CH2M HILL HEALTH & SAFETY PLAN
EAGLE ZINC SITE
Hillsboro, Illinois

WA No. 136-RSBD-B5Y7 / Contract No. 68-W6-0025
December 6, 2002

CH2M HILL Health and Safety Plan

This *Health and Safety Plan* will be kept on the site during field activities and will be reviewed as necessary. The plan will be amended or revised as project activities or conditions change, or when supplemental information becomes available. The plan adopts, by reference, the Standards of Practice (SOPs) set forth in the CH2M HILL *Corporate Health and Safety Program, Program and Training Manual,* as appropriate. In addition, this plan adopts those procedures described in the project Work Plan. The Site Safety Coordinator (SSC) is to be familiar with all applicable SOPs and the contents of this plan. CH2M HILL's personnel and subcontractors must sign Attachment 1 to this *Health and Safety Plan.*

(Reference CH2M HILL SOP HS-19, *Site-Specific Written Safety Plans*)

Contents

1. Project Information and Description

1.1 Project Number

175041

1.2 Client

USEPA

1.3 Project/Site Name

Remedial Investigation/Feasibility Study (RI/FS) Oversight, Eagle Zinc Superfund Site

1.4 Site Address

218 Industrial Park, Hillsboro, Illinois 62049

1.5 CH2M HILL Project Manager

Tim Biggs/STL

1.6 CH2M HILL Office

727 N. First Street
Suite 400
St. Louis, MO 63102

1.7 Date Health & Safety Plan Prepared

November 20, 2002

1.8 Date(s) of Site Work

December 2002 through January 2003

1.9 Site Access (from CH2M HILL)

Travel North on North 1st Street toward Morgan Street. Turn left onto Morgan Street. Turn right onto Dr. Martin Luther King, Jr. Memorial Bridge. Take the I-64 E/IL-3 N ramp toward Louisville/St. Clair Avenue. Merge onto I-55 North. Take the IL-16 exit, number 52,

toward Gillespie/Litchfield. Take the ramp toward Hillsboro/Matton/Litchfield. Merge onto IL-16 E. Turn left onto IL-16 W. Turn left onto CR-1.

1.10 Site Size

132 acres

1.11 Prevailing Weather

The winter months are moderately cool with an average temperature of 31°F and an average daily high temperature of 40°F. The average total snowfall accumulation is approximately 18 inches.

1.12 Site Description and History

The 132-acre Eagle Zinc site is located in central Montgomery County, Illinois, about 50 miles northeast of St. Louis, Missouri and 35 miles south of Springfield, Illinois. The site is currently active and is owned by the Eagle Zinc Company. It is located in a mixed commercial/industrial/residential area of the northeastern portion of Hillsboro.

Site features include office, laboratory, manufacturing/process, storage, and maintenance buildings. Other site features include railroad spurs; raw material; residual material stockpiles; two stormwater retention ponds; a small pond; and several paved and unpaved roads.

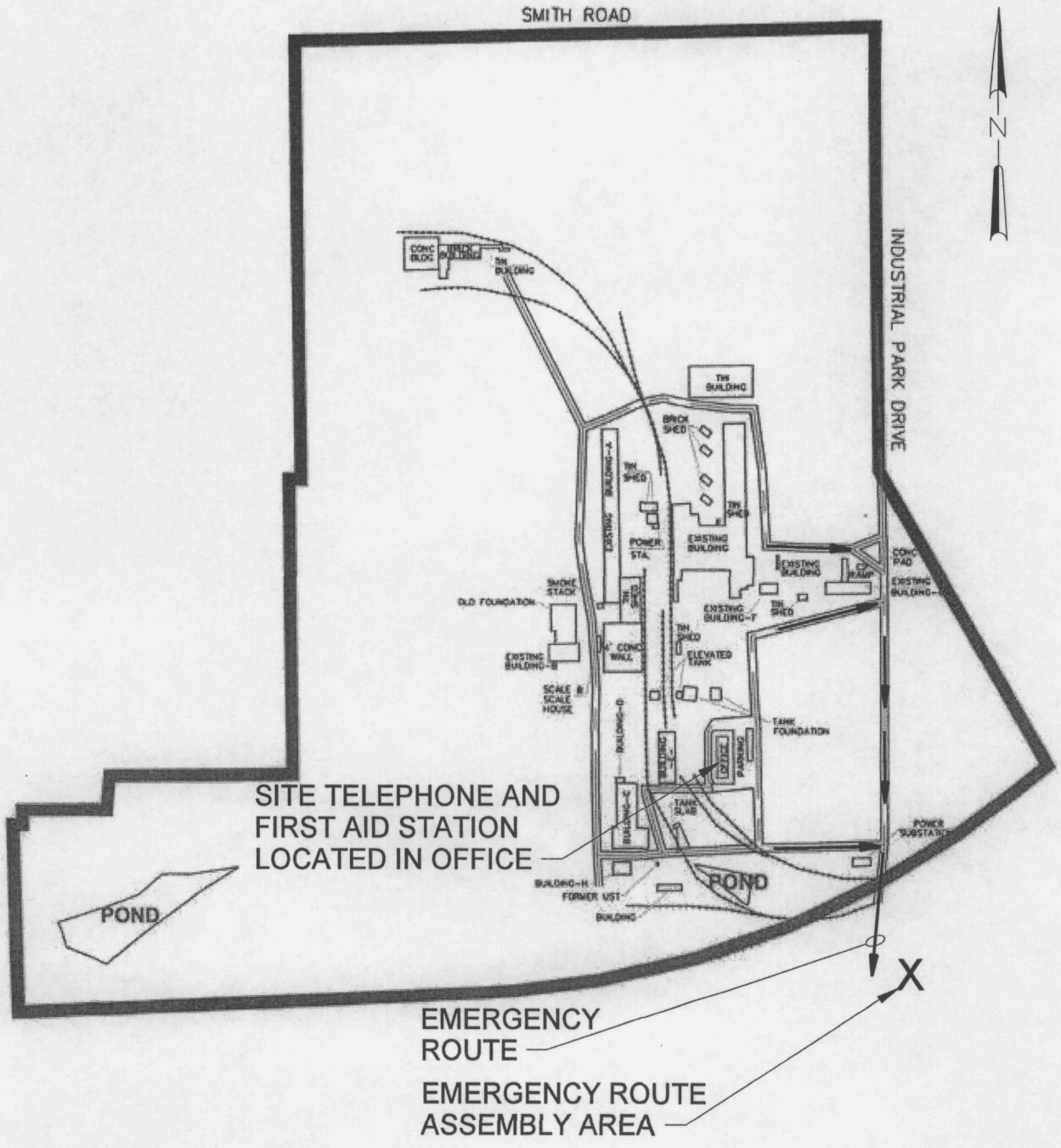
Zinc processing began at the site in 1912. The site was purchased by Eagle Picher Industries in 1919, whom conducted zinc smelting operations and the manufacturing of sulfuric acid until approximately 1935. Leaded zinc oxide at the site was manufactured by combining basic lead sulfate with zinc oxide. Eagle Picher operated the site until 1980, at which time it was purchased by Sherwin Williams. Sherwin Williams continued zinc smelting operations until 1984, when the site was purchased by the Eagle Zinc Company, a division of TL Diamond & Company.

