

**United States Environmental Protection Agency  
Region VII  
POLLUTION REPORT**

**Date:** Thursday, April 28, 2005

**From:** Davis, Garvey, Nold

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**Subject:** Omaha Lead Site  
Greater Omaha Nebraska Area, Omaha, NE  
Latitude: 41.2033000  
Longitude: -95.9308000

<b>POLREP No.:</b> 53	<b>Site #:</b> NESFN0703481
<b>Reporting Period:</b> 4/18-23/2005	<b>D.O. #:</b> 0006
<b>Start Date:</b> 4/4/2005	<b>Response Authority:</b> CERCLA
<b>Mob Date:</b> 4/4/2005	<b>Response Type:</b> Time-Critical
<b>Demob Date:</b>	<b>NPL Status:</b> NPL
<b>Completion Date:</b>	<b>Incident Category:</b> Removal Action
<b>CERCLIS ID #:</b> NESFN0703481	<b>Contract #</b> 68-S7-02-04
<b>RCRIS ID #:</b>	

**Site Description**

ASARCO Incorporated (ASARCO) operated a lead refinery at 500 Douglas Street in Omaha, Nebraska, for over 100 years beginning in the 1870s. The operation of the refinery ceased in 1997. As a routine part of the refinery operation, lead particles were emitted into the atmosphere at the refinery.

In addition, the Gould Incorporated lead battery recycling plant was located at 555 Farnam Street in Omaha and was a secondary smelter of lead from discarded lead batteries. The blast furnace used to smelt the lead at the Gould plant emitted lead particles into the air from that refinery. The Gould plant closed in 1982.

Several other facilities in the Omaha area used lead in their manufacturing processes. A few of these included Carter White Lead at 21st and Locust Street which produced white lead paint bases and red lead and litharge protective coatings until 1936, Omaha Shot and Lead which later became Lawrence Shot and Lead, and then became National Lead Company which manufactured lead shot by melting pig lead, Grant Storage Battery Company, Storage Battery Factory, and Exide Corporation which manufactured lead storage batteries.

Numerous other locations in the Omaha area such as foundries, iron works, metal salvaging companies, and other manufacturers used or processed lead at their facilities.

The EPA considers 400 ppm as a screening level for lead contamination in residential soils. Concentrations of lead exceeding 400 ppm have been found in one or more non-foundation samples at 8,967 residential properties at the Site. These include 92 licensed child-care centers (83 of which have been cleaned up) and 287 EBL residences (250 which have been cleaned up). More than 2,500 additional residential properties have been identified with at least one non-foundation sample exceeding 800 ppm that are eligible for a soil response under this Action Memorandum Amendment. At least 7,000 additional residential properties remain to be sampled.

Response activities were initiated in August 1999 and are continuing. The removal action on highly contaminated properties was initiated in August 2002. The EPA has performed removals on approximately 83 licensed child care and 250 EBL properties. In addition, the EPA has performed removals on 380 highly contaminated properties that have one or more non-foundation soil lead concentrations of 1,200 ppm or greater.

Excavation and replacement of lead-contaminated residential soils has occurred to date at properties meeting the time-critical removal thresholds described in previous Action Memoranda and amendments. At the end of the 2004 construction season, removal response actions had been completed at 713 residential properties. Removal response is also ongoing under an interagency agreement with the U.S. Army Corps of Engineers.

Residential soil sampling continued throughout December 2004. Data collected through the 2004 sampling event has identified approximately 2,500 additional properties that have one or more non-foundation soil lead concentrations of 800 ppm or greater. Additional child care facilities and EBL properties will be addressed as they are discovered.

