

# Exposure Investigation

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U.S. SMELTER AND LEAD REFINERY INCORPORATED  
(a/k/a CALUMET AND EAST CALUMET COMMUNITIES)

EAST CHICAGO, LAKE COUNTY, INDIANA

CERCLIS NO. IND047030226

MAY 7, 1998

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

## **Exposure Investigation: A Note of Explanation**

An exposure investigation is one approach ATSDR uses to develop better characterization of past, current, and possible future human exposures to hazardous substances in the environment and to evaluate existing and possible health effects related to those exposures more thoroughly.

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EXPOSURE INVESTIGATION

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Prepared by:

Indiana State Department of Health  
Under Cooperative Agreement with the  
Agency for Toxic Substances and Disease Registry

## **Background and Statement of Issues**

### ***Site Issues***

In July 1996, the Indiana State Department of Health (ISDH) received a request from the Agency for Toxic Substances and Disease Registry (ATSDR) to assist the U. S. Environmental Protection Agency (EPA) in determining the need for public health activities in the residential neighborhoods, northwest (West Calumet) and northeast (Calumet) of the U. S. Smelter and Lead Refinery, Inc. (USS Lead). Following a public meeting on the proposed partial remedy for the site, EPA received a written request in June 1996 from the Grand Cal Task Force for an extensive lead contamination survey in the aforementioned neighborhoods. Limited, historical EPA-generated environmental data (October 1985) indicate that off-site soil lead levels range from 20 - 11,000 parts per million (ppm). In September of 1996, USS Lead conducted a public meeting. The community posed concerns on how lead can affect human health and requested additional blood testing for people living in the West Calumet and Calumet communities.

ATSDR issued a Preliminary Public Health Assessment for the site in August 1994 (1). Recommendations listed included the need for further characterization of residential soils to determine the risk to human health. In February 1997, ISDH requested that ATSDR assist them in conducting an exposure investigation. The proposed exposure investigation was designed to address community health concerns and to evaluate potential exposures to lead. Activities planned included: determining the target population, offering free blood lead sampling to all current residents, and providing health education to the target population.

### ***Site Visit***

In May 1997, representatives from ISDH, ATSDR, and EPA participated in a site scoping visit. The group made the following observations:

1. Off-site soil sampling locations (EPA 1985) were noted. Areas toured included Calumet, West Calumet, and East Calumet neighborhoods.
2. The housing in this area appears to have been constructed before 1978.
3. Numerous churches and small businesses are located in the communities.
4. Home gardens are in the West Calumet community.
5. An elementary school that services both communities is undergoing construction. Per the EPA project manager, this is the site of an old lead smelter (Anaconda).
6. Two community centers are in the area: the 151st Street Neighborhood Center in the Calumet community; and the Martin Luther King Community Center in the West Calumet community. The local health department conducts various health activities at both centers during the week.

7. The Calumet community, per the EPA project manager, is built on an old metal processing plant (Eagle Pitcher).

### ***Community Health Concerns***

Based on the results of the public meeting conducted by EPA and USS Lead, health issues of concern include:

1. The extent of lead contamination in residential soils.
2. Completed exposure pathways occurring in the community.
3. The health effects of lead poisoning.

### ***Site Description***

USS Lead formerly operated on a 79-acre tract of property at 5300 Kennedy Avenue in East Chicago, Lake County, Indiana. The Indiana Harbor Belt Railroad is north of the site, the east-west toll road and the east branch of the Grand Calumet River are south of the site. Kennedy Avenue is east of the site, and the Indiana Harbor Canal is west. The site lies within the flood plain of the Grand Calumet River.