Zinc oxide is produced at the site using both direct and indirect processes. Other products historically manufactured at the site include leaded zinc oxide, metallic zinc, and sulfuric acid. In addition, the facility has produced a fine-grained product that is rich in carbon by screening stockpiled rotary residues using a rotary screen. The facility currently produces two products: zinc oxide and the carbon-rich by-product described above.

A Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Expanded Site Inspection that included the collection of 28 soil samples was conducted by the Illinois Environmental Protection Agency (IEPA) in October 1993. In May 1996, Eagle Zinc and IEPA entered into an Interim Consent Order which contained a site plan for stormwater management issues. In June 2000, IEPA issued a National Pollutant Discharge Elimination System (NPDES) permit for site stormwater management.

An Administrative Order on Consent (AOC) containing requirements for conducting an RI/FS was signed by the United States Environmental Protection Agency (USEPA) and three potentially responsible parties (PRPs) during December 2001.

Phase I of the RI field work was conducted by the one of the PRP's contractors (Environ of Deerfield, Illinois) over a 2-week period during July 2002. RI field activities included the sampling and inorganic laboratory analysis of stockpiled residual materials and sediments present in both onsite and offsite surface water features. Phase II of the RI field work is scheduled to begin during December 2002 or January 2003.



SITE MAP

EAGLE ZINC SITE

HILLSBORO, ILLINOIS

CH2MHILL

3. Hazard Analysis

3.1 Description of Tasks

(Reference Field Project Start-up Form)

The scope of work covered by this Revised Work Plan comprises oversight of the PRP's RI/FS activities. These activities shall include a field investigation to delineate the nature and extent of contamination at the site and in nearby areas beyond those already identified through previous investigations. The RI/FS shall address site-related contaminant nature and extent, transport mechanisms, and risk characterization related to waste materials, surface soil, subsurface soil, groundwater, surface water, sediment, and air. The RI/FS is intended to both complement and complete the prior investigations conducted at and within the vicinity of the site.

3.1.1 Hazwoper-Regulated Tasks

- Geoprobe boring (Oversight)
- Groundwater monitoring (Oversight)
- Surface water sampling (Oversight)
- Sediment sampling (Oversight)
- Air sampling (Oversight)
- Soil sampling (Oversight)
- Residue pile excavatations/sampling
- Monitoring well installation/sampling
- Investigation-derived waste (drum) sampling and disposal (Oversight)
- Observation of material loading for offsite disposal (Oversight)

3.2 Task Hazard Analysis

(Refer to Section 4 for hazard controls)

	TASK (OVERSIGHT)					
POTENTIAL HAZARDS	**Trenching**	**Drilling, Geoprobe, and Well Installation and Abandonment**	**Groundwater Monitoring**	**Surface Water, Sediment Sampling**	**IDW Drum Sampling and Disposal**	**Observation of Loading Material for Offsite Disposal**
Flying debris/objects	X	X		X	X	X
Noise > 85dBA	X	X				X
Electrical	X	X	X			
Suspended loads	X	X				X
Buried utilities, drums, tanks	X	X				
Slip, trip, fall	X	X	X	X	X	X
Back injury	X	X	X	X	X	

4.2.5 Electrical

(Reference CH2M HILL SOP HS-23, *Electrical*)

- Protect all electrical equipment, tools, switches, and outlets from outdoor elements.
- Only authorized personnel are permitted to enter high-voltage areas.
- Only qualified personnel are permitted to work on energized electrical circuits and equipment.

4.2.6 Cold Stress

(Reference CH2M HILL SOP HS-09, *Heat and Cold Stress)*

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for anticipated fieldwork. Appropriate rain gear is a must in cool weather.
- Consider monitoring the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council (NSC).
- The wind-chill index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn, therefore, it should only be used as a guideline to warn workers when they are in a situation that can cause cold-related illnesses.
- NSC Guidelines for Work and Warm-Up Schedules can be used with the wind-chill index to estimate work and warm-up schedules for fieldwork. The guidelines are not absolute; workers should be monitored for symptoms of cold-related illnesses. If symptoms are not observed, the work duration can be increased.
- Persons who experience initial signs of immersion foot, frostbite, and/or hypothermia should consult the SSC/DSC to avoid progression of cold-related illness.
- Observe coworkers for the initial signs of cold-related illness.
- Obtain and review weather forecasts– be aware of predicted weather systems which may be accompanied by sudden drops in temperature, increases in winds, and precipitation.

4.2.7 Confined Space Entry

(Reference CH2M HILL SOP HS-17, *Confined Space Entry)*

No confined space entry will be permitted. Confined space entry requires additional health and safety procedures, training, and a permit. If conditions change such that confined space entry becomes necessary, contact the HSM to develop the required entry permit.

When planned activities will not include confined space entry, confined spaces accessible to CH2M HILL personnel for which a permit is required are to be identified before a task begins. The SSC is to confirm that permit spaces are properly posted or that employees are informed of their locations and hazards.

