APPENDIX E

ATSDR Agency for Toxic Substances & Disease Registry Public Health Assessments & Health Consultations

HEALTH CONSULTATION
ILLINOIS ZINC COMPANY
PERU, LA SALLE COUNTY, ILLINOIS

PURPOSE

The Illinois Department of Public Health (IDPH) reviewed information from the Illinois Environmental Protection Agency (Illinois EPA) to determine whether current conditions at the Illinois Zinc Co. site in Peru, Illinois, pose a public health hazard. This document does not evaluate potential ecological impacts of the site.

BACKGROUND AND STATEMENT OF ISSUES

Site History

Illinois Zinc is an inactive zinc smelter at the southeastern edge of Peru, Illinois, in an area along the Illinois and Michigan (I & M) Canal and Illinois River (Attachment 1). It is bordered by Brunner Street on the north, the Illinois River and I & M Canal on the south, the Peru city boundary line on the east, and the Peru Wastewater Treatment plant on the west. The entire site occupies approximately 75 acres (1).

Illinois Zinc operated from the 1870s until the 1940s. The company was involved in the smelting of zinc ore, and produced sulfuric acid as a by-product. Coal used in the smelting process was mined locally. After the plant closed, portions of the property were bought and developed by different businesses. Some waste from Illinois Zinc was used for fill at nearby locations that were not part of the historical boundaries of the smelter. The old buildings used in the zinc smelting operations have been razed and new buildings built. The slag, waste, and rubble have been leveled and used for fill to elevate the land surface and reduce flooding.

Several businesses are now on the property (Attachment 2). The largest is Huntsman Chemical Company, which occupies about 32 acres in the northern portion of the site. Mertel, Consolidated Grain Company, and ADM/Growmark/Tabor are on the south side of the property along the I & M Canal and Illinois River. Consolidated Grain Company occupies approximately 5 acres in the southwestern portion of the site and was built on a large slag pile that is partially exposed on the west, north, and east sides. The ADM/Growmark/Tabor complex occupies about 25 acres. The Burlington Northern Railroad has a set of tracks that lie between the south side of Huntsman Chemical and ADM/Growmark/Tabor.

Huntsman Chemical has several large buildings and chemical storage tanks and associated piping. Much of the property has been covered with gravel or asphalt. Consolidated Grain has a seawall along the Illinois River and a facility for unloading grain. ADM/Growmark/Tabor have buildings and facilities for handling grain, and several large, covered salt piles to store salt brought in by barge.

Geology and Topography

The geology of Illinois Zinc consists of Wisconsin glacial till overlying the bedrock. The bedrock consists of fractured Silurian and Ordovician-aged dolomites and St. Peter sandstone. The Illinois River is adjacent to the site on the south, and glacial deposits in this area are overlain by alluvial deposits. The public water systems for the towns of La Salle and Peru use groundwater as a source of drinking water. La Salle has a shallow well field that uses the sand and gravel aquifer. The well field is approximately 1.5 miles east of Illinois Zinc along the south side of the Illinois River. These wells are upstream of the site and range in depth from 61 to 70 feet. Peru wells are about 0.5 miles west of the site and draw water from the St. Peter sandstone at depths greater than 2,500 feet.

The property is flat and surface water could enter the I & M Canal or Illinois River through direct runoff or from groundwater discharging to the canal or river. The property lies in the 100-year floodplain. No surface drinking water intakes exist within 15 miles downstream of Illinois Zinc. The site is sparsely vegetated and the nearest home is about 500 feet north of the site in the town of Peru.

Illinois Zinc and Residential Soil Sampling

In September 1999, Illinois EPA conducted a pre-Comprehensive Environmental Response, Compensation and Liability Act Information System (CERCLIS) investigation. Illinois EPA staff used an x-ray fluorescence (XRF) instrument to screen the surface soil on the site for metals and marked the XRF screening locations with a global positioning system (GPS) unit. During the screening, 193 XRF readings were taken on the property and 14 were taken along the I & M Canal.

On April 18 and 19, 2000, Illinois EPA collected 15 on-site soil samples and 6 sediment samples along the I & M Canal and Illinois River (1). Attachment 2 shows the sample locations, and Table 1 describes the soil and sediment samples. The samples were collected from 0 to 10 inches in depth. In September 2000, XRF readings were taken in 16 nearby residential yards west, north, and east of the Illinois Zinc site (1). No soil samples were collected from residential yards screened by the XRF.