### **Current Activities**

On March 31, 2005 an Action Memorandum Amendment was signed. The purpose of this amendment is to change the previously approved scope of work and to seek a funding ceiling increase for continued removal response at the Omaha Lead Site (Site), which encompasses eastern Omaha, Nebraska. Two Action Memoranda have previously been approved for work at the Site. The first Action Memorandum was approved on August 2, 1999, and addressed lead-contaminated soils exceeding 400 parts per million (ppm) at child care facilities and residences where a child with an elevated blood-lead level (EBL) exceeding 15 micrograms per deciliter ( $\mu\text{g}/\text{dl}$ ) lived and was amended on August 3, 2001, to lower the EBL threshold from 15  $\mu\text{g}/\text{dl}$  to 10  $\mu\text{g}/\text{dl}$ . The second Action Memorandum was approved on August 22, 2002, and addressed lead-contaminated soils at highly contaminated properties at the Site where one non-foundation sample exceeded 2,500 ppm. This second Action Memorandum was amended on March 25, 2004, to combine the activities of both Action Memoranda into a single response action and increase the funding and scope to include residential properties with lead-contaminated soil above 1,200 ppm. The purpose of the current Action Memorandum Amendment is to expand the scope of the removal action to include elements of an Interim Record of Decision (ROD) issued on December 15, 2004, for the Site, and to increase the expenditure ceiling to allow funding of these activities.

The removal action will allow continued removal response to address the highest priority lead-contaminated residential properties at the Site. This Action Memorandum Amendment enables several significant enhancements to the ongoing removal response action including:

- Lowering the action level from 1,200 ppm to 800 ppm for residential properties that are not otherwise eligible for response on the basis of high child-impact or EBL lead levels;
- Modifying the cleanup level to continue excavating until reaching a residual concentration of less than 400 ppm in the upper foot of soil, or less than 1,200 ppm at depths of one foot or greater. In garden areas, excavation will continue until reaching a residual concentration of 400 ppm in the upper two feet of soil, or less than 1,200 ppm at depths of two feet or greater. The installation of a physical barrier prior to backfilling will be discontinued;
- Expanding the types of properties that are considered high child-impact areas, and therefore eligible for response if non-foundation lead concentrations exceed 400 ppm, to include schools, churches, parks, vacant lots, and other properties where children could congregate;
- Providing for stabilization of deteriorating exterior lead-based paint in cases where the continued protectiveness of the remedy would be threatened by loose and flaking paint; and
- Providing for high-efficiency cleaning of household interiors for remediated properties when interior dust concentrations exceed the allowable standards established by the United States Department of Housing and Urban Development (HUD), and the Environmental Protection Agency (EPA). These standards allow a maximum dust loading of 40 micrograms per cubic feet ( $\mu\text{g}/\text{ft}^2$ ) for floors and 250  $\mu\text{g}/\text{ft}^2$  for window sills.

The EPA will continue to prioritize eligible properties, giving preference to the residences that house children with EBLs and child care facilities. The primary objective of this action is to eliminate or reduce ingestion exposure due to the presence of lead in residential soils at the Site. This action is an interim measure to provide for continued response under removal authority until remedial construction begins to

address high child-impact properties, properties where children with EBLs reside, and highly contaminated properties.

Continued activities are being centralized from the Missouri River Treatment Plant located at 5600 S. 10th Street, Omaha, Nebraska, 68107-3501. The city of Omaha has partnered with the U.S. Environmental Protection Agency (EPA) to allow the use of a portion of the facility.

During this reporting period, there were 9 properties excavated, 7 backfilled, and 0 sodded. There have been 19 total properties excavated and 12 backfilled during phase IV of the removal action which commenced on April 11, 2005.

As a project summary, during Phase I of the removal action, there were 32 properties completed. During Phase II there were 112 properties completed. Finally, Phase III has resulted in a total of 306 properties completed.

Some delays pertaining to the application of the sod on some properties have been experienced, primarily due to weather delays. This has occurred semi-frequently throughout all phases of the removal action. Continued communication with the sod sub-contractor is on-going to emphasize timing and coordination of the work tasks.

It should be noted that as an additional safeguard, the EPA sampled the sod that is currently being applied to all properties that have had a removal action performed. This sampling effort included analysis for total lead, herbicides, pesticides, semi-volatiles and volatile organic compounds. The resulting levels were below any levels of concern.

On Monday, April 11, 2005, OSC Garvey was contacted by Omaha Public Work's employee Mr. Bob Sink concerning a city regulation involving replacing excavated lead contaminated soil that had been removed from a residential yard with rock at the property owner's request. Mr. Sink told OSC Garvey that up to 35% of the front yard of a residential property in Omaha could be replaced with rock. The appropriate percentage of rock was replaced at this particular property without any additional costs to EPA.