4. Hazard Controls

This section provides safe work practices and control measures used to reduce or eliminate potential hazards. These practices and controls are to be implemented by the party in control of either the site or the particular hazard. CH2M HILL employees must remain aware of the hazards affecting them, regardless of who is responsible for controlling them. CH2M HILL employees who do not understand any of these provisions should contact the Health and Safety Manager for clarification.

4.1 Project-Specific Physical (Safety) Hazards

4.1.1 Drilling

(Reference CH2M HILL SOP HS-35, *Drilling*)

- Only authorized personnel are permitted to operate drill rigs.
- Stay clear of areas surrounding drill rigs during every startup.
- Stay clear of the rotating augers and other rotating components of drill rigs.
- Stay clear of all hoisting operations. Loads shall not be hoisted overhead of personnel.
- Do not wear loose-fitting clothing or other items, such as rings or watches, that could get caught in moving parts. Long hair should be restrained.
- If equipment becomes electrically energized, personnel shall be instructed not to touch any part of the equipment or attempt to touch any individual who may be in contact with the electrical current. The utility company or appropriate party shall be contacted to de-energize the line prior to approaching the equipment.
- Smoking around drilling operations is prohibited.

4.1.2 Earthmoving Equipment

(Reference CH2M HILL SOP HS-27, *Earthmoving Equipment*)

- Only authorized personnel are permitted to operate earthmoving equipment.
- Maintain safe distance from operating equipment and stay alert of equipment movement at all times. Avoid positioning oneself between fixed objects and operating equipment and equipment pinch points, and remain outside of the equipment swing and turning radius. Pay attention to backup alarms, but do not rely on them for protection. Never turn your back on operating equipment.
- Approach operating equipment only after receiving the operator's attention. The operator shall acknowledge your presence and stop movement of the equipment. Caution shall be used when standing next to idle equipment; when equipment is placed

in gear it can lurch forward or backward. Never approach operating equipment from the side or rear where the operator's vision is compromised.

- When required to work in proximity to operating equipment, wear high-visibility vests to increase visibility to equipment operators. For work performed after daylight hours, vests shall be made of reflective material or shall include a reflective stripe or panel.
- Do not ride on earthmoving equipment unless it is specifically designed to accommodate passengers. Only ride in seats that are provided for transportation and that are equipped with seat belts.
- Stay as clear as possible of all hoisting operations. Loads shall not be hoisted overhead of personnel.
- Earthmoving equipment shall not be used to lift or lower personnel.
- If equipment becomes electrically energized, personnel shall be instructed not to touch any part of the equipment or attempt to touch any person who may be in contact with the electrical current. The utility company or appropriate party shall be contacted to de-energize the line prior to approaching the equipment.

4.1.3 Working Above or Near Water

Fall protection should be provided to prevent personnel from falling into water. Where fall protection systems are not provided and the danger of drowning exists:

- U.S. Coast Guard-approved personal flotation devices (PFDs), or a life jacket, shall be worn.
- Inspect PFDs prior to use. Do not use defective PFDs.
- A minimum of one ring buoy with 90 feet of 3/8-inch solid-braid polypropylene (or equivalent) rope must be provided for emergency rescue.

4.2 General Hazards

4.2.1 General Hazards and Housekeeping

(Reference CH2M HILL SOP HS-20, *General Practices*)

- Site work will be performed during daylight hours whenever possible. Work conducted during the hours of darkness will require enough illumination intensity to read a newspaper without difficulty.
- Hearing protection must be worn in areas where it is necessary to shout to hear someone within 3 feet.
- Good housekeeping must be maintained at all times in all project work areas.
- Common paths of travel should be established and kept free from the accumulation of materials.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.
- Provide slip-resistant surfaces, ropes, and/or other devices to be used.

- Stairs or ladders are generally required when there is a break in elevation of 19 inches or more.
- Specific areas should be designated for the proper storage of materials.
- Tools, equipment, materials, and supplies shall be stored in an orderly manner.
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area.
- Containers should be provided for collecting trash and other debris, and shall be removed at regular intervals.
- All spills shall be quickly cleaned up. Oil and grease shall be cleaned from walking and working surfaces.

4.2.2 Hazard Communication

(Reference CH2M HILL SOP HS-05, *Hazard Communication)*

The SSC is to perform the following:

- Complete an inventory of chemicals brought onsite by CH2M HILL using Attachment 2.
- Before or as the chemicals arrive onsite, obtain an MSDS for each hazardous chemical.
- Provide the required chemical-specific HAZCOM training for employees using Attachment 3.
- Request or confirm the location(s) of Material Safety Data Sheets (MSDSs) from the client and contractors for chemicals to which CH2M HILL employees may potentially become exposed.

4.2.3 Shipping and Transportation of Chemical Products

(Reference CH2M HILL, *Procedures for Shipping and Transporting Dangerous Goods*)

Chemicals brought to the site may be defined as hazardous materials by the U.S. Department of Transportation (DOT). All staff who ship such materials or transport them by road must receive CH2M HILL training in shipping dangerous goods. All hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packaged, and documented by trained staff. Contact the HSM or the Equipment Coordinator for additional information.

4.2.4 Manual Lifting

(Reference CH2M HILL SOP HS-29, *Manual Lifting*)

Proper lifting techniques must be used when lifting any object.

- Plan storage and staging to minimize lifting or carrying distances.
- Split heavy loads into smaller loads.
- Use mechanical lifting aids whenever possible.
- Have someone assist with lifting– especially for heavy or awkward loads.
- Make sure the path of travel is clear prior to the lift.

4.2.5 Electrical

(Reference CH2M HILL SOP HS-23, *Electrical*)

- Protect all electrical equipment, tools, switches, and outlets from outdoor elements.
- Only authorized personnel are permitted to enter high-voltage areas.
- Only qualified personnel are permitted to work on energized electrical circuits and equipment.

4.2.6 Cold Stress

(Reference CH2M HILL SOP HS-09, *Heat and Cold Stress)*

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for anticipated fieldwork. Appropriate rain gear is a must in cool weather.
- Consider monitoring the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council (NSC).
- The wind-chill index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn, therefore, it should only be used as a guideline to warn workers when they are in a situation that can cause cold-related illnesses.
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- Observe coworkers for the initial signs of cold-related illness.
- Obtain and review weather forecasts– be aware of predicted weather systems which may be accompanied by sudden drops in temperature, increases in winds, and precipitation.

