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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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

AUG 2 1999

ACTION MEMORANDUM

SUBJECT: Request for Removal Action, Twelve-Month Exemption, and a Two Million Dollar Exemption at the Omaha Lead Site, Omaha, Nebraska and Council Bluffs, Iowa

FROM: Don Bahnke, Remedial Project Manager
Superfund Division

Don Bahnke

TO: Michael J. Sanderson, Director
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Site ID#: ZY
Category of Removal: Time-Critical
CERCLIS ID #: NESFN0703481
Nationally Significant/Precedent Setting: No

I. PURPOSE

The purpose of this Action Memorandum is to request approval for a time-critical removal action for the Omaha Lead Site (the Site), which encompasses eastern Omaha, Nebraska, and Council Bluffs, Iowa, and to request a two million dollar statutory exemption and a twelve-month exemption. Child care facilities and residences where a child with blood lead concentrations of 15 micrograms per deciliter (ug/dl) or greater will be included in the removal action if the soil in their yard contains lead concentrations equal to or greater than 400 milligrams per kilogram (mg/kg). The primary objective of this action is to eliminate or reduce ingestion exposure due to the presence of lead in the soils at the Site.

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Background

The Site is located in the Omaha metropolitan area and encompasses Council Bluffs, Iowa, and east Omaha. It is centered around downtown Omaha, Nebraska. 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

1996. 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 Streets 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.

In May 1998, Mr. Frank Brown, President of the Omaha City Council, sent a letter to the Environmental Protection Agency (EPA) requesting the assistance of the EPA in addressing problems with lead contamination in the Omaha area. The EPA initiated a process to investigate the lead contamination using authority under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9600, et seq., more commonly known as the Superfund Law. These actions are explained in more detail later in this memorandum.

a. Childhood Blood Lead

The Douglas County Health Department (DCHD) has operated a Childhood Lead Poisoning Prevention Program (CLPPP) for 21 years. Screening children six months to six years of age is one of the main functions of this program. Although the CLPPP finds children with blood lead concentrations above 10 µg/dl throughout the county, children living in certain zip codes within the Omaha metropolitan area exceed this level at a much greater frequency. All of these zip codes are located, in whole or in part, east of 42nd Street in Omaha, Nebraska. According to a November 1998 DCHD press release, the frequency of tested children exceeding 10 µg/dl within these zip codes ranges from 20.6% in 68108 to 42.8% in 68110.

b. 1996 Residential Property Lead Assessment

In the fall of 1996, the DCHD began an assessment of 179 homes located in east Omaha. The goal of the assessment was to identify all sources of lead poisoning in each residence. The DCHD collected outdoor soil samples from 84 of the 179 residences. Twenty of the 84 exceeded the 400 mg/kg screening level for lead.

c. 1998 Residential Property Soil Lead Assessment

In the fall of 1998, the DCHD began a more thorough assessment of soil lead contamination at selected residences in east Omaha. Some of the residences evaluated in the 1996 assessment were also included in the 1998 residential soil assessment. In addition, properties that DCHD had not previously evaluated were also included in the 1998 assessment. Yard soils from 22 of the 66 residences, who have been tested to date, have results above 400 mg/kg in the nonfoundation areas. Foundation areas are defined as areas in close proximity to structures where the lead soil concentration could be influenced by leaded paint.

d. Ambient Air Monitoring

On October 5,1978, the EPA promulgated a National Ambient Air Quality Standard (NAAQS) for lead. The standard is 1.5 micrograms (*ug*) of lead per cubic meter (m^3) of air averaged over a calender quarter (40 C.F.R. Part 50.12).

Air monitoring stations were established in three locations near the ASARCO refinery and air samples were collected and analyzed at these three stations. The DCHD performed the monitoring of the ambient air quality around the ASARCO lead refinery. In 1984 an air monitor was placed along Abbot Drive immediately north of the ASARCO refinery. In the 37 quarters that monitoring was conducted at this location between 1984 and 1996, the 1.5 ug/m^3 standard was exceeded 19 times with the highest concentration measured being 2.84 ug/m^3 in 1984. A second monitor was placed along the Missouri River front immediately south of the ASARCO refinery in 1990. The NAAQS standard was exceeded 17 of the 23 quarters that monitoring was conducted at this location between 1990 and 1996. The highest quarterly concentration measured at the river front monitor was 6.47 ug/m^3 in 1994. In 1995, a third monitor was placed immediately northwest of the ASARCO refinery toward the Union Pacific facility. This monitor exceeded the NAAQS standard in all five quarters that monitoring was conducted at this location with the highest quarterly concentration coming in 1995 measuring 6.57 ug/m^3.