Site Visit

On December 8, 2000, IDPH staff visited the site. Access to the property is limited. Huntsman Chemical Company is fenced and the entrance is through guarded gates. The other businesses are not fenced, but are on private roads that lead to dead ends. Signs stating "no trespassing" were posted to discourage unauthorized entry.

DISCUSSION

Chemicals of Interest

In preparing this health consultation, IDPH relied on the sampling information provided by Illinois EPA and assumed that adequate quality assurance and quality control measures were followed during the laboratory analysis and data reporting.

To select contaminants for further evaluation, IDPH compared the concentration of each chemical with appropriate screening comparison values developed by the Agency for Toxic Substances and Disease Registry (ATSDR) and other sources (2,3). A detailed discussion of

each of the comparison values used is presented in Attachment 3. Chemicals exceeding comparison values - or suspect chemicals for which no comparison values were available - were further evaluated for carcinogenic and noncarcinogenic health effects, considering exposure to children and adults.

Chemicals of interest found at levels greater than the comparison values in on-site soil samples were phenanthrene, chrysene, benzo(a)pyrene, arsenic, cadmium, lead, and zinc (Table 2). Chemicals of interest in on-site sediment samples were phenanthrene, chrysene, benzo(a)pyrene, and cadmium (Table 3). In residential XRF samples, chromium was the only chemical that exceeded comparison values, and only exceeded the comparison values in two locations (4).

Exposure Scenarios

The potential for persons to experience adverse health effects from exposure to a chemical depends on the age of the person when exposure occurs, how much of the chemical a person contacts, how long the exposure lasts, and the health condition of the person exposed. For persons working at Illinois Zinc, IDPH considered an exposure scenario of an adult working on the site 5 days per week for 50 weeks every year for 30 years. For residential soil exposure, IDPH considered a scenario of a child playing in the yard 5 days per week for 9 months per year for 15 years.

On the basis of these scenarios, exposure to the levels of chemicals detected in soil and sediment are not expected to cause adverse health effects. Moreover, because the site is mostly covered with gravel and asphalt, the amount of contaminated soil and dust available for ingestion is further reduced. Also, access to the property is limited by fences, guarded gates, and its location on private roads that lead to dead ends.

Residential Chromium

Residential XRF screening at two locations detected elevated chromium levels. These elevated levels were 395.2 milligrams per kilogram (mg/kg) of soil and 474.4 mg/kg of soil. On the basis of the scenarios presented previously, exposure to these levels of chromium is not expected to cause adverse health effects.

CHILD HEALTH INITIATIVE

IDPH recognizes that children are more susceptible to chemicals because their developing systems are more vulnerable, and because on a per-weight basis they consume more food, drink more water, and breathe more air than adults do. Children also spend much more time at ground level than adults do and explore their environment with their hands and mouths, so they might contact and ingest more chemicals in surface soil.

Based on our exposure scenario for a child (playing in a yard 5 days per week for 9 months per year for 15 years), and the chemical concentrations detected in residential soil, IDPH does not anticipate that children will have sufficient contact with chemicals in soil at levels that would result in adverse health effects.

CONCLUSIONS

On the basis of the April 2000 soil and sediment sampling results collected from Illinois Zinc and the September 2000 XRF readings from nearby residential yards, IDPH concludes that under current conditions, exposures to chemicals in soil on the Illinois Zinc site and nearby residential yards are not at levels expected to cause adverse health effects. This site poses no apparent public health hazard.

RECOMMENDATIONS

None.

PUBLIC HEALTH ACTION PLAN

IDPH sent a letter to each household tested in September 2000 which contained an assessment of the respective specific residential soil screening results. Information on how to reduce exposure to chemicals in soil was also included. This was done as a precautionary measure to provide prudent public health information in case household members or activities should change.

As Illinois EPA continues to evaluate the Illinois Zinc site, IDPH will review new information and data as they become available. We will use this to help answer future public health issues or questions related to the Illinois Zinc site.

PREPARER OF REPORT

Constanta E. Mosoiu
Environmental Health Specialist
Illinois Department of Public Health

REFERENCES

1. Illinois Environmental Protection Agency. Illinois Zinc Co., Peru, IL. Site history, description and sample results of April 2000 and September 2000. Springfield, IL: Illinois Environmental Protection Agency; 2000.

2. Agency for Toxic Substances and Disease Registry. Soil comparison values. Atlanta: US Department of Health and Human Services; September 2000.

3. Illinois Department of Public Health. Lead Poisoning Prevention Code, as amended February 1, 1993.

4. Agency for Toxic Substances and Disease Registry. Toxicological Profile for chromium. Atlanta: US Department of Health and Human Services; 2000.