4.2.7 Confined Space Entry

(Reference CH2M HILL SOP HS-17, *Confined Space Entry*)

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When planned activities will not include confined space entry, confined spaces accessible to CH2M HILL personnel for which a permit is required are to be identified before a task begins. The SSC is to confirm that permit spaces are properly posted or that employees are informed of their locations and hazards.

4.3 Biological Hazards and Controls

(Reference CH2M HILL SOP HS-46, *Biological Hazards)*

4.3.1 Snakes

Snakes are typically found in underbrush and tall grassy areas. If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. **DO NOT** apply ice, cut the wound, or apply a tourniquet. Try to identify the type of snake: note its color, size, patterns, and markings.

4.3.2 Poison Ivy, Oak, and Sumac

Poison ivy, poison oak, and poison sumac are typically found in brush or wooded areas, and they are most commonly found in moist areas or along the edges of wooded areas. Become familiar with the identity of these plants. Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin comes into contact with one of these plants, wash the area with soap and water immediately. If the reaction is severe or should the condition worsen, seek medical attention.

4.3.3 Ticks

Ticks are typically found in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to ¼-inch in size. Wear tightly woven light-colored clothing with long sleeves and keep pant legs tucked into boots, spray **only the outside** of clothing with permethrin or permanone, spray skin only with DEET, and check yourself frequently for ticks.

If bitten by a tick, grasp it at the point of attachment and carefully remove it. After removing the tick, wash your hands and disinfect and press the bite area(s). Save the removed tick. Report the bite to human resources. Look for symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF). Symptoms of Lyme disease include a bullseye-shaped rash with a small welt in the center. Symptoms of RMSF include a rash of red spots under the skin 3 to 10 days after a tick bite. In both cases, chills, fever, headache, fatigue, stiff neck, and bone pain may develop. If symptoms appear, seek medical attention.

4.3.4 Bees and Other Stinging Insects

Bees, wasps, and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic. Watch for and avoid nests. Keep exposed skin to a minimum. Carry a sting allergy kit if you have had allergic reactions in the past, and inform the SSC and/or buddy. If a stinger is present, remove it carefully with tweezers. Wash and disinfect the wound, cover it, and apply ice. Watch for allergic reactions; seek medical attention if a reaction develops.

4.3.5 Bloodborne Pathogens

(Reference CH2M HILL SOP HS-36, *Bloodborne Pathogens*)

Exposure to bloodborne pathogens may occur when rendering first aid or CPR, or when contact occurs with landfill waste or waste streams containing potentially infectious material. Exposure controls and personal protective equipment (PPE) are required as specified in CH2M HILL SOP HS-36, *Bloodborne Pathogens*. A Hepatitis B vaccination must be offered before an employee participates in a task where exposure is a possibility.

4.3.6 Other Anticipated Biological Hazards

Not applicable.

4.4 Contaminants of Concern

(Refer to Project Files for more detailed contaminant information)

Contaminant	Location and Maximum[a] Concentration (ppm)	Exposure Limit[b]	IDLH[c]	Symptoms and Effects of Exposure	PIP[d] (eV)
Antimony	**Soil:** 1.9	0.5 mg/m^3	50	Irritated eyes, skin, and nose; coughing; dizziness; headache; nausea; vomiting; diarrhea; stomach cramps; insomnia; anorexia; loss and/or change in olfactory sensations	NA
Arsenic	**Soil:** 13	0.01 mg/m^3	5 Ca	Ulceration of nasal septum, respiratory irritation, dermatitis, gastrointestinal disturbances, peripheral neuropathy, hyperpigmentation	NA
Beryllium	**Soil:** 2.8	0.0005 mg/m^3	Ca 4 mg/m^3	Berylliosis (chronic exposure): anorexia, low weight, weak ness, chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation to eyes; dermatitis	NA
Cadmium	**Soil:** 87	0.005 mg/m^3	9 Ca	Pulmonary edema, coughing, chest tightness/pain, headache, chills, muscle aches, nausea, vomiting, diarrhea, difficulty breathing, loss of olfactory sensations, emphysema, mild anemia	NA
Chromium	**Soil:** 3.8	0.5 mg/m^3	25	Irritated eyes, sensitization dermatitis, histologic fibrosis of lungs	NA
Copper	**Soil:** 35	1 mg/m^3	100 mg/m^3	Irritation to the eyes, nose, pharynx; nasal perforation; metallic taste; dermatitis; in animals: lung, liver, and/or kidney damage and anemia	NA
Lead	**Soil:** 100	0.05 mg/m^3	100	Weakness lassitude, facial pallor, pal eye, weight loss, malnutrition, abdominal pain, constipation, anemia, gingival lead line, tremors, paralysis of wrists and ankles, encephalopathy, kidney disease, irritated eyes, hypertension	NA
Selenium	**Soil:** 1.7	0.2 mg/m^3	1 mg/m^3	Irritation to the eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea, bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye and skin burns; in animals: anemia; liver necrosis, cirrhosis; kidney and spleen damage	NA
Silver	**Soil:** 0.42	0.01 mg/m^3	10	Blue-gray eyes, skin and nose irritation, GI disturbance	NA
Zinc	**Soil:** 11000	5 mg/m^3	NE	Sweet metal taste, dry throat, cough, tight chest, chills	NA

Notes:

[a] Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), S (Surface Soil), SL (Sludge), SW (Surface Water).

[b] Appropriate value of PEL, REL, or TLV listed.

[c] IDLH = immediately dangerous to life and health (units are the same as specified "Exposure Limit" units for that contaminant); NL = no limit found in reference materials; CA = potential occupational carcinogen.

[d] PIP = photoionization potential; NA = not applicable; UK = unknown.

4.5 Potential Routes of Exposure

Dermal: Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in Section 6.	**Inhalation:** Vapors and contaminated particulates. This route of exposure is minimized through proper respiratory protection and monitoring, as specified in Sections 6 and 7, respectively.	**Other:** Inadvertent ingestion of contaminated media. This route should not present a concern if proper hygiene practices are followed (e.g., wash hands and face before drinking or smoking).