e. EPA Integrated Site Assessment

The EPA began sampling soil from child care facilities and selected residential properties in March 1999. Thirty-nine of the 153 licensed child care facilities tested have one or more nonfoundation result greater than 400 mg/kg with a high concentration of 1,930 mg/kg. The locations of the 153 day cares are widely scattered over the Omaha metropolitan area (including Council Bluffs, Iowa). However, those with nonfoundation results exceeding the 400 mg/kg screening level are primarily located along a path that runs north-
northwest from downtown Omaha. The direction of this path coincides with the direction of prevailing winds measured at Epply Airfield in downtown Omaha. There are additional child care facilities that have not been sampled by the EPA. Efforts to sample these child care facilities are ongoing.

Preliminary screening results from residential properties have been reported to the EPA. Although these results have not been quality assured, review of the data provides some insight into the prevalence of lead at the Site. Two hundred eleven of the first 348 private residences tested have one or more nonfoundation result greater than 400 mg/kg. Unlike the child care facilities, the locations of the residences tested are not widely scattered over east Omaha and Council Bluffs. These residences were selected for sampling based on their location along the path of prevailing winds leading from downtown Omaha.

2. Physical Location

The Site is located in the Omaha metropolitan area including Council Bluffs, Iowa. Accurate boundaries of the site have not been defined because the integrated site assessment sampling being done by the EPA is not complete. The map included as Attachment 1 shows the location of most of the child care facilities where validated data has been obtained. A few child care facilities with validated data are outside the area covered on this map.

3. Site Characteristics

The Site encompasses properties used for both commercial and residential purposes. Commercial properties are primarily located in the downtown Omaha and downtown Council Bluffs areas. In Omaha, residential properties are found at the edge of downtown and continue with increasing distance from downtown. In Council Bluffs, residential and industrial properties are more intermixed. A large portion of the housing stock within the Site is composed of dwellings that were built before the use of lead-based paint was banned in 1978.

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

Lead is a hazardous substance as defined by Section 101(14) of CERCLA and is listed at 40 C.F.R 302.4. Sampling and analysis has confirmed that the levels of lead in surface soils are high in several residential and child care facility locations. The lead levels at these locations are high enough to pose a threat to children playing in the yards. Thirty-nine child care facilities have nonfoundation soil concentrations greater than 400 mg/kg with a high concentration of 1,930 mg/kg.

5. National Priorities List Status

The Site is not currently listed nor proposed for listing on the National Priorities List.

6. Supporting Documentation

All reports of investigations, reports of sampling and analysis, and other relevant documents regarding the contamination at the Site will be contained in the Site's Administrative Record. The Administrative Record in currently being developed.

B. Other Actions to Date

1. Previous Actions

The DCHD has tested blood lead concentrations of children six months to six years of age for 21 years. Many of the children tested have blood-lead levels greater than acceptable levels. See Section II. A. for discussion of other actions conducted at the Site.

No other response actions have been undertaken by the EPA at this site using CERCLA authority. The EPA is the lead agency for all on-site investigatory and removal program functions.

2. Current Action

Blood-lead testing in the area continues. Residential and child care facility yard sampling in connection with the integrated site assessment is ongoing.

C. State and Local Actions to Date

1. State and Local Actions to Date

The Nebraska Department of Environmental Quality (NDEQ) has been actively involved with, and has provided support to, the EPA throughout the project. The NDEQ was extensively involved with ASARCO's efforts to reduce their air emissions of lead to below the national ambient air quality standard. When ASARCO decided to cease operations at its Omaha refinery, the NDEQ focused their efforts on closure activities at the former refinery. The NDEQ is the lead agency for the closure activities. Currently, all structures at the refinery are being demolished. Completion of the planned closure activities will result in the property where the former refinery was located being converted to a city park. ASARCO's lead refinery property located at 500 Douglas Street in Omaha, Nebraska, is not part of the Site.

The CLPPP implemented by DCHD is ongoing. In addition to screening children for blood-lead poisoning, the CLPPP manages the cases of all children found to have elevated levels of lead in their blood.

2. Potential for State/Local Response

The NDEQ, DCHD, and Nebraska Health and Human Services (NHHS) are expected to remain involved in a variety of future activities at the Site, including blood-screening, health education, and health assessments.

