

EPA Region 5 Records Ctr.



228044

Date: November 15, 1993

From: Dr. Gregory Steele
 Environmental Epidemiologist
 Indiana Department of Health

To: Louise Fabinski
 ATSDR Regional Representative
 EPA Region 5

Subject: Avanti Site

BACKGROUND

In October 1993, an on-scene coordinator for the U. S. Environmental Protection Agency (EPA) requested a public health consultation for the Avanti site. EPA asked for comments on the degree of human health threat that this site poses. The Region V Office of the Agency for Toxic Substances and Disease Registry (ATSDR) forwarded the request to the Indiana State Department of Health (ISDH). Along with the request, EPA submitted the Site Assessment Report for the Avanti site prepared by Ecology and Environment Inc., for EPA (Reference 1).

The Avanti site is located in Indianapolis, Marion County, Indiana. The site, approximately 7 acres in size, is an abandoned foundry. The site is located at 502-560 South Harris Street, and is bounded by Harris Avenue to the east, Victoria Street to the north, Eagle Creek to the west, and the Conrail railroad tracks to the south. The site is located in a residential area. High blood lead levels have been documented in individuals living near the site (References 3 and 4).

The site consists of two main buildings, an east building and a west building separated by an alley (see site map). Access to the site is controlled by two gates. A railroad spur connects to the southern railroad tracks and the east building. A second railroad spur lies in the alley between the two buildings. The area between the western and the southern fences of the buildings is open land. The most southern area is paved. The site is fully fenced except in a couple of locations where it appears to have been broken into. There are no warning signs posted on the fence. Drinking water for the area is provided by the Indianapolis Water Company. There are private groundwater wells however, located approximately 1/4 mile to the south of the site (References 1, 2, and 5).

Weston Lead Corporation operated at the site in the 1960s. Later the Oxide and Chemical Corporation operated from 1974 to 1977. Former tenants operated a foundry, lead smelter, a battery recycling facility, a general recycling facility, an automotive part warehouse, and a heavy equipment warehouse. Recent occupants include Bloguide (a recycler of municipal solid waste), Allwaste, Freedom Pallet, and Allied Equipment (References 2 and 3).

In late 1992 the Marion County Health Department (MCHD) was investigating groundwater samples in private wells located in proximity to a superfund hazardous waste site south of the Avanti site. The results of these groundwater samples revealed the presence of lead in five wells, ranging from 90 to 150 parts per billion (ppb) (Reference 5). (The lead in these wells is not believed to be related to the superfund site. Lead has never been a contaminant of concern at this superfund site.) A decision was made to expand the sampling into the area north of the superfund site, approximately $\frac{1}{4}$ mile south of the Avanti site.

During an investigation of the area surrounding the Avanti site in February of 1993, discarded battery casings were noticed on the Avanti property along Eagle Creek (References 1, 2, and 3). In April of 1993, a surface soil sample was taken at the Avanti site by the Indiana Department of Environmental Management (IDEM) to be tested for heavy metals. This sample detected lead at 180,000 parts per million (ppm) in addition to concentrations of arsenic, mercury, and cadmium. At the same time, another division of the MCHD was following several children from one family with elevated leads (ranging from 16 to 48 $\mu\text{g}/\text{dl}$) who lived on Harris Street across from the site. Although there was lead based paint present in the home, it was in good condition and no specific route of exposure for these children could be ascertained. A soil lead level was taken from the front yard of this residence. The sample result revealed the presence of high concentrations of lead at 1,000 ppm (Reference 3).

Due to the concern of current workers at the site potentially being exposed, in May of 1993, air samples were taken from inside the building at 502 South Harris. All samples were below the EPA National Ambient Air Quality Standard lead action level of 1.5 $\mu\text{g}/\text{cubic meter}$. In mid May, blood lead screening was performed by the MCHD. One hundred and ten residents were screened. Twenty-five adults and children had elevated blood lead levels. Staff from the MCHD also performed blood lead tests (27 venous blood and one capillary samples) on individuals who were working on-site at that time, a total of 28 employees. Two employees were above the OSHA lead action level of 40 $\mu\text{g}/\text{dl}$. The capillary sampling was performed on an employee on whom blood could not be drawn. His test result detected lead at 144 $\mu\text{g}/\text{dl}$. This worker was advised to see his physician for a venous blood sample (Reference 4).

