

Health Consultation

RUSTON FOUNDRY

ALEXANDRIA, RAPIDES PARISH, LOUISIANA

EPA FACILITY ID: LAD985185107

MARCH 22, 2001

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

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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

RUSTON FOUNDRY

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EPA FACILITY ID: LAD985185107

Prepared by:

Louisiana Department of Health and Hospitals
Office of Public Health/ Section of Environmental Epidemiology and Toxicology
under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

I. Purpose

The US Environmental Protection Agency (EPA) Region 6 provided Louisiana Department of Health and Hospitals (LDHH) with the results of data collected in off-site residential soils adjacent to the Ruston Foundry site to prepare a health consultation. The health consultation will describe and evaluate the results to determine if a health threat exists. The main target of lead toxicity is the nervous system. Children are more vulnerable to lead poisoning than adults [1]. In early December 1999, portable X-ray fluorescence instrumentation (XRF) testing was conducted to investigate the amount of lead in residential soil and the external paint at residences closest to the facility. A public health assessment was prepared by LDHH of Ruston Foundry site in 2000 [2].

II. Background and Statement of Issues

The Ruston Foundry site is a 6.26 acre site located at 1010 Bogan Street, Alexandria, Rapides Parish, Louisiana. The facility is an inactive and abandoned foundry that was in operation from 1908 to 1985. The company engaged in foundry and machine shop activities and in the manufacturing, prefabrication, and repair of articles of steel, iron and other metals [2,3]. The property is located in an urban area within the city limits of Alexandria (Appendix 1, Figure 1).

The Chatlin Lake Canal is a fresh water river which borders along the site to the north, east, and south. The former Missouri-Pacific Railroad borders the site on the west. The canal is used primarily for drainage, and its recreational use is limited. There is unrestricted access to the canal. Residential neighborhoods are located to the north, east, and south of the site on the opposite side of the Chatlin Lake Canal. The closest resident is located approximately 80 feet northwest of the site [4].

1) Air monitoring

EPA collected air samples and analyzed them for total metals in April 1999. Air monitors were set up in the neighborhood to assess the probability of exposure due to air emissions. The results showed that all metals were found below levels of health concern, including lead which was below the National Ambient Air Quality Standard of 1.5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). This primary air quality standard establish limits to protect public health, including the health of "sensitive" population such as asthmatics, children, and the elderly.

During November 1999 air monitoring samples result found lead levels at $68.5 \mu\text{g}/\text{m}^3$ at the on-site downwind location. This concentration was three times higher than the lead concentration found at the upwind location which was $18.1 \mu\text{g}/\text{m}^3$. Copper, lead and zinc did not exceed the health assessment comparison values [5]. No off-site samples were collected at this time.

2) Soil Samples

On-site Soil

On June 5, 1990, the Louisiana Department of Environmental Quality's Inactive and Abandoned Sited Division (LDEQ-IASD), conducted a site investigation which included drum and soil sampling. The results of soil samples showed concentrations of up to 1,350 parts per million (ppm) of lead, toluene at 35 ppm and 100 ppm of ethyl benzene.

On October 26, 1990, the EPA Emergency Response Branch (ERB) requested the Technical Assistance Team (TAT) to conduct a Site Investigation (SI) to determine sampling strategies at the site. On November 12, 1990, the TAT obtained 50 soil and drum samples for analysis. Analytical results showed elevated levels of arsenic (110 ppm), chromium (230 ppm), cobalt (220 ppm), lead (120,000 ppm), mercury (1.8 ppm), and zinc (5,000 ppm) in the on-site soil samples [3].

In April 1998, the EPA took off-site surface soils, sediments, slag pile and field quality control samples that were analyzed for total metals. In May, 1999, an Expanded Site Investigation (ESI) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) resulted in the inclusion of this facility to the National Priorities List (NPL).

Off-site soil

In April, 1998, off-site soil samples were collected and analyzed for total metals (See Table 1). Chemical analyses of the residential off-site soil samples (two background samples and thirteen residential soil samples including a duplicate) presented in the ESI report [5] show lead was detected at a maximum concentration of 1,560 ppm. When lead exceeds 400 ppm in soil, more samples are usually collected. In April, 1999, the EPA gathered additional off-site soil samples. These soils were analyzed for metals and lead was again identified as a concern.

In December 1999, the EPA performed further sampling to determine the extent of the lead distribution in the off-site soil. They analyzed soils and exterior paint at six residences, including houses and work sheds, adjacent to the site using XRF. Lab confirmation samples were taken to support the finding of the XRF. Table 1 shows the results of soil and paint samples taken at six residences adjacent to the site.