From about 1906 to 1920, a copper smelter operated on the property. Only the main office building remains on site. Starting in 1920, among other activities, USS Lead operated a primary lead smelter on 25 acres of the property. In 1973, USS Lead converted operations to secondary smelting, recovering lead from scrap metal and old automobiles. Two waste materials were generated during smelting. The blast furnace slag was piled south of the plant building, and the pile was leveled once a year into what was originally a nearby 21-acre wetland. The second waste material, lead-containing flue dust emitted by the blast furnace stack, was originally trapped in bag filters and stockpiled on site for possible recycling or sale. Batteries that littered the area with rubber and plastic battery casings and contaminated area soils with battery acids were dismantled on site.

Over the years, permit levels for lead, cadmium, copper, arsenic, and zinc were frequently exceeded. In the 1980s, several state and federal enforcement actions were taken against USS Lead for permit violations. USS Lead ceased operations in December 1985.

### ***Background***

After a review of the EPA 1985 off-site soil lead concentrations, the ISDH and ATSDR determined that the West Calumet and Calumet communities are the populations at greatest risk to exposure to elevated lead levels. ISDH recommended that the Indiana Department of Environmental Management (IDEM) characterize the extent of lead contamination at the old Anaconda and Eagle Pitcher sites to determine if these sites could be contributing to high soil lead levels in the area. Of particular interest was the Anaconda site because of new construction at the school. Any subsurface lead contaminated soils that may be in construction areas could be brought to the surface, possibly where children could come into contact with it, as foundations and footings are dug. On July 10 and 25, 1997, six soil samples were taken

from both sites, and results showed soil lead levels ranging from 12 - 298 ppm at the former Eagle Pitcher site, and 59 - 1,400 ppm at the Anaconda site. Only a confined area of lead contamination at the Anaconda site contained lead above the action level for lead in residential soil (400 ppm).

### ***Population***

The target area boundaries are Chicago Avenue to the north, Kennedy Avenue to the east, 151st Street to the south, and the Indiana Harbor Canal to the west (*Figure 1*).

Approximately 3,000 individuals live in these two communities. Of those people, 2,500 are black, 300 are white, and 200 are nonwhite/nonblack. Approximately 250 children are equal to or greater than (>) 5 years of age, and 800 women are of child-bearing age.

### ***Methods***

Local, state, and federal personnel conducted the public health activities in the communities through a collaborative effort. Free venous blood lead screening was offered to current residents of the target communities one year of age and older.<sup>1</sup> Children and pregnant women were considered to have elevated exposures if their blood lead levels were  $\geq 10$   $\mu\text{g/dL}$  (as presented in the Centers for Disease Control and Prevention's (CDC) guidelines for evaluating childhood lead exposures). Other adults were considered to have significant exposures if their blood lead levels were  $\geq 25$   $\mu\text{g/dL}$  (as presented in the Healthy People 2000 National Health Promotion and Disease Prevention Objectives). Currently, CDC does not have a guideline associating a specific adult lead level with adverse health effects. However, maternal lead exposures below 25  $\mu\text{g/dL}$  can lead to adverse clinical health effects. Some studies suggest that significant health risks may occur in adult workers with blood lead levels possibly in the 30-40  $\mu\text{g/dL}$  range.

Blood samples were collected at the Martin Luther King Community Center and the 151st Street Neighborhood Center. Screening occurred on July 24-25, 1997, during morning and evening hours convenient for participants. The community was informed of the dates and hours ahead of time through flyers, phone calls, posters, and media announcements. A fact sheet was also distributed throughout the target community. It contained information on the purpose of the exposure investigation, the effects of lead on human health, ways to prevent exposure, the times and location of screening, and local contacts for further information.

Participants were given a consent form to read and sign (Attachment B) upon arrival at each center. Parents or guardians completed forms for minors. Upon registration, each person was provided a unique identification (ID) number. Participants completed a brief questionnaire (attached) that documented demographic, residential, dietary, occupational, behavioral, and other factors that may contribute to lead exposure. A trained phlebotomist collected a three cubic centimeter (cc) venous blood sample from each participant. All blood samples were labeled with each participant's unique ID number.