Additional lead screening tests were performed at a neighborhood church. Two hundred and twenty-three people were screened (55 children and 168 adults). Twenty-eight of the children had fingerstick blood lead levels greater than 10 $\mu\text{g}/\text{dl}$. None of the adults had blood lead levels greater than 10 $\mu\text{g}/\text{dl}$ during this screening.

Blood lead screening activities have identified a total of 45 community residents, both adults and children, with venous blood leads greater than 10 $\mu\text{g}/\text{dl}$ (ranging from 11 to 60 $\mu\text{g}/\text{dl}$, mean 18.6 $\mu\text{g}/\text{dl}$).

In May 1993, IDEM, MCHD, and ISDH staff met to discuss the preliminary results from the surface soil samples and blood lead screening and to coordinate future efforts. The Indiana State Occupational Safety and Health Administration was notified and briefed on the site soil contamination and the current blood lead levels for site employees. In May, IDEM staff verbally notified the Avanti site property owners to secure the site and implement dust suppression measures at the site.

In June, the Indianapolis Air Pollution Control Section took an ambient air sample for possible lead contamination. Sample analysis detected particulate lead at 0.967 $\mu\text{g}/\text{cubic meter}$. Five soil samples were taken from the yards of three other homes along Harris Street by MCHD. The results of these samples documented soil lead concentrations ranging from 1,470 to 6,640 ppm. Six dust samples taken from inside of the three homes documented lead contamination ranging from 5.2 to 171 ppm. A dust sample from a sidewalk across from the Avanti site and another sample taken from the hood of a car revealed lead contamination of 683 ppm and 13 ppm respectively (Reference 6).

In July of 1993, Ecology and Environment (E&E) Technical Assistance Team (TAT) was tasked by the Emergency and Enforcement Response Branch of EPA to perform a site assessment of the Avanti site (Reference 1).

In August of 1993, TAT and the EPA On-scene Coordinator (OSC) were briefed by IDEM regarding previous sampling efforts and other site related activities. TAT calibrated HNu equipment for organic vapor detection, oxygen/explosimeter for monitoring of oxygen and explosive atmosphere, and a Spectrace 9000 x-ray fluorescence for locating hot spots of heavy metal contamination.

The site had been recently used as a staging area for the recycling of solid waste. Two huge piles of paper bales were stacked on site. A pile of plastic materials was also observed near the northwestern entrance of the west building. The area west of the paper stack and the pile of plastic was full of shrubs and other plant life. A battery casing pile was also observed in the shrubs directly west of the west building.

The Spectrace 9000 XRF instrument was used at several locations. One of these locations situated approximately 200 feet south of the east building, detected a total lead concentration of 1,725 ppm. At the same location where IDEM had previously detected 18 percent soil lead, the XRF detected 18,667 ppm. Readings were taken along the sidewalks on both sides of Harris Street, in proximity to the site. The readings taken next to the site detected lead as high as 44,679 ppm.

Building inspections were then performed by TAT, the OSC, and IDEM. The west building was observed to be empty. Areas of soil between the east and west buildings along the railroad spur appeared to be stained. Inside the east building, several pieces of machinery, drums, and piles of waste material were observed. The front portion of the building is occupied by a tenant. The building floor is concrete and is approximately 5 feet above the railroad spur that runs through the middle of the building. The floor appeared to be gray with some kind of powdery material. The XRF reading of this material documented lead at 37,796 ppm. Eight 55-gallon drums were observed inside this building. The drums were labelled "Standout paints by Bradley". One of the open drums registered up to 5 percent of the lower exposure limit (LEL) on the oxygen/explosimeter equipment. One transformer was observed with a "Westinghouse" label on it. The label indicated that the transformer contained polychlorinated biphenyl (PCB) oil, and its capacity was 251 gallons. Seven 5-gallon pails with labels "Residual insect spray", "Cleaners", "Strippers" were also observed. The northeast corner of this building contained 13 over-packed metal drums, some of them labelled with "Grit, perma steel".