The Public Health Assessment for Ruston Foundry states that the off-site soil is a public health hazard because of lead and the potential for children to be exposed. Table 1 shows that residences C, D, and E had the highest levels of lead in soil. These yards are residential and therefore, children have unlimited opportunities to be exposed to contaminated soils.

The Ruston Foundry site is still in need of remedial activity. The EPA, Remedial Investigation/Feasibility Study (RI/FS) Plan is tentatively set to be released in the spring of 2001 [2].

Table 1. Results of off-site soil and exterior paint readings taken outside six residences adjacent to the Ruston Foundry site in Alexandria, Louisiana using x-ray fluorescence (XRF) technology to identify lead, December, 1999.

Residences	Number of sample readings		Paint results	Soil lead results				
				Concentration range (mg/kg ¹)			Percent above 400 mg/kg	Maximum Concentration
	Soil	Paint	Number positive + ²	1-200	201-400	401->	(%)	(mg/kg)
A	47	5	1	28	12	3	7	1172
B	34	1	-	20	11	4	11.5	655
C	44	4	3	21	12	3	8	2772
D	39	9	3	7	10	4	19	3327
E	28	1	-	15	9	3	11	3358
F	28	4	-	26	2	--	--	252

¹ mg/kg= milligrams/kilogram

² paint + : greater than 1.0 mg lead /cm² (milligrams of lead per square centimeter of painted surface)

² paint - : less than 1.0 mg lead /cm²

III. Discussion

This section contains an evaluation of the soil lead XRF data available for the residences adjacent to the Ruston Foundry site. The XRF analysis of residential soils in December 1999 was performed to confirm the findings of elevated lead in residential soils found from the April 1999 sampling event. Sampling was completed to learn about the distribution of lead which would help to explain if the lead in off-site soils is due to the Ruston Foundry site operations. Houses and work sheds at six residences were tested and one to nine readings for paint were taken at each residence.

Table 1 shows the ranges of lead concentrations found in soil and paint and the number of readings where soil lead concentrations was greater than 400 ppm, a concentration used as a residential screening level by the EPA [6]. Five of six yards tested had one or more soil readings with a lead concentration above 400 ppm. The maximum lead concentration found by XRF in a

yard was 3,358 mg/kg. The locations where elevated lead was found were unevenly distributed. Only 7% to 19% of the XRF readings found soil lead concentrations greater than 400 mg/kg. The majority of the lead readings were lower than 200 mg/kg. The dispersion of lead in soil and the visual observations made during sampling suggest the lead is the result of lead paint deterioration and private land use practices rather than from the Ruston Foundry.

The levels of lead in some portions, but not all of the residential soil are elevated and may pose a public health hazard. Unlike the site, where a fence keeps people out, small children can be easily exposed to lead contaminated soil during play in a residential yard. At the time the samples were taken, no children with lead poisoning or at risk for lead poisoning, were identified in the six homes tested.

Lead paint is a primary cause of childhood lead poisoning. Lead paint was permitted in the United States until 1978 [1]. The homes around Ruston Foundry are from five to eighty years old. Three out of six residences tested positive for exterior lead paint. This finding agrees with the United States Department of Housing and Urban Development estimate that three out of five of housing built before 1980 contain some lead paint [1]. The exterior paint at some of the residences poses a public health hazard. Paint condition is a variable which influences the degree of health hazard. Deteriorating paints which peel or flake are more accessible to children. The personal behavior of the child can also influence exposure to lead in soil and paint. It is important for parents and care givers to wash the children's hands frequently, try to eliminate hand to mouth behavior and not allow pacifier use or eating while playing in the yard. The adult should also keep the soil well covered with grass. Frequent wet mopping of indoor surfaces to remove dust can decrease exposure to contaminated dust tracked indoors.

The LDHH contacted the Rapides Parish Health Unit to learn about blood lead testing in the area. Children who receive health care through the Parish Health Unit are automatically screened for blood lead poisoning between the ages of 3 and 6 years. Children who live close to the site have been tested at the Parish Health Unit and if an elevated blood lead level is found, the procedures recommended by the Centers for Disease Control and Prevention (CDC) are followed [7,8]. Children who visit a private physician are not automatically given a blood lead test.