5. Agency for Toxic Substances and Disease Registry. Toxicological Profile for polycyclic aromatic hydrocarbons. Atlanta: US Department of Health and Human Services; 1995.

CERTIFICATION

This Illinois Zinc Company Site Health Consultation was prepared by the Illinois Department of Public 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.

W. Allen Robison
Technical Project Officer
Superfund Site Assessment Branch (SAAB)
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.

Roberta Erlwein
Chief, State Programs Section
SSAB, DHAC, ATSDR

TABLES

Table 1.

Description of Soil and Sediment Samples Collected at Illinois Zinc by the Illinois Environmental Protection Agency on April 18 and 19, 2000

Sample ID	Depth	Location and Description of the Soil Sample	Appearance
X101, X102	0 to 3"	**Background** and duplicate from south side of Washington Park in Peru about 0.6 miles northwest of site	Dark loam
X103	8"	Eastern area of the site on property that was once the location of Peru Plow Co.	Brown cinders
X104	8"	Approximately 300 feet west of X103	Brown-black cinders
X105	6"	Northeastern area of the property, near Brunner Street	Black-brown cinders
X106	8"	Approximately 250 feet west of X105	Black-brown cinders
X107	6"	South-central area of Huntsman Chemical Co. where a 6-foot trench was being dug for a water main	Black-brown cinders
X109	10"	Northeastern corner of Huntsman Chemical Co.	Black cinders
X112	8"	Huntsman Chemical Co. property by the western loading and the Peru wastewater treatment plant	Fill material
X113	6"	Northeastern portion of the slag pile at Consolidated Grain Co. at the southwestern portion of the site.	Reddish slag material
X114	6"	Northeast area of the slag pile at Consolidated Grain Co.	Dark fine slag
X115	6"	Southeast area of the slag pile at Consolidated Grain Co.	Red-brown fine slag
X116	6"	Southwestern area of the slag pile at Consolidated Grain	Red fine to coarse slag
X117	6"		Oily soil, cinders

		South end of the property, near where the Illinois and Michigan (I & M) Canal and Illinois River converge	
X118	6"	South end of the site approximately halfway down the site's frontage along the I & M Canal	Broken brick, cinders, soil
X119	2"	Southeastern portion of the site, near the bank of the I & M Canal	Cinders and brick fragments
X120	6"	Southeast corner of the site, on the bank of the I & M Canal	Cinders and brick fragments
Sediment Sample Description			
X201, X202	3" to 6"	**Background sample from the I & M Canal** approximately 300 feet upstream of the site	Black silt
X203	3" to 6"	I & M Canal at the southeast corner of the site	Black muck
X204	3" to 6"	I & M Canal midway between the site's frontage along the canal	Cinders, brick
X205	0" to 3"	I & M Canal near the canal's convergence with the Illinois River	Black silt, kernels of split corn
X206	3" to 6"	**Illinois River background** sample, approximately 700 feet south of the site	Black sandy silt
X207	3" to 6"	Illinois River near the Huntsman Chemical Co. crane	Black silt
X208	3" to 6"	Illinois River near Mertle Co.	Fine black silt

Table 2.

Chemicals in On-site Soil Exceeding Comparison Values (in micrograms per kilogram)

Sample ID	Phenanthrene	Chrysene	Benzo(a) pyrene	Arsenic	Cadmium	Lead	Zinc
X101 (background)	0.026	0.032	0.025	5.3	2.6	46.6	373
X103	4.9	2.1	1.5	LCV	LCV	LCV	LCV
X104	0.43	LCV	0.28	LCV	LCV	LCV	LCV
X105	1.3	1.2	LCV	LCV	26.0	LCV	LCV
X106	1.2	1.2	LCV	25.1	34.8	1,470	LCV
X107	0.2	LCV	LCV	LCV	20.6	LCV	LCV
X109	1.9	2.5	2.0	LCV	28.5	1,170	27,209
X112	LCV	LCV	LCV	23.3	46.6	LCV	LCV
X113	ND	LCV	LCV	LCV	13.2	LCV	LCV
X114	LCV	ND	ND	35.6	22.7	LCV	LCV

X115	0.5	0.87	0.41	22.7	42.5	2,090	26,900
X116	LCV	LCV	ND	LCV	18.6	LCV	26,800
X117	2.2	0.76	0.6	LCV	LCV	LCV	LCV
X118	0.81	LCV	0.2	LCV	LCV	LCV	LCV
X119	0.91	LCV	0.27	LCV	LCV	LCV	LCV
X120	0.36	LCV	0.1	LCV	10.2	LCV	LCV
Comparison values (child)	**0.14 ATSDR**	**0.64 ATSDR**	**0.1 CREG**	**20 EMEG**	**10 EMEG**	**1,000 IDPH**	**20,000 EMEG**

LCV: less than comparison value
ND: not detected
ATSDR: upper range of background levels (5)
CREG: Cancer Risk Evaluation Guide for $1x10^{-6}$ excess cancer risk (see Attachment 3)
EMEG: Environmental Media Evaluation Guide (see Attachment 3)
IDPH: Illinois Department of Public Health (3)

Table 3.