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<sup>1</sup> Additional screening of children who reside outside the target area but frequently participate in activities in the target area would have been offered free testing as well, depending on the results of the exposure investigation.

## Results

Individual results were sent to all participants by certified mail. All individuals with elevated lead levels were contacted by phone prior to mailing their results to discuss any immediate action that needed to be taken to protect health.

The following discussions present results of the blood screenings for each screening location (Calumet and West Calumet) and for the aggregated data set. A total of 95 individuals were tested during the two days of screening (July 24-25, 1997).

### *151st Street Neighborhood Center*

The 151st Street Neighborhood Center is in the West Calumet neighborhood. At this location, 62 (65.3% of participants from both locations) people participated in the blood lead screening. At this location no blood lead levels were greater than 15  $\mu\text{g}/\text{dL}$ . However, of the 23 children 6 years of age or less tested at the center, 8, which was 35% of the children tested, had blood lead levels greater than 10  $\mu\text{g}/\text{dL}$ . Age is strongly inversely correlated,  $p=.0005$ , with increased blood lead level in the population screened at the 151st Street Neighborhood Center.

### *Martin Luther King Community Center*

The Martin Luther King Community Center is in the Calumet neighborhood. At this location, 33 (34.7% of participants from both locations) individuals participated in the blood lead screening. Two participants at this site were found to have elevated blood lead levels. One child less than or equal to 6 years of age had a blood lead level of 41  $\mu\text{g}/\text{dL}$ . Another child, eight years of age, with a previous history of elevated blood lead levels, had a blood lead level of 39  $\mu\text{g}/\text{dL}$ . These two children are siblings.

### *Aggregated Data*

Data collected at the two screening locations were aggregated into a single data set for general analysis. A total of 95 people participated in the exposure investigation. Of the 30 children in the age group less than or equal to 6 years old that participated, 30 % had elevated ( $\geq 10$   $\mu\text{g}/\text{dL}$ ) blood lead levels. Table 3 shows the arithmetic mean blood lead levels of participants in each age group screened at both locations.

After the statistical analysis of the data was conducted, ISDH discovered that eight out of ten participants with elevated lead levels in the investigation live in two homes. A statistically significant association ( $p=.039$ ) was found between age groups 6 months to 6 years and blood lead levels. Correlation of blood lead level by age group also was found to be significant ( $p=.028$ ). A logistic regression model was developed to test the significance of age group and blood lead elevation ( $\geq 10$   $\mu\text{g}/\text{dL}$ ). All risk factors on the survey were included in the analysis. The logistic regression model supported that younger-aged children are at greater risk for blood lead elevation.

### *Historic Blood Lead Data*

Historic blood lead data for residents in the neighborhood were made available by the Indiana Childhood Lead Prevention Program. These data covered blood samples collected during the years 1990-1997. The data included analyses for both capillary and venous blood samples. For the purposes of analysis, the samples were divided into time-based categories. The

categories were samples collected in 1990-1992, 1993, 1994, 1995, 1996, and 1997 for each of the sample groups. Also, the number and percentage of cases with elevated blood lead levels ( $\geq 10 \mu\text{g}/\text{dl}$ ) was calculated (*Table 5*).

Indiana data indicate a lower prevalence of elevated blood lead levels compared to the populations in the Calumet and West Calumet communities. For instance, statewide data from fiscal year 1993 collected by the Indiana Childhood Lead Poisoning Prevention Program indicated a prevalence of 10.9% blood lead levels  $\geq 10 \mu\text{g}/\text{dL}$ .<sup>(2)</sup> The prevalence in the area of interest has been approximately 30% from 1990-1997.

#### ***Exposure Investigation Survey Results***

Survey results of the participating children who had elevated blood lead levels are listed in *Table 6*. Eight of the ten children live in two households. Survey information (same telephone number and address for test results) suggests that the eight children may be related; however, to date, ISDH has not been able to contact the people to verify the relationship. Within the two households with children having the highest blood lead levels, one home contains chipping and peeling paint and the other home was remodeled within the last year. Of the ten children, none of them live in homes where family members had hobbies or occupational histories related to lead.