5. Project Organization and Personnel

5.1 CH2M HILL Employee Medical Surveillance and Training

(Reference CH2M HILL SOP HS-01, *Medical Surveillance,* and HS-02, *Health and Safety Training*)

The employees listed below are enrolled in the CH2M HILL Comprehensive Health and Safety Program and meet state and federal hazardous waste operations requirements for 40-hour initial training, 3-day on-the-job experience, and 8-hour annual refresher training. Employees designated "SSC" have completed a 12-hour site safety coordinator course, and have documented requisite field experience. An SSC with a level designation (D, C, B) equal to or greater than the level of protection being used must be present during all tasks performed in exclusion or decontamination zones. Employees designated "FA-CPR" are currently certified by the American Red Cross, or equivalent, in first aid and CPR. At least one FA-CPR-designated employee must be present during all tasks performed in exclusion or decontamination zones. The employees listed below are currently active in a medical surveillance program that meets state and federal regulatory requirements for hazardous waste operations. Certain tasks (e.g., confined space entry) and contaminants (e.g., lead) may require additional training and medical monitoring.

Pregnant employees are to be informed of and are to follow the procedures referenced in CH2M HILL SOP HS-04, *Reproduction Protection,* including obtaining a physician's statement of the employee's ability to perform hazardous activities prior to being assigned to fieldwork.

Employee Name	Office	Responsibility	SSC/FA-CPR
Andy Sprinkle	STL	General Field Oversight	Level C & D, SSC
Tim Biggs	STL	General Field Oversight, Project Manager	Level C & D, SSC, FA-CPR

5.2 Field Team Chain of Command and Communication Procedures

5.2.1 Client

Contact Name: Dion Novak/ USEPA Region V
Phone: (312) 886-4737

5.2.2 CH2M HILL

Project Manager: Tim Biggs / STL
Health and Safety Manager: John Longo / NJO
Field Team Leader: Andy Sprinkle / STL
Site Safety Coordinator: Andy Sprinkle / STL

The SSC is responsible for contacting the Field Team Leader and Project Manager. The Project Manager will contact the client. The Health and Safety Manager should be contacted, as appropriate.

5.2.3 Contractors

(Reference CH2M HILL SOP HS-55, *Subcontractor, Contractor, and Owner*)

Contractor:	Environ
Contractor:	Contact Name: Ross Jones
Telephone:	847-444-9200

This plan does not cover contractors that are contracted directly to the client or the owner. CH2M HILL is not responsible for the health and safety or means and methods of a contractor's work, and CH2M HILL must never assume such responsibility through the actions of its employees (e.g., advising on health and safety issues). In addition to this plan, CH2M HILL staff should review contractor safety plans so that awareness is maintained of appropriate applicable precautions. Except in unusual situations when conducted by the HSM, CH2M HILL must never comment on or approve contractor safety procedures. Self-assessment checklists contained in Attachment 5 are to be used by the SSC to review the contractor's performance ONLY as it pertains to evaluating our exposure and safety.

Health and safety related communications with contractors should be conducted as follows:

- Request the contractor to brief CH2M HILL employees and subcontractors on the precautions related to the contractor's work.
- When an apparent contractor non-compliance/unsafe condition or practice poses a risk to CH2M HILL employees or subcontractors:
  - Notify the contractor safety representative.
  - Request that the contractor determine and implement corrective actions.
  - If needed, stop affected CH2M HILL work until the contractor corrects the condition or practice. Notify the client, Project Manager, and HSM, as appropriate.
- If apparent contractor non-compliance/unsafe conditions or practices are observed, inform the contractor safety representative.CH2M HILL's obligation is limited strictly to informing the contractor of our observations– the contractor is solely responsible for determining and implementing necessary controls and corrective actions.
- If an apparent imminent danger is observed, immediately warn the contractor employee(s) in danger and notify the contractor safety representative. CH2M HILL's obligation is limited strictly to immediately warning the affected individual(s) and informing the contractor of our observations– the contractor is solely responsible for determining and implementing necessary controls and corrective actions.
- Document all oral health and safety related communications in the project field logbook, daily reports, or other records.

6. Personal Protective Equipment (PPE)

(Reference CH2M HILL SOP HS-07, *Personal Protective Equipment, HS-08, Respiratory Protection*)

The basic levels of PPE to be used for field activities at the Eagle Zinc Site are Level C and modified OSHA level D. PPE may be upgraded based on air monitoring results or field conditions. A downgrade of PPE must be approved by the Project Manager and SSC.

PPE Specifications [a]

Task	Level	Body	Head	Respirator[b]
General site entry Observation of direct push technology Observation of monitoring well installation Observation of soil sampling Observation of residue pile excavation Observation of IDW sampling and disposal Air sampling	D	Work clothes: steel-toe, leather work boots; work gloves	Hardhat [c] Safety glasses Ear protection [d]	Not required
Observation of surface water sampling Observation of groundwater monitoring Observation of sediment sampling	Modified D	Work clothes or cotton coveralls **Boots:** Leather work boots with outer rubber boot covers **Gloves:** Inner and outer surgical-style nitrile gloves	Hardhat [c] Safety glasses Ear protection [d]	Not required

Reasons for Upgrading or Downgrading Level of Protection

Upgrade[f]	Downgrade
Request from individual performing tasks. Change in work tasks that would increase contact or potential contact with hazardous materials. Occurrence or likely occurrence of gas or vapor emissions. Known or suspected presence of dermal hazards. Instrument action levels (Section 7) are exceeded.	New information indicating that a situation is less hazardous than originally thought. Change in site conditions that decrease a hazard. Change in work task that would reduce contact with hazardous materials.

7. Air Monitoring/Sampling

(Reference CH2M HILL SOP HS-06, *Air Monitoring)*

Air will be monitored by the PRPs' field personnel using a photoionization detector (PID) and a real-time aerosol monitor (RAM) to assess the presence and concentration of organic vapor and airborne dusts during drilling and sampling activities. The air will be also monitored with a combustible gas monitor (CGM) during intrusive work to detect the presence of combustible chemicals. Samples will be collected in the breathing zone. A CH2M HILL employee will coordinate with the PRPs' field personnel to ensure that the personal protective measures employed during field activities are appropriate and adequate.