Chemicals in Sediment Exceeding Comparison Values (in micrograms per kilogram).

Sample ID	Phenanthrene	Chrysene	Benzo(a) pyrene	Cadmium
X201 (background from Illinois and Michigan Canal)	1.8	3.2	2.7	4.3
X203	7.4	1.9	1.2	14.3
X204	2.2	1.7	1.5	37.6
X205	1.5	1.1	1.0	10.6
X206 (background from Illinois River)	0.19	0.31	0.28	0.15
X207	0.7	1.2	1.1	LCV
X208	0.96	1.5	1.3	LCV
Comparison values (child)	**0.14 ATSDR**	**0.64 ATSDR**	**0.1 CREG**	**10 EMEG**

LCV: less than comparison value
ND: not detected
ATSDR: upper range of background levels (5)
CREG: Cancer Risk Evaluation Guide for $1x10^{-6}$ excess cancer risk (see Attachment 3)
EMEG: Environmental Media Evaluation Guide (see Attachment 3).

ATTACHMENTS

ATTACHMENT 1: DEMOGRAPHIC STATISTICS

ATTACHMENT 2: SAMPLE LOCATION MAP

ATTACHMENT 3: COMPARISON VALUES USED IN SCREENING CONTAMINANTS FOR FURTHER EVALUATION

Environmental Media Evaluation Guides (EMEGs) are developed for chemicals based on their toxicity, frequency of occurrence at National Priorities List (NPL) sites, and potential for human exposure. EMEGs are not action levels, but are comparison values. They are developed without consideration for carcinogenic effects, chemical interactions, multiple route exposure, or exposure through other environmental media. They are very conservative concentration values designed to protect sensitive members of the population.

Reference Dose Media Evaluation Guides (RMEGs) are another type of comparison value. They are developed without consideration for carcinogenic effects, chemical interactions, multiple route exposure, or exposure through other environmental media. They are very conservativeconcentration values designed to protect sensitive members of the population.

Cancer Risk Evaluation Guides (CREGs) are estimated contaminant concentrations based on aprobability of one excess cancer in a million persons exposed to a chemical over a lifetime.

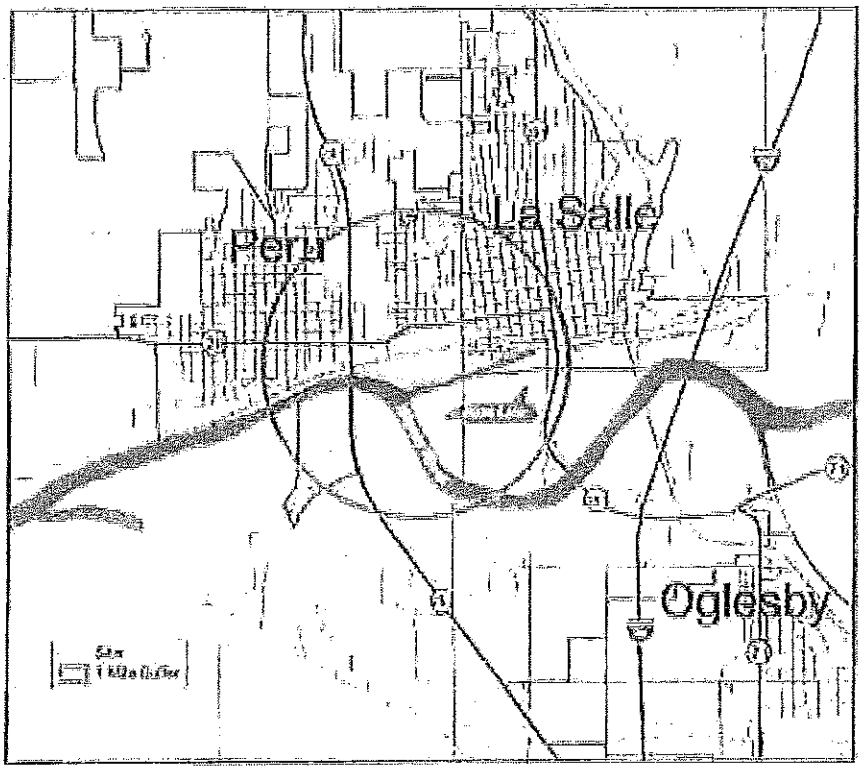
Table of Contents

Page last reviewed: December 2, 2009
Page last updated: December 2, 2009
Content source: Agency for Toxic Substances and Disease Registry