In August, soil samples for lead and other heavy metals were taken from 16 locations and sediment samples were taken from 2 locations along Eagle Creek (see Tables 1-3)(Reference 1). Soil sample locations were selected based on the XRF readings. Soil samples were taken from a depth of 0-4 inches. Surface soil sample numbers 9-14 were taken off-site along Harris Street. Soil and sediment samples were analyzed for total lead and the toxicity characteristic leachate procedure (TCLP). The TCLP gives an indication as to the mobility or leachability of the contaminant in the environment.

A variety of other inorganic chemicals were sampled for and identified in the soil. All sample results for arsenic, cadmium, chromium and mercury were below health based evaluation criteria.

The MCHD is continuing to evaluate blood lead levels in area residents, and is performing routine retesting of all children under the age of six. Both the MCHD and the ISDH are performing an exposure assessment study of area residents. The MCHD is currently investigating anecdotal reports of one child who recently moved from Harris Street, who is now hospitalized and undergoing chelation therapy for lead poisoning. Residents have been sent a letter informing them of the results of the EPA site assessment. The letter also provides them with measures they can perform themselves to prevent or minimize their exposure to lead. The ISDH, MCHD, and IDEM have held several meetings with the local citizens. The next meeting with the residents has been scheduled for mid-November.

DISCUSSION

The EPA has found high levels of lead in the on-site surface soils and in off-site surface soils located in proximity to the site. Sampling has shown there is a high potential for the lead to leach from the soil. IDEM and MCHD have documented off-site soils to be contaminated with high levels of lead. At least two on-site workers have been found to have elevated blood lead

levels. These workers and other workers may have carried home lead wastes on their clothing or shoes. If work clothes were washed or stored with other family clothing, the wastes may have been transferred to other members of the family.

Both children and adults in this neighborhood have been exposed to lead. Exposure to lead at the levels documented in surface soil and dust samples could result in body burdens and subsequently in severe adverse health effects. Based on current results from other investigators, ATSDR now considers blood lead levels above 10 $\mu\text{g}/\text{dL}$ in young children to be a cause for public health concern. Exposure to high levels of lead is particularly dangerous for unborn children because of their great sensitivity during development. Exposure of unborn children to lead may cause premature births, smaller babies, and decreased mental ability. Exposure to lead is also dangerous for young children, because they swallow more lead through normal mouthing activity, take more of the lead that they swallow into their bodies, and are more sensitive to its effects. Lead exposure can decrease the intelligence quotient (IQ) scores and reduce the growth of young children (Reference 7).

In adults, lead exposure may decrease reaction time and possibly memory. Lead exposure may also cause weakness in the fingers, wrists, or ankles. Exposure to lead has also been shown to increase blood pressure in middle-aged men. It is not known whether lead has an effect on blood pressure in women. Lead exposure may also cause anemia. At high levels of exposure, lead can severely damage the brain and kidneys in adults or children. In addition, high levels of exposure to lead may cause abortion and damage the male reproductive system. The effects of lead are the same regardless of whether it enters the body through breathing or swallowing (Reference 7).

CONCLUSIONS

Based on the information reviewed, ATSDR and ISDH conclude the following:

- The lead contaminated surface soils and dusts are a urgent public health hazard at this site. The site was formerly accessible and may currently be accessible to residents, especially children who live nearby. Exposure to the levels of lead found in the soils could result in adverse health effects.
- Individuals who reside in the neighborhood surrounding the Avanti site may have been exposed off-site, to high levels of lead.
- Individuals who formerly and/or currently work at this site, and their families may have past and/or present exposures to high levels of lead.