#### **Discussion**

This exposure investigation focused primarily on the measurement of blood lead levels. We identified ten children with blood lead levels greater than  $10 \mu\text{g}/\text{dL}$ . Three children who participated in the exposure investigation had their blood tested by finger stick due to inability to collect a venous sample. Of these three children, only one had an elevated blood lead level of  $14 \mu\text{g}/\text{dL}$ . Typically, fingerstick samples tend to be higher than those taken by venipuncture, and require a repeat sample to confirm the level. Eight out of ten of these children are less than six years old. A review of the surveys completed by these participants indicate two possible sources of exposure for the children with elevated lead levels (*Table 6*). The first, and possibly most likely, is lead based paint, as all of the children live in homes that were built before 1978. The second possible source is lead-contaminated soil. Children play habits result in the incidental ingestion of soil, and some children may eat homegrown vegetables that possibly have contaminated soil on them.

In comparing *Table 6* with *Figure 2*, Jonquil, Gladiola, and Aster Streets, where 5 of the children with elevated blood lead levels live, are located in the area of the old Eagle Pitcher site. Soil lead levels for the general vicinity are below 300 ppm. Melville Street where the other 5 children live, is in an area where soil lead levels have been found as high at 1,100 ppm. Soil samples have not been taken in the immediate vicinity of the homes where the ten children live.

The Indiana Childhood Lead Program, which employs medical and environmental case workers, will further investigate all children found with blood lead levels  $\geq 10 \mu\text{g}/\text{dL}$ . Information gathered from their home visits and the exposure investigation survey will be used to identify appropriate follow-up health actions for the participants, and instructions will be provided on how participants can reduce their exposure.



## **Conclusions**

1. Two possible sources of lead are in the target area: lead-contaminated soil and lead-based paint. Ten of the children who participated in the exposure investigation have blood lead levels greater than the action level of 10  $\mu\text{g}/\text{dL}$ . Five of those children live in one household, and three of those children live in another household. The exposure appears to be greater for children under the age of six than any other age group.
2. The results of recent soil samples taken in the area of new construction at the elementary school show one set of soil samples contains lead at levels of health concern.
3. Recent soil samples taken from the Calumet area did not contain lead at levels of health concern.
4. No information exists on surface soil lead levels in the vicinity of homes where participants were found with elevated lead levels.
5. Lead exposure has consistently occurred in this community over the past seven years.
6. The fingerstick method was used to test the blood lead level of three children. One of these three children had an elevated blood lead of 14  $\mu\text{g}/\text{dL}$ . That method does not provide as accurate results as a venous blood draw.

## **Recommendations**

ISDH recommends the following actions:

1. Conduct additional and appropriate follow up investigations of each participant with an elevated lead level, which includes: determining the source of exposure; determining the need for additional soil sampling in yards where children with elevated blood lead levels live; conducting a confirmatory blood lead test on the child that was tested by finger stick; and conducting follow up testing on all the children. (Investigations proposed by Indiana Childhood Lead Prevention Program March 1998)
2. Provide health professional training to primary care physicians and pediatricians that service these two communities. The training should focus on recognition of the signs and symptoms of lead poisoning. (Training was conducted on October 27, 1997.)
3. Remediate the area of lead contamination at the Anaconda site, including the vicinity of the elementary school, to prevent current or future exposure. (Scheduled by IDEM.)

## References

1. Preliminary Public Health Assessment for U.S. Smelter and Lead Refinery, Inc., East Chicago, Lake County, Indiana, ATSDR, August 24, 1994.
2. Unpublished data, Indiana Childhood Lead Poisoning Prevention Program, April 1994

## CERTIFICATION

This Calumet and East Calumet Communities Exposure Investigation Health Consultation was prepared by the Indiana State Department of Health 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.