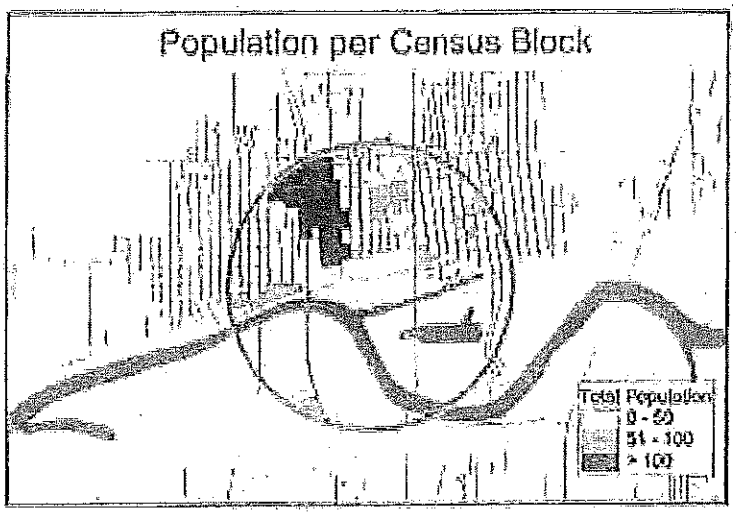
Agency for Toxic Substances and Disease Registry, 4770 Buford Hwy NE,
Atlanta, GA 30341
Contact CDC: 800-232-4636 / TTY: 888-232-6348