7.1 Air Monitoring Specifications

Instrument	Tasks	Action Levels[a]		Frequency[b]	Calibration
PID: See PRP's HSP for details.	All tasks	< 1 ppm →	Level D	Initially and periodically during task	Daily
		≥ 1 ppm →	Vacate work area		
CGM: See PRP's HSP for details.	Intrusive tasks such as drilling and trenching	0-10% →	No explosion hazard	Continuous during advancement of boring or trench	Daily
		10-20% LEL →	Potential explosion hazard		
		>20% LEL →	Explosion hazard; evacuate or vent		
RAM: See PRP's HSP for details.	All tasks that may generate dust	No visible dust →	Level D	Initially and periodically during tasks	Zero Daily
		Visible dust →	Vacate area		

Notes:
[a] Action levels apply to sustained breathing-zone measurements above background.
[b] The exact frequency of monitoring depends on field conditions and is to be determined by the SSC; generally, every 5 to 15 minutes if acceptable, but a more frequent interval may be appropriate. Monitoring results should be recorded. Documentation should include instrument and calibration information, time, measurement results, personnel monitored, and place/location where measurement is taken (e.g., "Breathing Zone/MW-3," "at surface/SB-2," etc.).

7.2 Calibration Specifications

(Refer to the respective manufacturer's instructions for proper instrument-maintenance procedures.)

7.3 Air Sampling

Sampling, in addition to real-time monitoring, may be required by OSHA regulations governing the potential exposure to certain contaminants. Air sampling is typically required when site contaminants include lead, cadmium, arsenic, asbestos, and certain volatile organic compounds. Contact the HSM immediately if these contaminants are encountered.

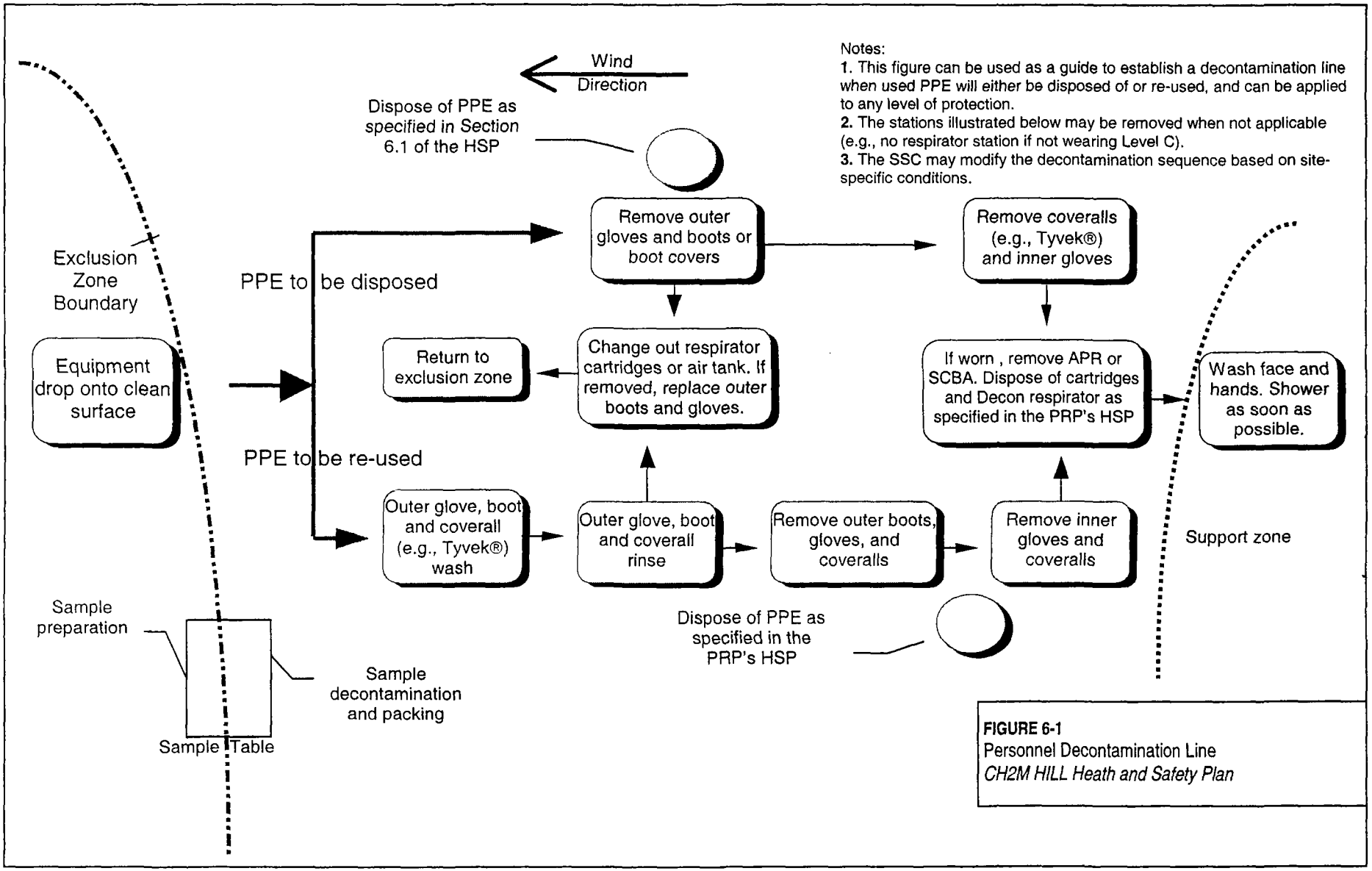


FIGURE 6-1
Personnel Decontamination Line
CH2M HILL Heath and Safety Plan

8. Site-Control Plan

8.1 Site-Control Procedures

(Reference CH2M HILL SOP HS-11, *Site Control)*

- The CH2M HILL employee providing site observation will attend all site safety briefings held by the PRP before starting field activities or as tasks and site conditions change.
- The CH2M HILL employee providing site observation will record their attendance at these safety briefings in a logbook and document the topics discussed.
- The establishment of support, decontamination, and exclusion zones will be denoted and abided by.
- Establish onsite communication consisting of the following:
  - -- Line-of-sight and hand signals
  - -- Air horn
  - -- Two-way radio or cellular telephone, if available
- Establish offsite communication.
- Establish and maintain the "buddy system."
- Initial air monitoring is conducted in an appropriate level of protection.
- The CH2MHILL employee providing site observation is to conduct periodic inspections of work practices to determine the effectiveness of this plan (refer to Sections 4 and 5). Deficiencies are to be noted, reported to the HSM, and corrected.