Gail D. Godfrey

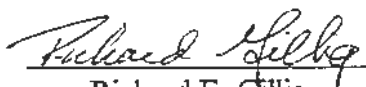
Technical Project Officer

Superfund Site Assessment Branch (SSAB)

Division of Health Assessment and Consultation (DHAC)

ATSDR

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



Richard E. Gillig

Chief, SPS, SSAB, DHAC, ATSDR

### Concurrence:

The Exposure Investigation Section of the Exposure Investigation and Health Consultation Branch of the Division of Health Assessment and Consultation has reviewed this document and concurs with the report.



Susan Metcalf, M.D.

Chief, EIS, EICB, DHAC, ATSDR

**Attachment - A (Tables)**

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**Table 1. Blood Lead Levels for Participants at the  
151st Street Neighborhood Center**

<b>Age</b>	<b>Participants</b>	<b>#≥10 µg/dL</b>	<b>%≥10 µg/dL</b>
≤6	23	8	34.8
6-12	16	0	0.0
12-18	3	0	0.0
>18*	20	0	0.0
<b>Total</b>	<b>62</b>	<b>8</b>	<b>12.9</b>

\*Used ≥ to 25 µg/dL (micrograms per deciliter) for adult males

**Table 2. Blood Lead Levels for Participants at the  
Martin Luther King Community Center**

<b>Age</b>	<b>Participants</b>	<b>#≥10 µg/dL</b>	<b>%≥10 µg/dL</b>
≤6	7	1	14.0
6-12	5	1	20.0
12-18	1	0	0.0
>18	20	1	5.0
<b>Total</b>	<b>33</b>	<b>3</b>	<b>9.0</b>

\*Used ≥ to 25 µg/dL (micrograms per deciliter) for adult males

**Table 3. Blood Lead Levels for Participants at Both Locations  
(Aggregated Data)**

Age	Participants	# $\geq 10$ $\mu\text{g/dL}$	% $\geq 10$ $\mu\text{g/dL}$
$\leq 6$	30	9	30.0
6-12	21	1	4.76
12-18	4	0	0.0
>18*	40	1	2.5
all	95	11	11.57

$\mu\text{g/dL}$  = micrograms per deciliter

**Table 4. Arithmetic Mean Blood Lead Levels for All Participants  
(Aggregated Data) Less One Adult Case\***

Age	Cases (n=)	Mean Blood Lead Level ( $\mu\text{g/dL}$ )	Standard Deviation
$\leq 6$	30	7.05	7.76
6-12	21	4.50	8.10
12-18	4	1.50	0.00
>18*	40	3.01	2.42
all	95	4.57	6.22

n = number

\*Used  $\geq$  to 25  $\mu\text{g/dL}$  (micrograms per deciliter) for adult males

**Table 5. East Chicago Historic Lead Screening Data\***

<b>Date</b>	<b>Total Tested</b>	<b>Arithmetic Mean (<math>\mu\text{g}/\text{dL}</math>)</b>	<b>% Cases <math>\geq 10 \mu\text{g}/\text{dL}</math></b>
1990-1992 children $\leq 6$ yrs	7	8.57	42.8
1993 children $\leq 6$ yrs	137	7.58	27.4
1994 children $\leq 6$ yrs	113	9.69	37.4
1995 children $\leq 6$ yrs	20	9.05	31.6
1996 children $\leq 6$ yrs	48	7.21	25
1997 Jan-June children $\leq 6$ yrs	12	7.50	33
<b>Total for all samples</b>	<b>337</b>	<b>8.31</b>	<b>30.9</b>

\*Data from Indiana Childhood Lead Prevention Program  
 $\mu\text{g}/\text{dL}$  = micrograms per deciliter