Also, an investigation concerning the large concrete pad where EPA has stockpiled lead contaminated soils within the Missouri River Treatment Plant, pending sampling and disposal was initiated. City representatives have stated that the concrete pad has been damaged by EPA's use of the pad. Various concrete sub-contractor experts visited the pad and determined the the sub-surface grade seemed to be suspect. Bi-weekly elevations will be obtained by EPA to monitor the 9 inch thick concrete, rebar reinforced pad. The city has allowed EPA's continued use of the area and a tentative decision to likely have both the city and EPA jointly repair the concrete pad at the conclusion of EPA's use seems imminent.

#### **Planned Removal Actions**

Omaha Lead Site Property Summary for 2005 (EPA's Removal Group)

Initial Priority Properties

- 1) 10 Daycares/high child-impact areas
- 2) 37 EBLs

2004 Holdover Properties

- 1) 3 access allowed properties from the fall of 2004
- 2) 30 properties that had unsuccessfully been contacted for access in 2004 will be contacted again
- 3) 19 properties for drive-bys to determine if occupied and/or ownership

New Properties for 2005

- 1) 209 properties above 1200 ppm
- 2) 389 Properties between 800-1200 ppm

Soil sampling performed to guide response decisions will be done in accordance with procedures described in the "Superfund Lead-Contaminated Residential Sites Handbook". Residential yards will be divided into a number of sections and one multi-aliquot composite sample will be collected from each section. The number of sections in each yard will depend upon the size of the yard. For properties less than 5,000 square feet, separate sections will generally be designated for the front yard, back yard, and side yard (if substantial). For properties greater than 5,000 square feet, the lot will generally be divided

into four sections of roughly equal surface area. Properties over one acre in size will be divided into approximate one-quarter acre sections. A five-aliquot composite sample will typically be collected from each section. In addition, a four-aliquot composite sample will typically be collected from any drip zone within 6 to 30 inches from the exterior walls. A separate composite sample is collected from distinct play areas, gardens, and gravel driveways with incomplete barriers, if present. Soil samples will generally be analyzed for lead content using X-Ray Fluorescence Spectroscopy. A representative number of samples will be sent off-site for laboratory confirmation analysis in accordance with quality assurance/quality control plans. Sample results are compared to appropriate soil action levels. If one or more non-drip zone sections exceed the appropriate action level, the property becomes eligible for Superfund response.

Soil will be excavated using lightweight excavation equipment and hand tools in the portions of the yard where the surface soil exceeds an applicable action level. Non-contaminated soil will be used to replace the soil removed after excavation, returning the yard to its original grade and elevation. The EPA will not use protected soils from the Loess Hills for backfill of excavated properties at the Site.

After the soil has been replaced, a grass lawn will be re-established through either sodding or hydro-seeding. The EPA anticipates that most, if not all, residential yards will be restored through placement of sod. Sodding provides a more immediate cover and requires less maintenance to establish. Sod must be used in sloped areas of properties that would be subject to erosion. Hydro-seeding offers potential cost savings relative to sodding, but can present more difficulty in establishing a high quality lawn. Hydro-seeding may be considered for very large properties, or for unoccupied properties, in lieu of sodding. Hydro-seeding would be applied to a property only with the agreement of the property owner and when circumstances assure that a quality grass cover can be effectively established. Installation of landscaping features, including mulch, crushed stone, landscaping cloth, sand, wood chips or other forms of vegetation may be considered in remediated areas where grass cover can not be established.

This amendment increases the scope of the removal to include stabilization of deteriorating exterior lead-based paint and interior dust which are components of the ROD. Performing these actions concurrent with the removal response action will avoid the potential for soils to be recontaminated if these actions are conducted at a later time following soil replacement.

In addition, the amended action reduces the action level from 1,200 ppm to 800 ppm for properties that are not eligible due to EBLs or high child impact. Removal response to properties exceeding 800 ppm is required due to imminent and substantial endangerment to children residing at or frequenting these properties, as determined by the Baseline Human Health Risk Assessment prepared for the Site.