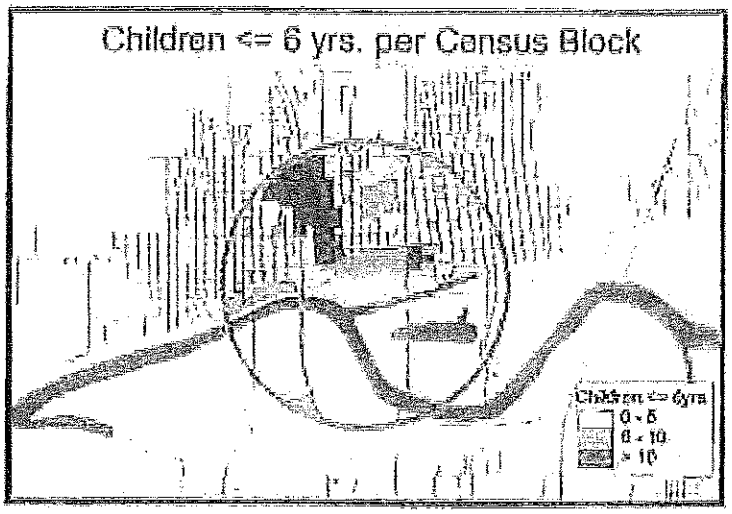
Illinois Zinc, Peru, Illinois

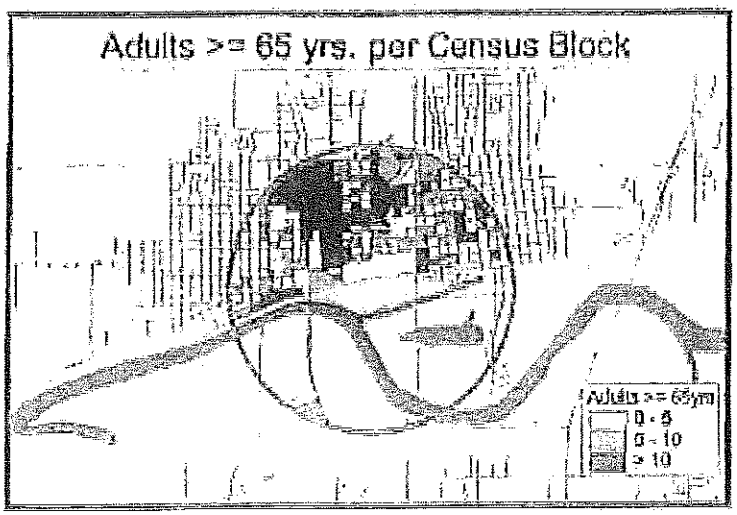
CERCLIS # ILSFNO507992

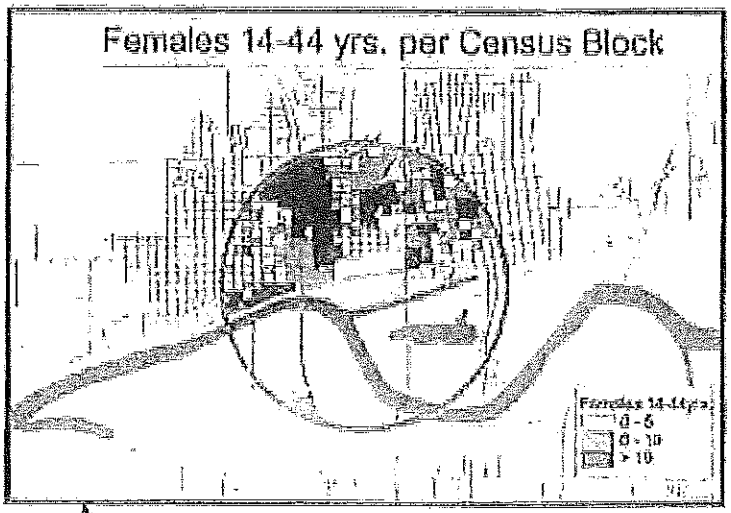


Summary Statistics Within One Mile of the Site	
Total Number of People	6142
Children Aged 6 and Younger	552
Adults Aged 65 and Older	1315
Females Aged 15-44	1317
Younger Than 18 Years	1410
18 Years and Older	5032
White	6262
Black	45
Asian or Pacific Islander	36
American Indian, Eskimo, Al	9
Other Race	90
Hispanic Origin	258









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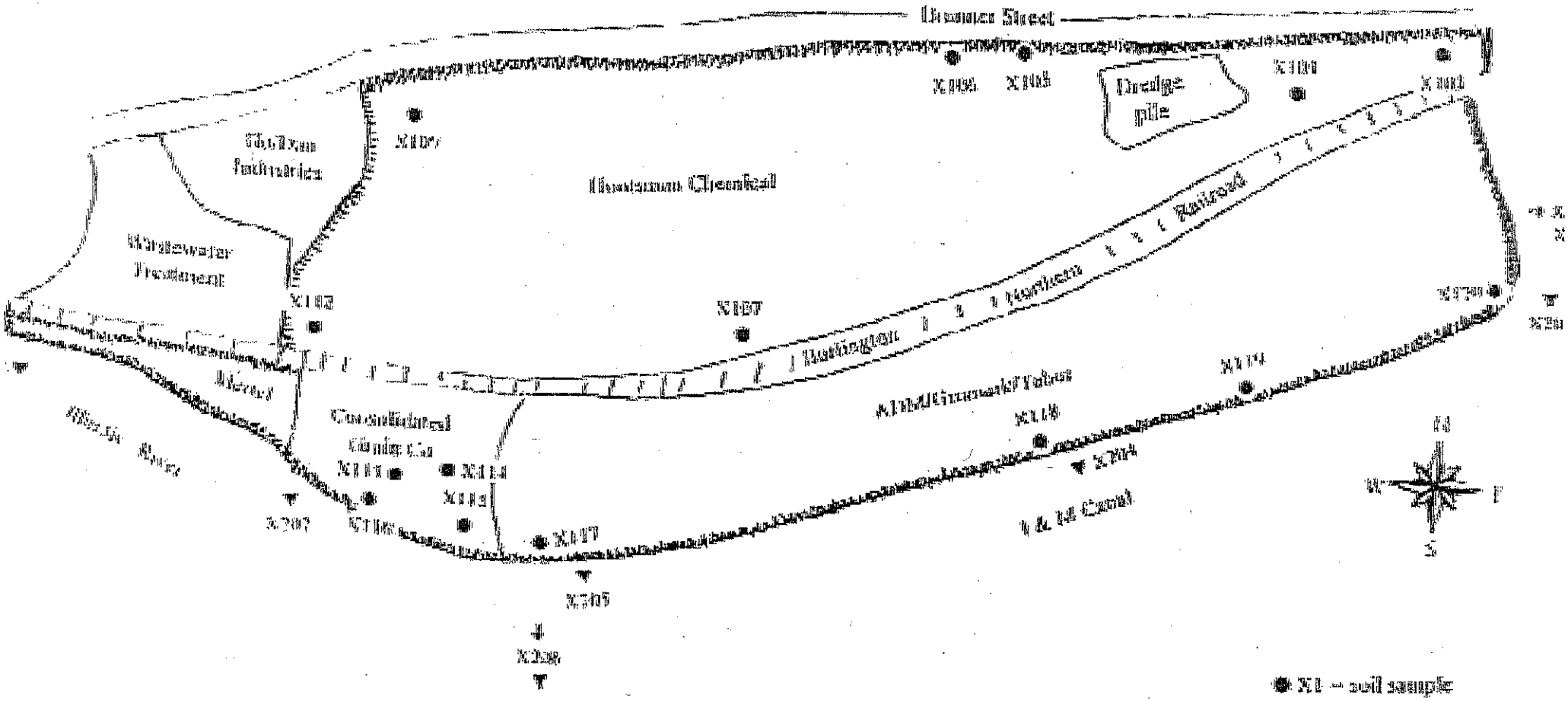