A blood lead test measures the amount of lead in the blood and estimates the amount of exposure to lead. Blood tests are commonly used to screen children for potential chronic lead poisoning. The CDC considers children to have an elevated level of lead if the amount in the blood is at least 10 micrograms lead per deciliter of blood ($10 \mu\text{g/dL}$). Blood lead levels above $10 \mu\text{g/dL}$ may not cause any symptoms but may alter the brain's development and decrease intelligence. Blood lead levels above $40 \mu\text{g/dL}$ may cause serious harm to the kidneys and blood production [1].

IV. Child Health Initiative

ATSDR's Child Health Initiative recognizes that the unique vulnerabilities of infants and children demand special emphasis in communities faced with contamination of their water, soil, air, or food. Children are at greater risk than adults are for lead poisoning. They are more likely to be exposed because they have more hand-to-mouth behaviors. They are more likely to play outdoors and to come in contact with dust and soil because they are close to the ground. Also, they receive higher dose of chemical exposure due to their lower body weights. The developing body systems of children can sustain permanent damage if toxic exposures occur during critical growth stages. The neurological damage that lead can cause in children is irreversible and was taken into consideration.

Children could be exposed to lead in off-site soil in residential yards. Because the lead levels were elevated in some soils on site and off site, blood lead levels should be checked in children less than six years old that may be exposed to those particular soils.

V. Conclusions

Residential soils are a public health hazard because of the finding of lead at concentrations above 400 ppm and up to 3,000 ppm in five of the six yards tested and the potential for children in these homes to be exposed. The December 1999 XRF readings supported the previous EPA findings of elevated soil lead. Half of the residences had some external lead paint as well. The presence of exterior lead paint at half of the homes and the distribution of lead in yard soils indicates that the public health hazard is not site related.

VI. Recommendations

1. The Ruston Foundry site needs further on-site characterization of the nature and extent of all possible contamination sources to determine if the contaminant levels represent a public health hazard. The site is still in need of remedial activity.
2. Identify children living at residences where soil lead is higher than 400 ppm. LDHH will be performing this task in a near future.
3. Fact sheets with the most important recommendations about lead will be distributed by LDHH to residences where high lead levels were found. If you would like information on blood lead testing for your child you can call the Rapides Parish Health Unit (318) 487-5282.
4. EPA should implement dust suppression and dust mitigation and air monitoring during remediation activities to minimize off-site transport of site contaminants.

5. LDHH would like to review and evaluate the RI/FS Plan as it becomes available to determine if actions proposed are protective of public health.

VII. Public Health Action Plan

Actions Planned

1. The Health Education component with the community has been initiated as mentioned by the administration and evaluation of the Needs Assessment Survey. However, more Health Education will be offered to the community such as Fact Sheets with the most important recommendations about lead. Those will be distributed by LDHH to residences where high lead levels were found.
2. LOPH will coordinate with the Office of Public Health's Regional Office to determine blood lead testing availability.
3. LDHH/ATSDR will coordinate additional sampling and testing with EPA, LDEQ, and other agencies.
4. LDHH/ATSDR will review health outcome data as it becomes available.
5. LDHH/ATSDR will review the Remedial Action Plan as it becomes available.

Actions Completed

1. EPA conducted the remedial investigation in the fall of 2000.
2. Attendance of the Lower Third Neighborhood Watch Community Meeting on March 22, 1999 and September 25, 2000.
3. Site visits occurred July 15, 1999, and November 13, 1999.
4. Telephone calls were initiated by the Health Educator at LDHH to contact with community residents in order to coordinate a focus group to plan the Needs Assessment. This was held with the site's Community Assistance Panel (CAP) on November 18, 1999.
5. LDHH generated a press release to inform the public of a Needs Assessment Survey for Ruston Foundry in December 1999.
6. LDHH/ATSDR has administered a Needs Assessment Survey on February 19, 2000.

7. On December 4, 2000, a Ruston CAP meeting was held to inform the panel about the Summary of the Public Health Assessment. In this CAP meeting the results of the Needs Assessment Survey (completed in December 1999) were addressed.
8. The initial version of the Public Health Assessment was completed, January 19, 2000. The public comment Version of the Public Health Assessment was from December 4, 2000 to February 1, 2001.
9. LDHH has provided assistance to EPA in informing the community of the site's status by going door-to-door and talking with residents personally in February 2000.

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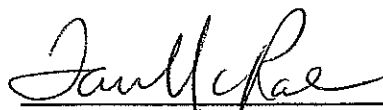
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VII. References

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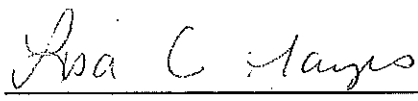
Certification

This Ruston Foundry Health Consultation was prepared by the Louisiana Department of Health and Hospitals under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.