The amended action involves the excavation and removal of lead-contaminated soils, backfilling the excavated areas to original grade with clean topsoil, and restoring a grass lawn at remediated properties. Excavation would be performed at properties where exposure to lead-contaminated soils is of greatest concern. Generally, the properties that will be designated for response include:

- 1) Any residential-type property where at least one non-foundation sample exceeds 800 ppm lead;
- 2) Residences with any non-foundation sample exceeding 400 ppm lead where a child identified with an EBL (greater than 10 µg/dl) resides;
- 3) Child care facilities and other high child-impact areas with any non-foundation sample exceeding 400 ppm lead.

When a response action is initiated at a property meeting any of the above criteria, soil excavation and replacement will be performed in all portions of the property where soil concentrations of 400 ppm or higher have been detected, including drip zones. Excavation will continue until the lead concentration measured at the exposed surface of the excavation is less than 400 ppm in the initial foot from the original surface, or less than 1,200 ppm at depths greater than one foot. The excavation will terminate at less than 12 inches if a residual soil lead concentration less than 400 ppm is measured within the initial foot of excavation. Soils in garden areas would be excavated until reaching a residual concentration of less than 400 ppm in the initial two feet from the original surface, or less than 1,200 ppm at depths greater than two feet. Creation of raised-bed gardens may be considered as an option for remediation of garden areas where removal of contaminated soil to achieve cleanup criteria is not practicable. After confirmation sampling has verified that cleanup goals have been achieved, excavated areas will be backfilled with non-contaminated soil to original grade and revegetated.

Response actions performed in accordance with this Action Memorandum Amendment will be prioritized for residences and residential-type properties exceeding 400 ppm where a child is identified with an EBL level. When a child residing within the Site is identified with an EBL level through the ongoing blood

screening program for children, the status of sampling and response at the child's residence will be checked. If sampling results indicate any non-foundation sample exceeding 400 ppm, the property will be prioritized for response. If sampling of the subject property has not occurred, sampling and potential response will likewise be prioritized. Child-care facilities, properties where children under age seven reside, and high child-impact areas will be the next highest priorities for sampling and response.

In the process of identifying appropriate options and recommendations for soil remediation, the conditions of existing vegetation, the use patterns of the property, and current drainage patterns within and adjacent to a property will be evaluated.

During remediation activities, clean access to the residence will be provided at all times. Clean access will provide residents with access to their home that avoids contact with potentially contaminated soil. Sidewalks will be thoroughly brushed and/or washed off with water after each workday to provide as clean an entry as possible to the residence. In the absence of a sidewalk, placement of plywood, pallets, plastic, or using other temporary measures to prevent exposure and tracking of soils will provide a clean pathway to the residence. All residents will be required to avoid the construction area during remediation activities. Unsafe excavation areas or stockpiled soils will be visually identified with banner guard or other type of barrier to prevent accidents and exposure.

Water application will be used, as necessary, to minimize the potential for fugitive dust emissions. Application rates will be regulated to control dust during excavation, yet prevent the development of muddy conditions. The objective will be to minimize airborne dust and minimize the production of mud that could be transported off-site on vehicle tires and other mobile equipment. Outdoor faucets and hydrants from private residences and public areas may be used as water supply sources, with the property owner's permission.

Installation of a non-contaminated soil cover may be considered for areas contaminated at levels less than 1,200 ppm as an acceptable alternative to, or in combination with, excavation to reduce cost in special cases such as large parks or open spaces. Installation of a soil cover on residential properties in lieu of excavation and soil replacement will generally not be considered, and would not be performed without the informed consent of the individual property owner. Installation of a non-contaminated soil cover would only be considered in areas where surface soil-lead concentrations are greater than 400 ppm, but less than 1,200 ppm, and where drainage and other site-specific considerations would otherwise accommodate placement of a soil cover. The soil cover would consist of a minimum of 12 inches of non-contaminated soil. Installation of a non-contaminated soil cover would not occur in areas where surface soils exceed 1,200 ppm lead.

Air monitoring will be conducted during removal activities, if necessary, to ensure that airborne particulates do not contain harmful levels of lead. No visible dust will be allowed to leave the excavation areas.

Three options are available for final management of excavated contaminated soils. As the response progresses, the EPA will continue to assess opportunities that become available for final management of excavated material. The amended action provides for flexibility to utilize the final management option that is both protective and cost-effective during the course of the response action.