ILLINOIS ZINC COMPANY

Sample location map

Source: IEPA file

APPENDIX F

USEPA

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601

ROD R. BLAGOJEVICH, GOVERNOR RENEE CIPRIANO, DIRECTOR

217/524-3300

June 10, 2003

CERTIFIED MAIL
7001 2510 0002 5277 3985

Mr. John Lakenan
Plant Manager
Huntsman Expandable Polymers Company, L.C.
501 Brunner Street
Peru, Illinois 61354

Re: 0990850005 --- LaSalle County
Huntsman Expandable Polymers Company, L.C.
ILD087154555
Received: January 2, 2003 and April 11, 2003
Log No.: C-838
RCRA Closure

Dear Mr. Lakenan:

This is in response to your December 31, 2002 and April 9, 2003 submittals documenting RCRA closure efforts completed for a hazardous waste pile (S03) at the above-referenced facility. A drawing showing the former location of this waste pile within the facility is attached. The subject pile was created in May 2002 when the facility stockpiled soil excavated during the installation of a fire protection water line through the northeast portion of the facility.

The certification you signed and an affidavit by Ms. Eileen Cronin, P.E. (Huntsman's environmental engineer who oversaw the closure project) indicate that all the soil in the pile was removed and properly disposed off-site. Information in support of these statements was also contained in the subject submittals. Illinois EPA has completed its review of the subject submittals and conducted an inspection of the former location of the waste pile. Based on the results of these efforts, Illinois EPA has determined that closure of the hazardous waste pile at the above referenced facility has apparently met the requirements of 35 IAC 725 and no further closure or post-closure efforts are necessary for this unit. In addition, the information in these submittals indicate that all lead contaminated soil from the fire protection system upgrading project improperly sent to LandComp Landfill was subsequently removed from the landfill and disposed at a permitted hazardous waste landfill.

It must be noted that the subject report and closure efforts described in it were made in response to alleged improper management of hazardous waste at this facility as set forth in Illinois EPA's September 5, 2002 Violation Notice (No. L-2002-01254). Acceptance of this closure

certification does not: (1) resolve any of the facility's alleged violations of the Illinois Environmental Protection Act and/or 35 Ill. Adm. Code, subtitle G: Waste Disposal; or (2) prevent the USEPA or Illinois EPA from pursuing enforcement proceedings and monetary penalties as a result of the alleged violations.

This letter shall constitute Illinois EPA's final action on the subject submittals. Within 35 days after the date of mailing of Illinois EPA's final decision, the facility may petition for a hearing before the Illinois Pollution Control Board to contest the decision of Illinois EPA, however, the 35-day period for petitioning for a hearing may be extended for a period of time not to exceed 90 days by written notice provided to the Board from the applicant and the Illinois EPA within the 35-day initial appeal period.

Work required by this letter, your submittal(s) or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. This letter does not relieve anyone from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

Should you have any questions regarding this matter, please contact Takako N. Halteman at 217/524-3274.

