

Health Consultation

LEROI COMPANY SMELTER

LEAD EXPOSURE INVESTIGATION RESULTS

NORTHPORT, STEVENS COUNTY, WASHINGTON

EPA FACILITY ID: WAD988507323

DECEMBER 6, 2005

DOH 334-080 December 2005

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

LEROI COMPANY SMELTER

LEAD EXPOSURE INVESTIGATION SITE

NORTHPORT, STEVENS COUNTY, WASHINGTON

EPA FACILITY ID: WAD988507323

Prepared by:

Washington State Department of Health
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

Foreword

The Washington State Department of Health (DOH) has prepared this health consultation in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is part of the U.S. Department of Health and Human Services and is the principal federal public health agency responsible for health issues related to hazardous waste. This health consultation was prepared in accordance with methodologies and guidelines developed by ATSDR.

The purpose of this health consultation is to identify and prevent harmful human health effects resulting from exposure to hazardous substances in the environment. Health consultations focus on specific health issues so that DOH can respond to requests from concerned residents or agencies for health information on hazardous substances. DOH evaluates sampling data collected from a hazardous waste site, determines whether exposures have occurred or could occur, reports any potential harmful effects, and recommends actions to protect public health. The findings in this report are relevant to conditions at the site during the time of this health consultation, and should not necessarily be relied upon if site conditions or land use changes in the future.

For additional information or questions regarding DOH or the contents of this health consultation, please call the health advisor who prepared this document:

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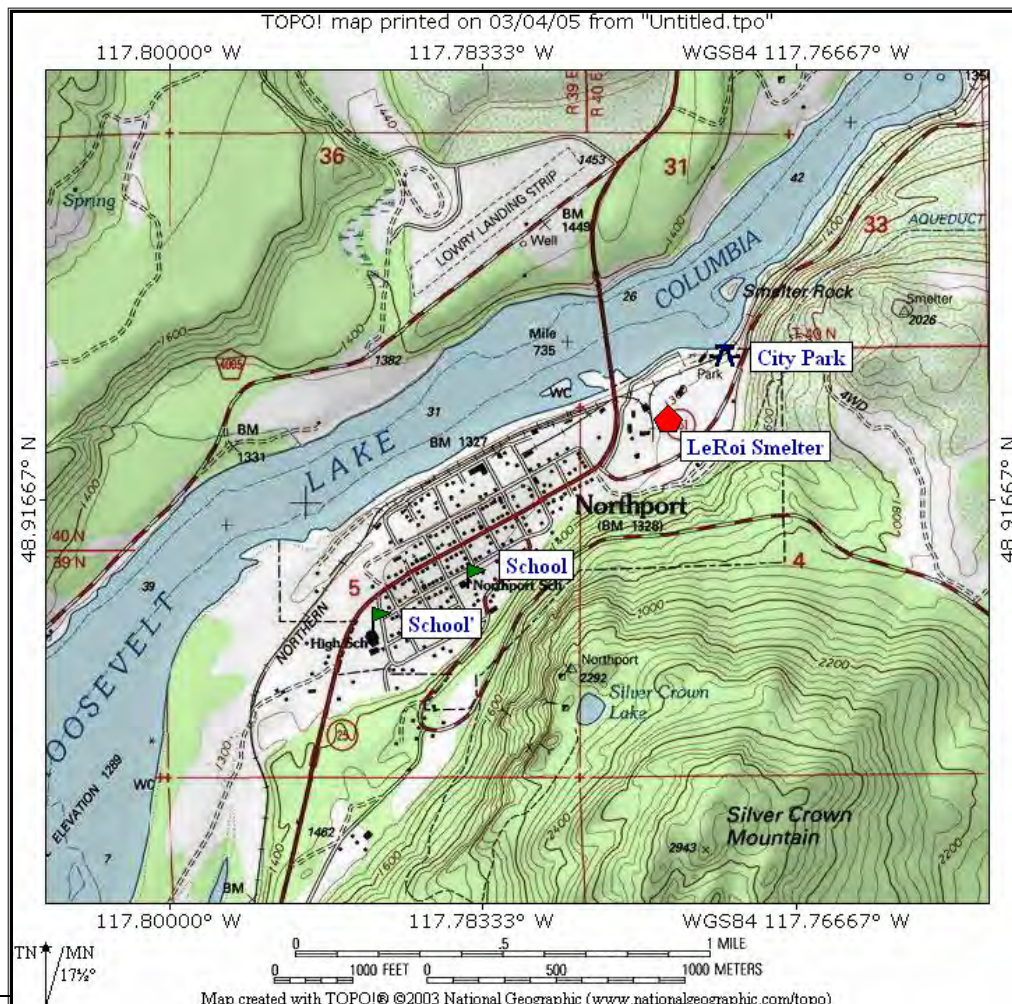
Summary and Statement of Issues

The Washington State Department of Health (DOH) prepared a health consultation in August 2004 evaluating exposure to metals contamination resulting from historic operation of the LeRoi smelter in the town of Northport, Washington. As follow-up to this report, DOH, the Northeast Tri-County Health District (NETCHD), and the Northport Community Health Center (NCHC) collected blood samples from children for an exposure investigation (EI). The EI was conducted on August 31, 2004, to determine if children in the community were at risk due to elevated levels of blood lead.