The most expedient, and perhaps the most costly, means of managing excavated soils would be to transport the material to an off site sanitary landfill for disposal for use as daily cover. This option is currently being utilized during the ongoing removal action at the Site.

Alternatively, the excavated materials could be used as beneficial fill in the construction of an industrial or other non-residential facility. Lead-contaminated soils at the site are considered a risk to human health only in residential settings. In certain instances, removed soils could be safely used in a non-residential setting without creating a risk to human health. Special engineering features may be designed into the fill area to assure protection of human health and the environment. Coordination with other agencies, particularly at the state and local level are required for an acceptable beneficial use to be identified and implemented. The value associated with the beneficial use of excavated materials could potentially offset the costs to transport and place the materials, resulting in a cost-effective solution concerning the final management of contaminated soils.

The third option involves constructing an off-site repository for the final management of excavated materials. This alternative has costs associated with design, construction, operation and maintenance. This option is limited by the availability of land and the ability to arrange for maintenance of such a facility.

In order to prevent the re-contamination of the non-contaminated soil placed in yards after excavation,

loose and flaking exterior lead-based paint that threatens the continued protectiveness of the remedy will be stabilized on affected structures prior to soil excavation. Only those homes and other structures where lead-based paint is visibly flaking and deteriorating will be addressed. Loose and flaking paint will be removed primarily through wiping, or wet scraping, although power washing may be considered on surfaces where limited damage to the siding or structure would be expected. Once loose and flaking paint has been removed, an encapsulant or other appropriate material will be applied to stabilize the affected surface. Coating material used to stabilize affected surfaces will be color-matched to the existing surface to the extent practicable.

The stabilization of exterior lead-based paint will be conducted on a voluntary basis prior to soil removal and replacement, and will only be performed at properties where soil response actions are conducted. Procedures used to stabilize lead-based paint will be consistent with HUD requirements presented in "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (HUD, June 1995). Contractors working on removal of lead-based paint will operate in conformity with the Residential Lead-Based Paint Hazard Reduction Act, the Toxic Substances Control Act, and Title 178, Chapter 23 of the Nebraska Administrative Code.

At residences where soil cleanup actions are conducted, sampling will be performed to assess lead concentrations in interior dust. Homes that exceed the EPA and the HUD standards for lead in interior dust that allow a maximum dust loading of 40 µg/ft<sup>2</sup> for floors and 250 µg/ft<sup>2</sup> for window sills will be eligible for a thorough interior cleaning using high-efficiency equipment. Interior cleaning of affected residences will be provided, in accordance with the HUD procedures, on a voluntary basis for willing residents, after the soil cleanup is completed in the yard.

### Next Steps

The Interim ROD issued December 15, 2004, increased the scope of the response action to include other eligible properties described above. Based on information in the Omaha Lead Site Remedial Investigation, the ROD estimated that 5,600 properties exceed 800 ppm lead, or are otherwise eligible for response based on high child-impact or EBLs. The current action increases the scope of the removal response to include all elements of the ROD and increases the funding ceiling to provide continued response at an estimated 300 of these properties.

### Key Issues

The EPA's health protection goal is that there be no more than a five percent probability that any child exposed to lead at the Site will have a blood-lead level exceeding 10 µg/dl. A Baseline Human Health Risk Assessment was finalized for the site in June 2004. This risk assessment concluded that on the basis of data collected from the Site, 34 percent of children are predicted to exceed the health-based goal.

### Estimated Costs \*

	Budgeted	Total To Date	Remaining	% Remaining
<b>Extramural Costs</b>				
ERRS - Cleanup Contractor	\$7,328,207.00	\$6,298,417.00	\$1,029,790.00	14.05%
START	\$781,617.00	\$592,214.00	\$189,403.00	24.23%
<b>Intramural Costs</b>				
<b>Total Site Costs</b>	<b>\$8,109,824.00</b>	<b>\$6,890,631.00</b>	<b>\$1,219,193.00</b>	<b>15.03%</b>

\* 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.

[response.epa.gov/OmahaLeadPhaseIV](http://response.epa.gov/OmahaLeadPhaseIV)