9. Emergency Response Plan

(Reference CH2M HILL, SOP HS-12, *Emergency Response*)

9.1 Pre-Emergency Planning

The SSC performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with CH2M HILL onsite parties, the facility, and local emergency-service providers, as appropriate.

- Review the facility emergency and contingency plans where applicable.
- Determine what onsite communication equipment is available (e.g., two-way radio, air horn).
- Determine what offsite communication equipment is needed (e.g., nearest telephone, cell phone).
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and hospital routes; communicate this information to onsite personnel.
- Review changed site conditions, onsite operations, and personnel availability in relation to emergency response procedures.
- Where appropriate and acceptable to the client, inform emergency room, ambulance, and emergency response teams of anticipated types of site emergencies.
- Inventory and check site emergency equipment, supplies, and potable water.
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases.
- Rehearse the emergency response plan before site activities begin, including the driving route to hospital.
- Brief new workers on the emergency response plan.

The SSC will evaluate emergency response actions and initiate appropriate follow-up actions.

9.2 Emergency Equipment and Supplies

The SSC should mark the locations of emergency equipment on the site map and post the map.

Emergency Equipment and Supplies	Location
20-lb (or two 10-lb) fire extinguisher (A, B, and C classes)	PRP's Heavy Equipment
First aid kit	Field Vehicle
Eye Wash	Field Vehicle
Potable water	Field Vehicle
Bloodborne-pathogen kit	Field Vehicle

9.3 Incident Response

Actions to be taken for fires, explosions, or chemical releases include the following:

- Evacuate the immediate work area.
- Notify appropriate response personnel.
- Account for all personnel at the designated assembly area(s).

9.4 Emergency Medical Treatment

The procedures listed below may also be applied to non-emergency incidents. Injuries and illnesses (including overexposure to contaminants) must be reported to Human Resources. If there is a question as to whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the CH2M HILL medical consultant. During non-emergencies, follow the procedures listed below, as appropriate.

- Notify the appropriate emergency response authorities listed in Section 9.8 (e.g., 911).
- The SCC will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Prevent further injury.
- Initiate first aid and CPR where feasible.
- Seek medical attention immediately.
- Perform decontamination where feasible; lifesaving and first aid or medical treatment take priority.
- Make certain that the injured person is accompanied to the emergency room.
- When contacting the medical consultant, state that the situation is a CH2M HILL matter, and give your name and telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken.
- Report incidents as outlined in Section 9.7.

9.5 Evacuation

- Evacuation routes and assembly areas (and alternative routes and assembly areas) are specified on the site map.
- Evacuation route(s) and assembly area(s) will be designated by the SSC before work begins.
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation.

- The SSC and a "buddy" will remain on the site after the site has been evacuated (if safe) to assist local responders and to advise them of the nature and location of the incident.
- The SSC will account for all personnel in the onsite assembly area.
- A designated person will account for personnel at alternate assembly area(s).
- The SSC will write up the incident as soon as possible after it occurs and will submit a report to the Corporate Director of Health and Safety.

9.6 Evacuation Signals

Signal	Meaning
Grasping throat with hand	Emergency- help me
Thumbs up	OK; understood
Grasping buddy's wrist	Leave area now
Continuous sounding of horn	Emergency; leave site now

9.7 Incident Notification and Reporting

- Upon any project incident (fire, spill, injury, near miss, death, etc.), immediately notify the PM and HSM. Call the emergency beeper number if the HSM is unavailable.
- For CH2M HILL work-related injuries or illnesses, contact the Human Resources administrator and assist them with the completion of an Incident Report Form (IRF). The IRF must be completed within 24 hours of incident.
- For CH2M HILL subcontractor incidents, complete the Subcontractor Accident/Illness Report Form and submit it to the HSM.
- Notify and submit reports to client as required in the contract.

9.8 Emergency Contacts

24-hour CH2M HILL Emergency Beeper – 888/444-1226

Medical Emergency—911

CH2M HILL Medical Consultant

Health Resources
Dr. Jerry H. Berke, M.D., M.P.H.
600 West Cummings Park Suite 3400
Woburn, MA 01801-6350

(781) 938-4653 or 1-800-350-4511
(After hours calls will be returned within 20 minutes)

Fire/Spill Emergency—911

Local Fire Dept: Hillsboro (217) 532-2345

Local Occupational Physician

See Hospital

Security & Police—911

Local Police: Hillsboro (217) 532-6120

Corporate Director Health and Safety

Name: Dave Waite/SEA
Phone: (425) 453-5005

24-hour emergency beeper: 1-888-444-1226

Utilities Emergency

Water: 1-800-344-7483
Gas: 1-800-344-7483
Electric: 1-800-344-7483

Health and Safety Manager (HSM)

Name: John Longo/NJO
Phone: (973) 316-9300

Site Safety Coordinator (SSC)

Name: Andy Sprinkle
Phone: (314) 421-0900

Regional Human Resources Department

Name: Cindy Bauder/WDC
Phone: (414) 272-2426

Project Manager

Name: Tim Biggs
Phone: (314) 421-0900

Corporate Human Resources Department

Name: Pete Hannon/COR
Phone: (303) 771-0900

Federal Express Dangerous Goods Shipping

Phone: 1-800-238-5355

CH2M HILL Emergency Number for Shipping Dangerous Goods

Phone: 1-800-255-3924

Worker's Compensation

Contact the Regional Human Resources Department to have an Incident Report Form (IRF) completed. After hours, contact Julie Zimmerman (303) 664-3304

Auto Claims

Rental: Carol Dietz/COR (303) 713-2757
CH2MHILL Owned: Zurich Insurance Company 1-800-987-3373

Federal Agency/Contact Name: Michael McAteer **Phone:** (312) 886-4663

Contact the Project Manager. Generally, the Project Manager will contact relevant government agencies.