Background

The former LeRoi Smelter site is located northeast of the city center of Northport, Washington (See Figure 1). The Northport-Waneta road borders the 32-acre site on the east and south. Burlington Northern Santa Fe Railway (formerly the Spokane Falls and Northern Railroad) runs parallel to the Columbia River and is on the northern border of the site [1,2]. Highway 25 makes up the western border of the site. Residential homes are located to the west of the site. A city park is located about 50 feet northwest of the site along the Columbia River.

Figure 1. LeRoi Smelter and Vicinity



The former facility smelted lead, copper, gold and silver ores from 1896 to 1921. It was made up of several buildings (the furnace building, the roaster building, and the crusher and ore building), which are no longer standing [1,2]. Currently, the city of Northport operates three community drinking water wells located at the site of the brick platform used for initial roasting of the ore.

In September 2003, EPA sent out a fact sheet to residents of the Northport area announcing voluntary free residential soil testing for lead and other heavy metals. The fact sheet encouraged residents at higher risk (pregnant women and children under age seven) to test the soil around their homes.

In October 2003, EPA's Removal Evaluation team analyzed 210 surface and subsurface soil samples from 118 locations on the former LeRoi Smelter site for lead and arsenic [3]. The site was divided into the smelter complex and the lumberyard area. A 100-foot plot grid was used to collect the samples, 15 locations were not sampled because five lay over concrete; five were within 50 feet of the property boundary; four were within 75 to 100 feet of city drinking water supply wells; and 1 lay within a building. In addition, EPA analyzed 114 soil samples from 13 residential properties (volunteered to be sampled), and 58 composite samples from 18 locations on the Northport School campus [3]. EPA screened the samples using X-ray Fluorescence (XRF). Twenty percent of these samples were confirmed using Inductively Coupled Plasma Emission Spectrometry (ICP).

Lead levels on the smelter site and tailings piles were extremely high (up to 99,700 ppm). Residential soil lead levels ranged from 195 ppm to 1,880 ppm. The results indicated that lead and arsenic contamination is present throughout the smelter complex and areas within the city.

Justification for the Exposure Investigation

EPA held two open house public meetings on April 20 and 21, 2004, at the Northport community center. DOH collected community health concerns at the meetings. During the course of the meetings, several community members inquired about the feasibility of having children's blood screened for lead. This, in addition to the evidence of high lead levels in the soil in the community, provided the impetus to make blood lead screening available to children and adults in Northport area.

Targeted Population

DOH solicited participation in the exposure investigation by sending 650 letters to Northport area residents. DOH, NETCHD, and NCHC staff collected blood samples from Northport area residents who volunteered for the free blood lead screening. (Children six and under, older children if they play around the LeRoi Smelter site and women of child bearing years are included.).

Consent/Assent Form

Prior to testing, a parent or legal guardian of each minor participant was required to sign an informed consent form. Staff from the DOH, NETCHD and NCHC administered the consent

forms to the parents or guardians of the children and obtained their written permission prior to the EI.

Blood Sample Collection

DOH, NETCHD and NCHC staff were present the day of the blood lead sampling and explained the process to the residents. DOH staff coordinated ordering the sampling kits in advance and had them shipped to the DOH. DOH staff coordinated the laboratory analyses with CBHA Laboratory. NETCHD staff administered the finger sticks and capillary tube sample collection. Finger sticks were used for capillary blood draws using LeadCare capillary tubes and reagent vials. Columbia Basin Health Association (CBHA) Laboratory in Othello, Washington analyzed the blood lead samples using the LeadCare Analyzer System.

Results

Blood samples were collected from nine children and five adults. Blood lead levels were less than 5 µg/dl for all children participating in the EI. Adults participating in this EI had blood lead levels within an acceptable range (0 -10.0 µg/dl for women of childbearing age and up to 40.0 µg/dl for all others. However, the public health objective of the Adult Blood Lead Epidemiology and Surveillance (ABLES) program, as stated in *Healthy People 2010*, is to reduce the number of persons with blood lead levels ≥ 25 µg/dL from work exposures [5]).

In accordance with Washington State confidentiality law, individual test results were not made available to the general public. Individual test results and an explanation of their meaning were provided to each of the participants in writing. NETCHD and DOH staffs were available to discuss individual results by telephone. Recommendations for follow-up actions were made as appropriate.

Discussion

Although DOH mailed out 650 letters and follow up notices about free blood lead screening to Northport area residents, the participant turnout in this investigation was very low. Fourteen individuals showed up for the free blood lead screening.

