophy. A significant amount of lead that enters the body is stored in the bone for many years and can be considered an irreversible health effect.

Children are more vulnerable to lead poisoning than adults. For children, lead can damage the central nervous system, kidneys and reproductive system. At higher levels, it can cause comas, convulsions and death. Even low levels of lead are harmful and are associated with decreased intelligence, impaired neurobehavioral development, decreased stature and growth, impaired hearing acuity, and possibly high blood pressure.

300.415(b)(2)(ii) – Actual or potential contamination of drinking water supplies or sensitive ecosystems.

The MDNR sample results showed numerous private drinking water wells were contaminated with lead above federal and state drinking water standards.

300.415(b)(2)(iv) -- High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate.

Lead has been detected in surface soils above the proposed action level of 1,200 mg/kg. Lead contaminated soils may migrate via airborne dusts, surface runoff, percolation into ground water, construction activity, by children transporting soils/dusts into their homes after playing in the affected areas by being tracked in by foot traffic.

IV. ENDANGERMENT DETERMINATION

See previous Action Memorandum

V. PROPOSED ACTIONS AND ESTIMATED COST

A. Proposed Actions

1. Proposed Action Description

PROVISION OF ALTERNATIVE DRINKING WATER

Any residence where the drinking water exceeds 15 ppb for lead and 5 ppb for cadmium will be provided an alternative source of drinking water if, through sampling and analysis, EPA suspects contaminated water was the result of mining activity.

SOIL/WASTE EXCAVATION, REMOVAL, AND REPLACEMENT

The EPA will excavate and remove all soils and/or wastes from properties where a composite sample exceeds a concentration of 1,200 mg/kg lead. In order to avoid unnecessary mobilization and demobilization and being intrusive to the residents, EPA will excavate all soils exceeding 400 mg/kg in yards where at least one quadrant, cell, or zone exceeds 1,200 mg/kg.

The EPA will excavate and remove all soils and/or waste from properties where a composite sample exceeds a concentration of 400 mg/kg lead and the property is a highly used area for younger children (72 months of age or younger) or a residence where a young child has an EBL greater than 10 micrograms per deciliter (µg/dl).

Properties with soil concentrations exceeding action levels will be excavated up to a depth of 12 inches. The excavation will be conducted with excavating machinery, such as skid loaders, dozers, excavators, backhoes, and hand tools. If soils at a depth of 12 inches exceed 1,200 mg/kg excavation may continue until concentrations fall below 1,200 mg/kg. The EPA may choose to place a warning barrier if excavation below 24 inches will not achieve a concentration level below 1,200 mg/kg.

After removing the soils from the affected area or areas and placing the warning barriers where required, the excavated soils will be replaced with clean soils. Clean soils are soils that have been analyzed for lead and results indicate that the lead concentration is below 240 mg/kg and all other hazardous substances, pollutants, or contaminants are below residential soil screening levels determined by the EPA or by referring to the Region 9 Preliminary Remediation Goal tables found at:

http://www.epa.gov/Region9/waste/sfund/prg/index.htm.

Garden soils in any yard that exceed 400 mg/kg lead (based on discrete samples) will be excavated to a minimum depth of 24 inches. If soils at a depth of 24 inches exceed 1,200 mg/kg, excavation will continue in 6 to 12 inch lifts until the soil concentrations fall below 1,200 mg/kg or EPA decides to cease excavation and place a warning barrier.

SOIL TREATMENT AND DISPOSAL

The EPA shall sample soil for conducting the Toxicity Characteristic Leaching Procedure (TCLP) according to the requirements of SW-846-Chapter 9 (representative sampling for waste piles). Soils that exceed the TCLP limits for lead must be properly treated with an appropriate lead stabilization chemical and re-sampled until the levels are below the TCLP limits for lead. Treatment of soils will not be conducted at the residence.

Transportation, treatment, storage, and disposal of the excavated material shall be in accordance with all applicable local, state, or federal requirements.

POST REMOVAL SITE CONTROL

It is EPA policy that Post Removal Site Control (PRSC) shall be the responsibility of the state, the Potentially Responsible Party or the remedial program. At this time it is uncertain what, if any, PRSC will be needed. When that determination is made the OSC, working through regional management will attempt to obtain PRSC agreements, as appropriate.

2. Contribution to Remedial Performance

The removal actions proposed in this Action Memorandum should not impede any future remedial plans or other response. This is consistent with any long-term remedy in that it fully addresses the direct contact threat posed by lead contamination at this site.