- The residences that border the Avanti site are on municipal water. There are residences in proximity to the site who utilize groundwater for all their potable water needs. The TCLP sample results documented the potential of the lead contamination at this site to migrate off-site. Groundwater samples taken to the south of the site have been contaminated with lead. Site contaminants may be currently affecting the groundwater.
- There are no data to assess the impact of site related chemicals on Eagle Creek. Lead contaminated soils may be migrating off-site via surface water runoff from this site.
- Drummed or pailed chemicals may be a hazard to site trespassers or to individuals currently working on-site.
- Current workers, future site workers, or trespassers could be exposed to PCBs from the transformer stored on-site if it were to leak, or if acts of vandalism were to occur.

RECOMMENDATIONS

Based on the information reviewed, ATSDR and ISDH recommend the following:

- Immediate measures should be taken to ensure that access to the site is restricted.
- Warning signs should be placed around the perimeter of the site.
- Immediate measures should be undertaken to prevent contact with the off-site lead contaminated soils.
- Residential surface soil samples should be taken immediately to identify the extent and magnitude of off-site migration of lead contaminated soils and dusts.
- Until the site is remediated, site managers should immediately evaluate the extent of lead contaminated dusts in residences in proximity to the site.
- Until the site is remediated, site managers should immediately monitor the groundwater on or near the property.
- Until the site is remediated, site managers should sample the quality of the water and sediment in Eagle Creek.
- People who have regularly worked or played on the Avanti property should have their blood levels checked and should follow their physician's advice if the levels are high.
- All community members potentially exposed should have their blood levels checked and should follow their physician's advice if the levels are high.

HEALTH ACTIVITIES RECOMMENDATION PANEL (HARP) RECOMMENDATIONS

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, the data and information developed in the Avanti site health consultation have been evaluated by the Health Activities Recommendations Panel for appropriate health follow-up actions. There is evidence that site workers and nearby residents have been and probably are still being exposed to lead-contaminated soil, dust, and possibly other media at levels of health concern. The HARP determined residents living nearby need to be informed of the present level of contamination, possible adverse health effects associated with exposure to lead, and ways they can reduce their exposures. ISDH and local health officials have and will continue to provide this community education. Blood lead testing should continue to be conducted on workers and potentially exposed residents, particularly children and pregnant women. Individuals with elevated blood leads should follow the advice of their physicians. There are allegations that adverse health effects are occurring that may be related to lead exposure. ATSDR and ISDH will continue to evaluate blood lead results and other environmental information and will take additional follow-up actions when appropriate.

DOCUMENTS REVIEWED

1. Ecology and Environment, Inc. TAT, Site Assessment Report for Avanti, Indianapolis, Marion County, Indiana, October 1993.
2. IDEM Fact Sheet, Avanti Development Corporation, July 1993.
3. Marion County Health Department, Fact Sheet, Avanti Site, July 20, 1993
4. Personal Communication with Stephanie Nelson, Director of the Lead Program, Marion County Health Department.
5. IDEM Memorandum, Laboratory Results for Sadie, Tip, and Ray Streets, December 23, 1991; November 18, 1992; January 9, 1992; November 1993.
6. Marion County Health Department, Department of Housing and Neighborhood Health, Dust and surface soil sample results, July 18, 1993.
7. ATSDR, Toxicological Profile For Lead, April 1993.