Low participation in screening makes it practically impossible to estimate local prevalence of elevated blood lead levels in Northport's children. In the U.S. 2.2 % of children have blood lead levels that exceed 10 ug/dl. Currently, the main pathways of lead exposure in children in the U.S. are ingestion of paint chips, contaminated soil and house dust from soil tracked into the house, and drinking water in homes with lead plumbing. Lead is a naturally occurring chemical element that is normally found in soil. Background soil lead concentrations ranges between 2.1 and 205.5 ppm, statewide in Washington State [4]. However, the widespread use of certain products (such as leaded gasoline, lead-containing pesticides, lead-based paint, plumbing and canning) and the emissions from certain industrial operations (such as smelters) has resulted in significantly higher levels of lead on many properties in the state. Elimination of lead in gasoline and solder used in canning has greatly reduced exposure to lead through inhalation and ingestion pathways.

Children less than seven years old are particularly vulnerable to the effects of lead. Compared to older children and adults, they tend to ingest more dust and soil, absorb significantly more of the lead than they swallow, and more of the lead that they absorb can enter their developing brain. Especially for young children, high blood lead levels are associated with nervous system toxicity including learning disorders. Pregnant women and women of childbearing age should also be aware of lead in their environment because lead ingested by a mother can affect the unborn fetus.

Generally, blood lead cannot be linked to a single source of lead such as soils in Northport or lead paint without further intensive investigations. Blood lead is not a clean-up measure (i.e., biological indicator) for contaminated sites. Broadly speaking, blood lead is a snapshot that reveals information on recent lead exposures.

Conclusions

Blood lead concentrations were not elevated in the 14 individuals who participated in this exposure investigation. Of the 14 individuals, nine were children and five were adults. The low turnout for the blood lead screening makes it impossible for the community and the health agencies to predict citywide child and adult blood lead levels and whether there are exposures to lead from the site.

Recommendations

Although no children or adults had elevated blood lead levels, DOH still recommends that the community follow common sense exposure reduction measures as suggested in the previous health consultation, "LeRoi Company Smelter, May 19, 2005."

Public Health Action Plan

Actions Completed

1. DOH attended a City Council meeting and an EPA public meeting in Northport, Washington, and provided educational materials to the community.
2. DOH mailed fact sheets about the LeRoi Smelter and free blood lead screening fliers to residents of Northport area.
3. Blood lead screening was completed in August 2004. Levels were not a health concern but turn out was very low.
4. Individual blood lead test results were mailed to participants in a letter explaining their health implications.

Actions Planned

No additional actions are planned.

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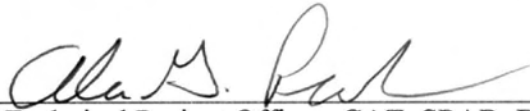
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References

1. Ecology and Environment, Inc and Roy F. Weston, Inc. Upper Columbia River expanded site inspection report, Northeast, Washington TDD:01-02-0028. Prepared for U.S. Environmental Protection Agency, contract no. 68-S0-01-01. Seattle: Ecology and Environment, Inc and Roy F. Weston, Inc. March 2003.
2. Ecology and Environment, Inc. Preliminary assessments and site inspection report, Upper Columbia River Mines and Mills, Stevens County, Washington TDD:01-02-0028. Prepared for U.S. Environmental Protection Agency, contract no. 68-S0-01-01. Seattle: Ecology and Environment, Inc. October 2002.
3. Herrera Environmental Consultants. LeRoi Smelter Removal Site Evaluation, Draft, Summary of X-ray Fluorescence soil screening results for lead and arsenic. Prepared for Washington State Department of Ecology, Project No. 00-01732-043. Seattle: Herrera Environmental Consultants, November 4, 2003.
4. Toxics Cleanup Program, Department of Ecology: Natural background soil metals concentrations in Washington State Publication No. 94-115. Olympia: Washington State Department of Ecology: October 1994.
5. Centers for Disease Control and Prevention (CDC), Adult Blood Lead Epidemiology and Surveillance (ABLES) United States, 1998-2001, Surveillance Summaries: MMWR 51(SS11); 1-10 December 13 2002.

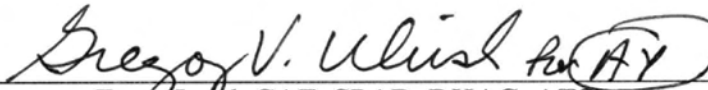
Certification

This LeRoi Smelter Health Consultation was prepared by the Washington State Department of Health under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It was completed in accordance with approved methodologies and procedures existing at the time the health consultation was initiated. Editorial review was completed by the Cooperative Agreement partner.



Technical Project Officer, CAT, SPAB, DHAC

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this health consultation and concurs with its findings.



Team Lead, CAT, SPAB, DHAC, ATSDR