3. Action/Cleanup Level

Yards with soils contaminated with lead above 1,200 mg/kg will be excavated, treated if TCLP analysis fails, and disposed of at an acceptable soil repository. Another suitable option is to dispose of excavated soils that meet the definition of a hazardous waste in a RCRA Subtitle C disposal facility. These levels are consistent with the revised interim guidance for lead-contaminated Superfund sites, Office of Solid Waste and Emergency Response (OSWER) Directive 9355.4-12.

All site-sampling activities for comparison to the action levels will be conducted in accordance with the approved Quality Assurance Project Plan.

4. Applicable Relevant and Appropriate Requirements (ARARs)

Section 300.415(j) of the NCP provides that fund-financed removal actions under Section 104 of and removal actions pursuant to CERCLA Section 106 shall, to the extent practicable considering the exigencies of the situation, attain ARARs under federal environmental or state environmental facility citing laws. The following specific ARARs have been identified for this action:

- Subtitle D of the Resource Conservation and Recovery Act (RCRA), Section 1008, Section 4001, et seq., 42 U.S.C. §6941, et seq., State or Regional Solid Waste Plans and implementing federal and state regulations.

- Occupational Safety and Health Act, 29 C.F.R. part 1910 will be applicable to all actions.

- Subtitle C of RCRA, 42 U.S.C. Section 6901, et seq., 40 C.F.R. Part 260, et seq. and implementing federal and state regulations for contaminated soils that exhibit the characteristic of toxicity and are considered RCRA hazardous waste.

Subtitle C of RCRA is potentially applicable for the removal of soils contaminated with heavy metals from spills of lead concentrate, particularly if these soils exceed the TCLP regulatory threshold. However, soils contaminated with heavy metals from extraction, beneficiation or processing of ores are exempt from the requirements of RCRA, Subtitle C pursuant to the Bevill amendment, Section 3001(b)(3)(A) of RCRA, 42 U.S.C. Section 6921(b)(3)(A), and implementing regulations, 40 C.F.R. Section 261.4(b)(7).

- 40 C.F.R. Part 122, Section 122.26, National Pollution Discharge Elimination System storm water discharge regulations may be relevant and appropriate for management of storm water runoff from the repository.

- 49 C.F.R. Parts 107, 171-177, the Department of Transportation (DOT) hazardous material transportation regulations may be relevant and appropriate for transportation of the contaminated soils to the repository.

In a letter dated November 30, 2005, the EPA requested potential State ARARs. In a letter dated December 15, 2005, EPA received ARARs from the State of Missouri. These ARARs will be evaluated per the EPA guidance on consideration of ARARs during removal actions.

Any lead-bearing wastes exceeding the TCLP regulatory threshold will undergo treatment in accordance with the requirements of the Resource Conservation and Recovery Act (RCRA).

5. Project Schedule

Soil excavation activities are expected to begin at the start of the new construction season. It is expected that this removal action will take several months to complete.

B. Estimated Costs

The costs associated with this removal action are estimated as follows:

Extramural Costs:

	CURRENT CEILING	PROPOSED INCREASE	PROPOSED CEILING
Removal Costs	$1,132,255	$ 520,007	$1,652,262
Contingency	$ 226,451	$ 104,002	$ 330,453
Total Extramural Costs	$1,358,706	$ 624,009	$1,982,715

Intramural Costs:

EPA Direct	$ 100,000	$ 10,000	$ 110,000
EPA Indirect (50.69% of all costs)	$ 739,418	$ 321,379	$1,060,797
	$ 839,418	$ 331,379	$1,170,797

The EPA direct and indirect costs, although cost recoverable, do not count toward the total removal project ceiling for this removal action.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

See previous Action Memorandum

VII. OUTSTANDING POLICY ISSUES

See previous Action Memorandum

VIII. ENFORCEMENT

See previous Action Memorandum

IX. RECOMMENDATION

This decision document represents a change in the scope of response and associated increase in the project ceiling for the contaminated soils and drinking water at the Washington County Lead District – Potosi Area Site. If approved, the amended total removal ceiling will be $1,982,715. This amount comes from the Removal AOA. The removal action was developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based on the Administrative Record for the site.

Conditions at the Site continue to meet NCP Section 300.415(b) criteria for a removal action and I recommend your approval for this change in Scope of Work and Ceiling Increase.

Approved:

Cecilia Tapia, Director
Superfund Division

4-4-06
Date

Attachments:
Action Memorandum Signed October 17, 2005