**Table 6. Survey Results of children with Elevated Blood Lead Levels**

<b># of Children</b>	<b>Street</b>	<b>Peeling Paint</b>	<b>Remodeled within 1 yr</b>	<b>Home Garden</b>	<b>Soil Lead Levels general area ppm</b>	<b>Mean Blood Lead levels <math>\mu\text{g}/\text{dL}</math> (range)</b>
5	Melville	yes	no	no	1,100	23 (11-41)
3	Jonquil	no	yes	no	<300	12 (10-13)
1	Gladiola	yes	yes	yes	<300	11
1	Aster	no	no	yes	<300	14



## Indiana State Department of Health

### Consent Form for Participation Lead Exposure Investigation

The Indiana State Department of Health (ISDH) and the Agency for Toxic Substances and Disease Registry (ATSDR), in cooperation with the East Chicago Health Department, is offering free voluntary blood tests for lead exposure to selected residents. Along with the free testing, limited information will be collected with a brief questionnaire. Participation in this investigation will enable me to know my own blood levels of lead, and will enable the ISDH to identify public health actions, if appropriate, to reduce exposure.

#### **Benefits**

I understand that I will benefit from participating by learning whether I (or my child/ward) have had elevated exposures to lead. Each participant will be tested for lead. If elevated exposure has occurred, I will receive information on how to reduce current and future exposure. Written information about lead exposure will be available to me and to my physician, if I identify him or her in the questionnaire.

#### **Procedure**

I will read and complete a brief questionnaire that should take no more than 5- 10 minutes to complete. A certified phlebotomist/nurse (a blood drawer) will take a sample of blood from a vein in my arm using a needle. Lead testing requires 2 cc (about 1/3 teaspoon) of blood. This may cause a little pain (similar to a pin prick), but every effort will be made to minimize discomfort. Some people may have a small bruise where the needle enters the skin, but this will soon go away. Drawing blood usually takes no more than 5 or 10 minutes to complete. My blood will be tested at a laboratory selected by the ISDH, and the results will be sent to the ISDH. The only tests that will be conducted on my blood will be for lead. The blood sample will be destroyed at the completion of the investigation.

#### **Participation**

I understand that I am not required to participate. Even if I agree to participate and sign this form, I can stop my participation or my child's/ward's participation at any time without any consequences. I understand and agree that there is no medical treatment offered by the ISDH or ATSDR based upon the test results or in the event of injury from participation. I understand that I must sign this form to participate.

#### **Confidentiality**

Confidentiality will be protected to the fullest extent possible according to state and federal laws. Any reports produced from this information will give only group information and not identify specific individuals. I understand that if I participate in a confidential manner, any forms containing my name or address will be kept in locked cabinets at the ISDH.

**Results**

I understand that the results of my blood tests will be provided in writing to me within approximately two months. Blood lead results that are of immediate health concern will be reported to you/your guardian immediately. I will receive an actual test result number(s) in addition to reference values and averages for all participants. If my results reveal an elevated value of lead, I understand that I should notify my personal physician.

**Consent**

The risks and benefits have been explained to me. I hereby freely and voluntarily give my signed authorization for participating in the testing described above. If I have any additional questions in the future, I may contact: Dollis Wright, ISDH Environmental Epidemiology, 2 North Meridian Street, Indianapolis, IN 46204. Phone number: (317) 233-7808.

I, (print) \_\_\_\_\_, the undersigned, agree to blood sampling and completing questionnaires for:

- Myself
- My child/ward, \_\_\_\_\_, age - \_\_\_\_
- My child/ward, \_\_\_\_\_, age - \_\_\_\_
- My child/ward, \_\_\_\_\_, age - \_\_\_\_
- My child/ward, \_\_\_\_\_, age - \_\_\_\_
- My child/ward, \_\_\_\_\_, age- \_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Phone #: \_\_\_\_\_



Assent Form for Children  
(7- 17 years of age)

*A statement to be read to children in the presence of the parent/guardian:*

**“We want to find out if you have been exposed to lead. Lead is something which you cannot see but might affect your health. To Know if you have lead in your body, we would like to take a little sample of blood from your arm by using a small needle. In the past, you may have given blood to your doctor in this way. It might hurt only for a few seconds. It is considered very safe, and your mother/father/guardian has said that it would be all right for you to do this.”**

**“Do you have any questions? May we take a sample of your blood?”**

The above information has been read to me and I want to participate.