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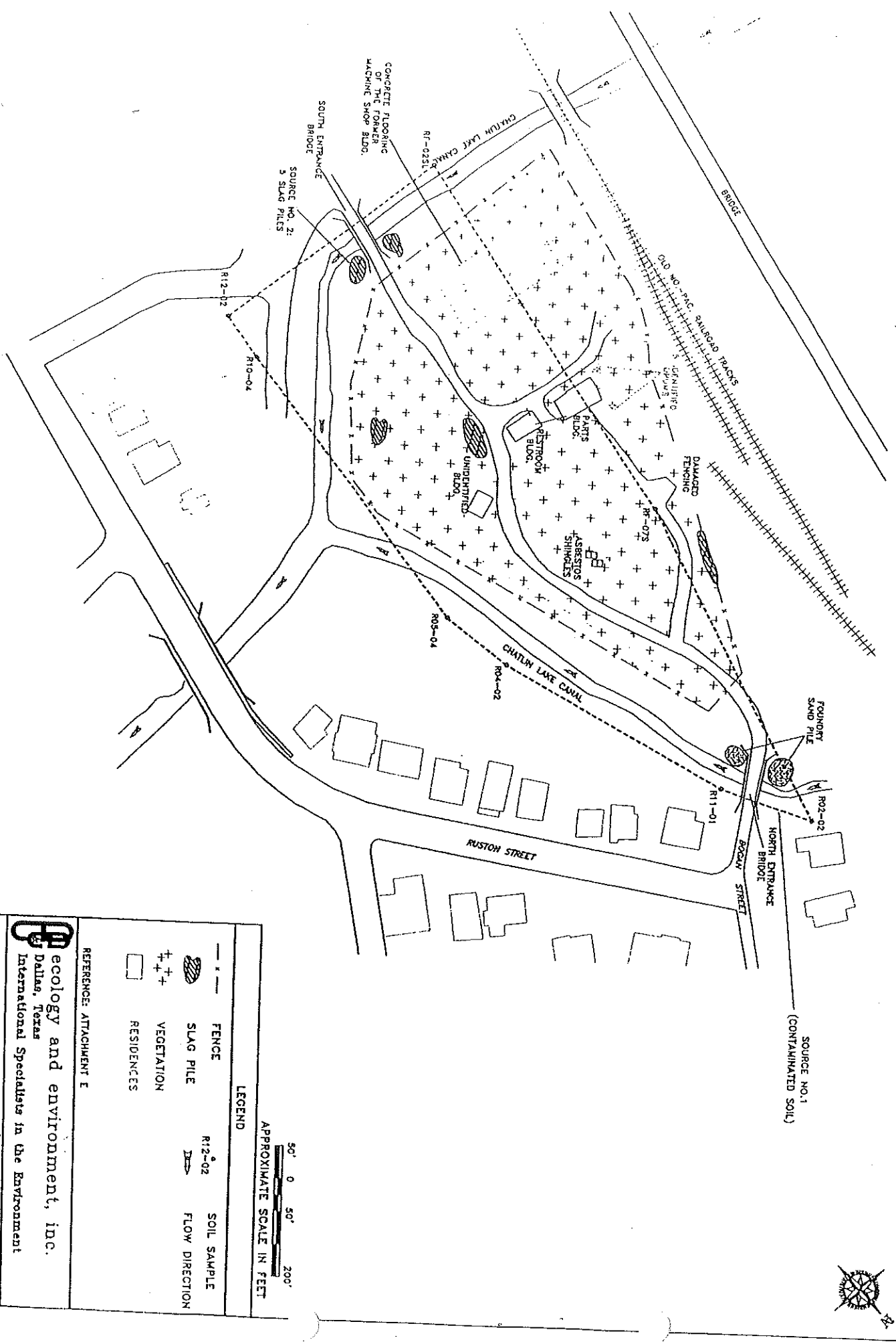
The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with the findings.

for 

Richard Gillig
Chief, State Program Section, DHAC, ATSDR

APPENDIX 1

Site Map



LEGEND	
	FENCE
	SLAG PILE
	VEGETATION
	RESIDENCES
	SOIL SAMPLE
	FLOW DIRECTION

50' 0 50' 200'
 APPROXIMATE SCALE IN FEET

REFERENCE ATTACHMENT E

Ecology and environment, inc.
 Dallas, Texas
 International Specialists in the Environment

FIGURE 1
 SITE SKETCH
 RUSTON FOUNDRY