Table 1.
Surface Soil Sample Results For Total Metals
Avand Site, August 1993

Sample #	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury
SS-01	22	76	8.1	22	9,500	3.7
SS-02	470	350	110	36	160,000	60
SS-03	18	130	4.9	13	11,000	1.3
SS-04	7.6	ND	1.8	4.2	2,700	0.5
SS-05	25	56	4.2	10	6,400	1.2
SS-06	160	64	16	57	35,000	0.8
SS-07	9.7	130	8.3	56	230,000	0.8
SS-08	7.4	26	2.3	7.9	21,000	0.6
SS-09	6.6	48	1.1	6.9	790	0.5
SS-10	30	54	5.1	18	59,000	4.3
SS-11	9.9	55	3.6	10	4,400	0.5
SS-12	4.9	ND	0.9	4.6	3,200	0.2
SS-13	11	140	5.3	13	3,000	0.8
SS-14	7.6	52	3.2	10	2,600	1.1
SS-15	ND	ND	ND	2.9	31	ND
SS-18	91	100	5.9	11	150,000	0.6

ND = Not Detected

All sample results in mg/kg or ppm

Data from Reference 1

Table 2.
Toxicity Characteristic Leachate Procedure (TCLP)
Testing for Surface Soil Cadmium and Lead Samples
Avanti Site, August 1993

Sample #	Cadmium	Lead
01	0.11	43
02	1.1	950
03	ND	64
04	ND	18
05	ND	52
06	0.3	130
07	0.14	1,500
08	ND	500
09	ND	3.0
10	ND	1,000
11	ND	7.2
12	ND	21
13	ND	1.9
14	ND	6.1
15	ND	0.7
18	ND	850

ND = Not Detected
 All sample results in mg/kg or ppm
 Data from Reference 1

Table 3.
Sediment Sample Results For Total Metals
Avanti Site, August 1993

Sample #	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury
SS-16	NA	NA	NA	NA	9.4	ND
SS-17	NA	NA	NA	NA	9.6	ND