The EPA will coordinate all activities associated with this removal action with NDEQ, NHHS, and DCHD.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Section 300.415(b)of the National Contingency Plan (NCP) provides that the EPA may conduct a removal action when it determines that there is a threat to human health or welfare or the environment based on one or more of the eight factors listed in Section 300.415(b)(2). The factors which justify a removal action at this Site are outlined below.

A. Threats to Public Health or Welfare

1. 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.

Concentrations of lead greater than 400 mg/kg have been found in one or more nonfoundation samples collected from 39 child care facility yards at the Site with a high concentration of 1,930 mg/kg. Children playing in and around the contaminated areas of the yards have the highest potential to be exposed. Sampling of additional child care facilities and sampling of residences where children with elevated blood lead levels (EBL) live may reveal additional yards that will be included in this removal action.

2. 300.415(b)(2)(ii) -- Actual or potential contamination of drinking water supplies.

The elevated concentrations of lead in soil is a potential continuing source of groundwater contamination. However, all properties at the Site are connected to municipal water systems.

3. 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 levels of concern. Lead-contaminated soils may migrate via airborne dusts, surface runoff, percolation into groundwater, and by people and pets transporting soils/dusts into their homes from the affected areas.

4. 300.415(b)(2)(v) -- Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

Weather conditions could cause the lead contamination to migrate. Wind could cause the lead-contaminated soils to migrate via airborne dusts. Rain or thundershowers may cause the lead contamination to migrate via surface runoff and percolation into groundwater.

5. 300.415(b)(2)(vii) -- The availability of other appropriate federal or state response mechanisms to respond to the release.

There are no other state or federal authorities who are able to respond to the release of hazardous substances at the Site.

6. 300.415(b)(2)(viii) -- Other situations or factors that may pose threats to public health or welfare of the United States or the environment.

In addition to the above-listed factors, the EPA considered studies conducted which assess the effects of lead on human health. The EPA also relies on widely-accepted toxicological references and on case studies which assess human health effects.

Lead is a metal and a constituent of D008 hazardous waste. 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.

IV. ENDANGERMENT DETERMINATION

The actual release of a hazardous substance at this Site, if not addressed by implementing the response action selected in this Action Memorandum, presents an imminent and substantial endangerment to the health of the public that comes in contact with the Site, and to public

welfare and the environment. Federal and state agencies are recommending that immediate response actions be taken to reduce potential exposure.

V. EXEMPTION FROM STATUTORY LIMITS

This response action will exceed two million dollars and may exceed 12 months in duration. The threat constitutes an immediate risk to public health or welfare or the environment. The response action described in this Action Memorandum will eliminate the immediate risk posed by soil contamination. The response actions described are immediately required to prevent, limit, or mitigate an emergency. Following completion of the described response action, site contaminants will be removed from the soil in yards described in this Action Memorandum, eliminating the potential for exposure to lead in soils.

Assistance will not otherwise be provided on a timely basis. Neither the state, county, nor local governments have the response authority and resources to implement the described actions.

An exemption from the statutory limit is necessary for this action in accordance with CERCLA § 104 (c)(1), 42 U.S.C. § 9604 (c)(1).

VI. PROPOSED ACTIONS AND ESTIMATED COST

A. Proposed Actions

1. Proposed Action Description

Past sampling activities at this Site have documented the release of hazardous substances but has not necessarily defined the total areal extent. Sampling in connection with the integrated site assessment is in progress. It is likely that this sampling will identify more child care facilities and private residences that exceed the 400 mg/kg removal standard. In addition, the EPA will test yard soil at all residences of children under seven years old with blood lead concentrations of 15 µg/dl or greater (EBL residence). The EBL residences with one or more nonfoundation result equal to or greater than the 400 mg/kg will be included in the removal action.

Excavation of contaminated soils to below action levels, disposal of excavated soils, and restoration of the excavated areas will be completed at each child care facility and EBL residence. Excavation will occur at those child care facilities and EBL residences where non-foundation soil lead concentrations exceed 400 mg/kg. Each property was divided into four quadrants and sampling was done at each quadrant. If a property had a play area or garden, samples were collected from these areas. A foundation sample was also taken at each property. Excavation will be done only in the quadrant(s) or areas where soil samples are equal to or greater than 400 mg/kg. Once an action is triggered by having a nonfoundation sample greater