Name of Child: \_\_\_\_\_ Signature of Child: \_\_\_\_\_

Name of Child: \_\_\_\_\_ Signature of Child: \_\_\_\_\_

Name of Child: \_\_\_\_\_ Signature of Child: \_\_\_\_\_

Name of Child: \_\_\_\_\_ Signature of Child: \_\_\_\_\_

Name of Child: \_\_\_\_\_ Signature of Child: \_\_\_\_\_

Date: \_\_\_\_\_

Insert Number Label here

**HUMAN QUESTIONNAIRE**  
**U.S.S. Lead Exposure Investigation**

Complete one questionnaire for each participant.

Participant name \_\_\_\_\_

1. Who is completing this questionnaire? (check one):  self  parent/guardian
2. What year were you (your child/ward) born? 19 \_\_\_\_
3. What is your (your child's/ward's) gender? (check one):  female  male
4. What is the name of the street you (your child/ward) live on? \_\_\_\_\_
5. How many years have you (your child/ward) lived at this house? \_\_\_\_\_
6. How long have you (your child/ward) lived in this community? \_\_\_\_\_  
(Please list additional addresses and dates below)

Address	Date
_____	_____
_____	_____
_____	_____

- 7a. Have you (your child/ward) been tested for lead before?  no  yes \_\_\_\_\_ latest test date  
\_\_\_\_\_ level  unk
- 7b. Has you (your child/ward) or any member of the household been identified as having lead poisoning?  
 yes  no  unk (Please list name, date, and level of latest testing )

Name	Date	Level
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

7c. What do you believe caused your (your child/ward) blood level to be high?  
\_\_\_\_\_

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8. Have you (your child/ ward) ever had a baby that was (please check all that apply)?

premature \_\_\_ birth defects \_\_\_\_\_ growth delay \_\_\_\_\_

(Please explain below)

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9. Please answer the following questions pertaining to your (your child/ward):

	Past year			2-5	More than
	Yes	No	Unk	years ago	5 year ago
a. Does anyone in the household work in an industry that uses lead?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Was your home built before 1978?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Is there chipping and peeling paint, inside or outside your home?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Has your home been recently remodeled or renovated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Does anyone in the family use imported or glazed ceramics for food preparation, storage, dinnerware?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Do you (child/ward) eat food from a home garden?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Do you (child/ward) garden in the community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Does anyone in your family use traditional medicines? (For example Greta and Azarcon , please list)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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10. Do you (your child/ward) participate in any of the following hobbies? (Please circle all that apply)

- a. Nonc                      b. Target practice                      c. Stained glass making                      d. House painting  
e. Bullet inaking                      f. Folk remedies                      g. Pottery ceramics                      h. Other \_\_\_\_\_

11. We would like to send environmental health material about exposures to lead to your regular physician. If you would like for us to send material, please complete the following information:

Physician Name: \_\_\_\_\_  
Physician Address: \_\_\_\_\_  
\_\_\_\_\_

11. How would you like to receive health information about this exposure investigation?

- City Health Department                       Newspaper                       Flyers  
 Library                       Television                       Community Center  
 Community Meetings                       Radio                       Other \_\_\_\_\_

Interviewers Initials \_\_\_\_\_

FIGURES

Figure 1

Community Centers and Former  
Lead Smelting Sites in the  
Vicinity of USS Lead (Anaconda  
and Eagle Pitcher Sites estimated)



Figure 2.

### 1985 Soil Sampling Locations and Concentrations in the Vicinity of USS Lead