ND = Not Detected


NA = Not Analyzed

All sample results in mg/kg or ppm

Data from Reference 1

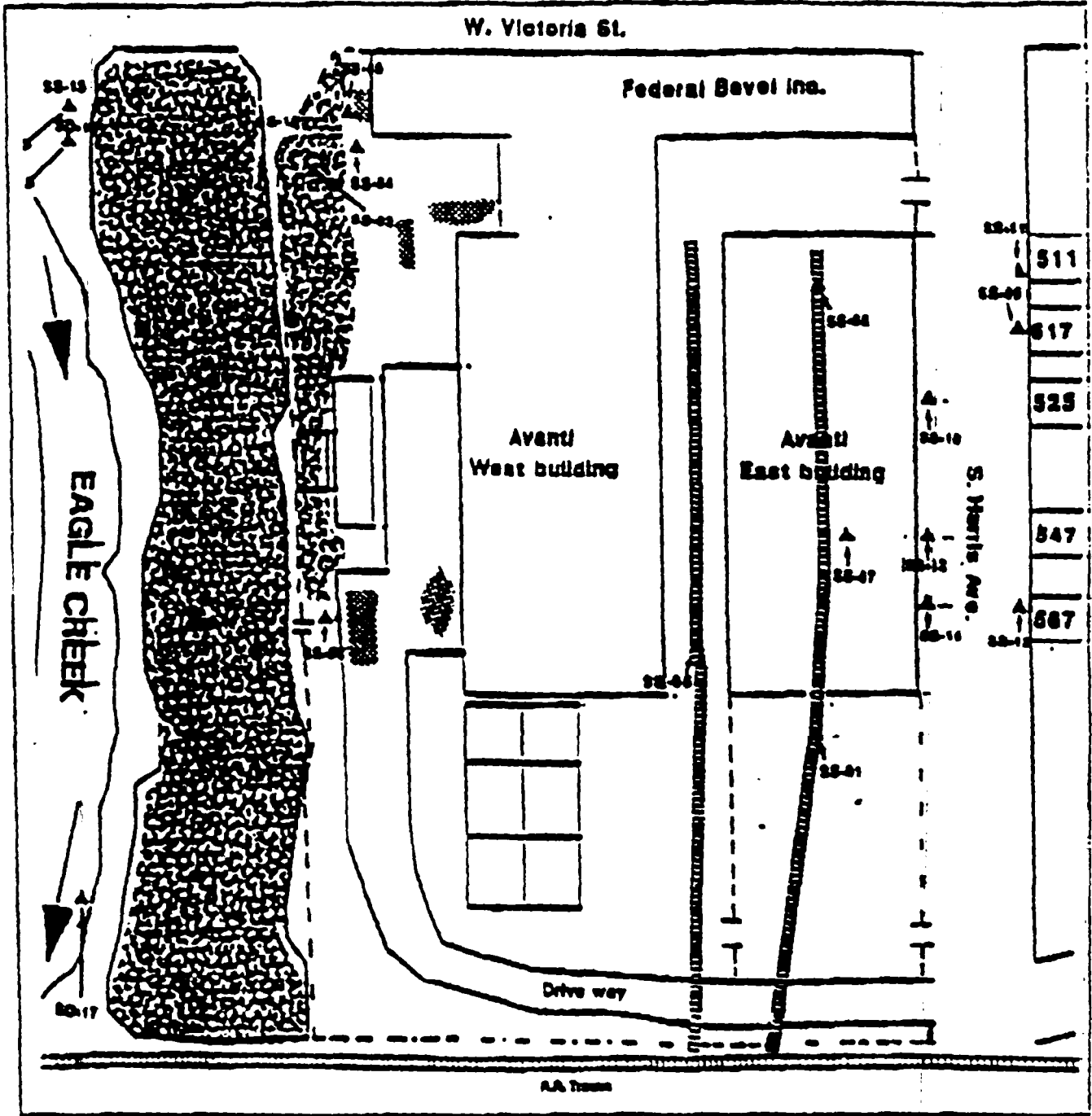
CERTIFICATION

The Avanti 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.




Technical Project Officer, SPS, RPB, DHAC

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


Chief, RPB, DHAC, ATSDR



LEGEND

-  Trees & bushes
-  Paper & plastic piles
- 511 Residence number
- SS-01 Sample location



ecology and environment, Inc.
 Technical Assistance Team
 Region V
 111 W. Jackson Blvd., Chicago, Illinois 60604

FILE	Sample Location Map	NUMBER	3
DATE	Avant	SCALE	Not to scale
OFF		NO.	IN
PROJECT	Site Map of	NO.	EIN08078AA
	Indiana Department of Environmental Management	DATE	1983

November 23, 1993

Technical Project Officer, State Programs Section, RPB, DHAC (E32)

Health Activities Recommendation Panel
Avanti site, Indianapolis, Marion County, Indiana - ACTION

David Brown, Sc.D., OAA, PHPCG

The Health Consultation for the above site was reviewed by the Health Activities Recommendation Panel on November 10, 1993. Based on the conclusions of the state health assessor and the Panel, we propose that the following statement be included in the health consultation for this site:

Health Activities Recommendations Panel (HARP) Recommendations

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, the data and information developed in the Avanti site health consultation have been evaluated by the Health Activities Recommendations Panel for appropriate health follow-up actions. There is evidence that site workers and nearby residents have been and probably are still being exposure to lead-contaminated soil, dust, and possibly other media at levels of health concern. The HARP determined that residents living nearby need to be informed of present contamination and possible adverse health effects and ways they can reduce their exposures. ISDH and local health officials have and will continue to provide this community education. Blood lead testing should continue to be conducted on workers and potentially exposed residents, particularly children and pregnant women. Individuals with elevated blood leads should follow the advice of their physicians. There are allegations that adverse health effects are occurring that may be related to lead exposure. ATSDR and ISDH will continue to evaluate blood lead results and other environmental information and will take additional follow-up actions when appropriate. ATSDR recommends expeditious collection and evaluation of the environmental data to address these exposures.

If you agree with this statement please indicate your approval below and return this memo to us. If you do not concur with this statement, please provide us with your suggested revisions so that we can proceed with the finalization of this public health assessment.



William Greim

APPROVED: _____

HARP Chairman, OAA

Date

Nov 23, 1993