Sincerely,

Joyce L. Munie, P.E.
Manager, Permit Section
Bureau of Land

JLM:TNH:bjh\032171s.doc

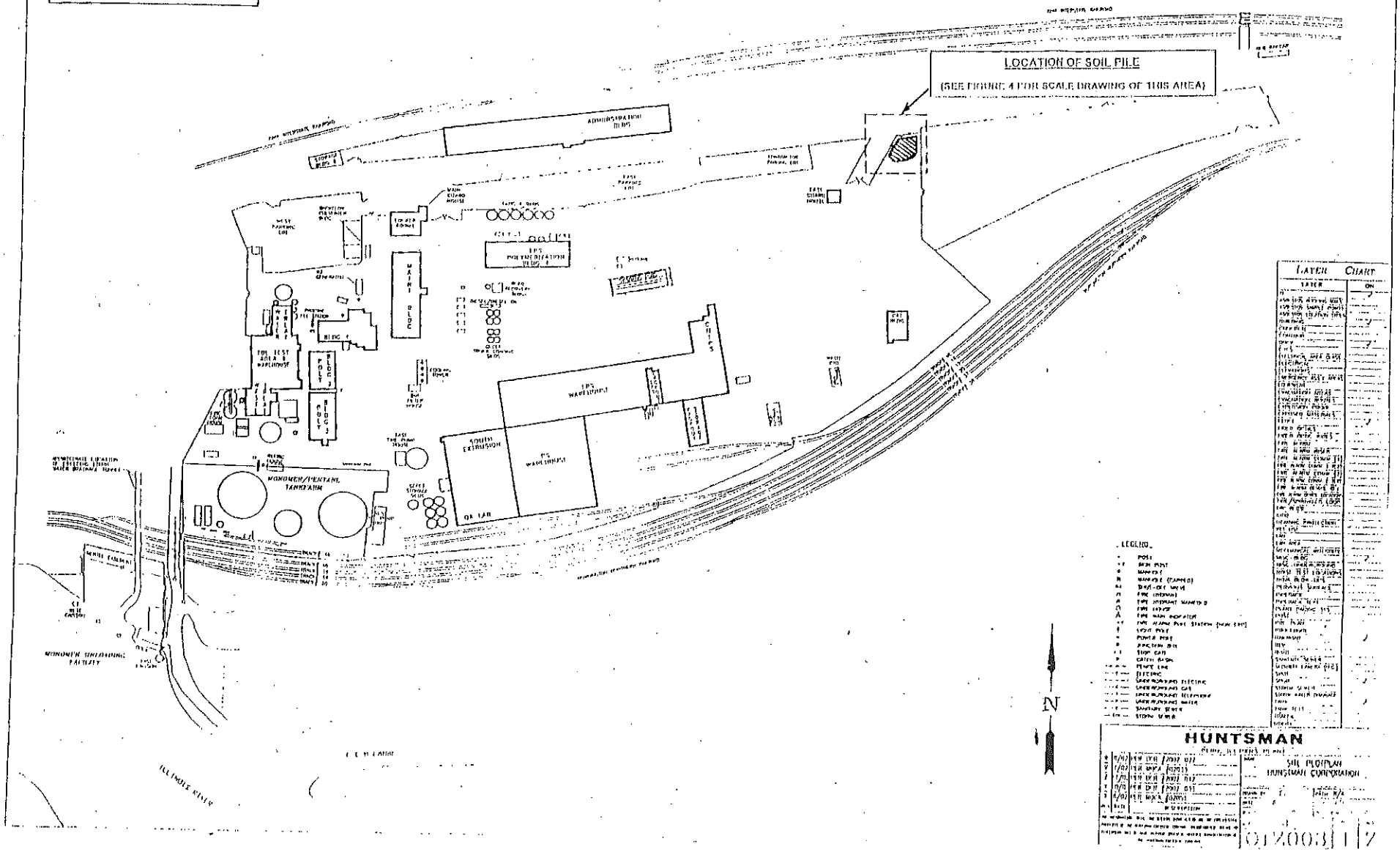
Attachment: Location of Former Hazardous Waste Pile

cc: USEPA Region V, Harriet Croke

012003 SHT 1

TOPOGRAPHIC SURVEY PLAT OF
HUNTSMAN CORPORATION
501 BRUNNER STREET
PERU , ILLINOIS
APRIL, 1998

Figure 3: Peru Plant Plot Plan



Location of the Former Hazardous Waste Pile
Huntsman Expandable Polymers Company L.C.
Log No.: C-838

APPENDIX G

APPENDIX G

Deliverable	Submittal Timeline
Current Conditions Report (CCR)	90 days after signing of this Order
Corrective Action Framework (CAF)	60 days after CAF meeting
RCRA Facility Investigation (RFI) Work Plan	180 days after EPA approval of CAF
Quality Assurance Project Plan (QAPP)	180 days after EPA approval of CAF
Interim Corrective Measures Work Plan	If requested by EPA
Environmental Indicator (EI) Determination	If requested by EPA
RFI Report	90 days after completion of RFI investigation
Corrective Action Objectives (CAO) Worksheet	After submittal of RFI Report by Respondent
Corrective Measures Proposal (CMP)	180 days after EPA approval of RFI Report