Facility Alarms: N/A **Evacuation Assembly Area(s):** Field Vehicle

Facility/Site Evacuation Route(s): N/A

Hospital

Hospital Name/Address: Hillsboro Area Hospital, 1200 East Tremont Street Hillsboro, IL **Hospital Phone #:** (217) 532-6111

Directions to Hospital

From (S): Eagle Zinc Company, 218 Industrial Park, Hillsboro, IL

To (E) : Hillsboro Area Hospital, 1200 East Tremont Street, Hillsboro, IL

Directions

1: Travel South on County Road 1200E

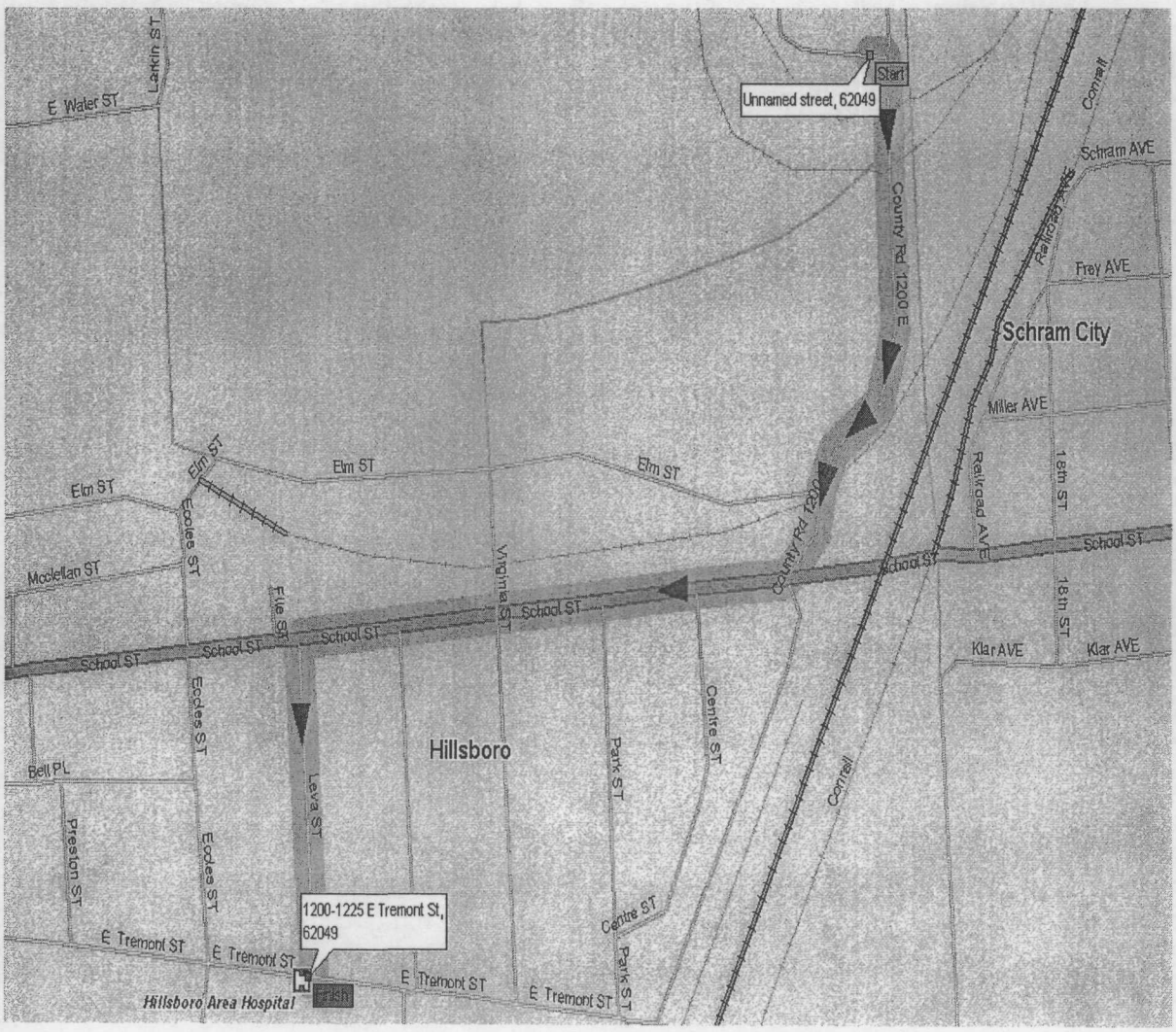
2. Turn West onto School St.

3. Turn South onto Leva St.

4. Hospital is located at the intersection of E. Tremont and Leva Streets

Estimated Distance: 1.0 miles

Estimated Time: 5 minutes



10. Approval

This site-specific *Health and Safety Plan* has been written for use by CH2M HILL only. CH2M HILL claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. This site-specific *Health and Safety Plan* is applicable to the site conditions, purposes, dates, and personnel specified only, and it must be amended if such conditions change.

10.1 Original Plan

Written By: Tim Biggs /STL Date: 11/20/2002

Approved By: Steve Beck/MKE Date: 11/21/2002

Steven J. Beck

10.2 Revisions

Revisions Made By: _____ Date: _____

Revisions to Plan:

Revisions Approved By: _____ Date: _____

11. Attachments

Attachment 1: Employee Signoff Form—Health and Safety Plan

Attachment 2: Project-Specific Chemical Product Hazard Communication Form

Attachment 3: Chemical-Specific Training Form

Attachment 4: Project Activity Self-Assessment Checklists

Attachment 1

Employee Signoff Form—Health and Safety Plan

CH2MHILL

EMPLOYEE SIGNOFF FORM

Health and Safety Plan

The CH2M HILL project employees and subcontractors listed below have been provided with a copy of this FSI, have read and understood it, and agree to abide by its provisions.

Project Name: **Project Number:**

EMPLOYEE NAME (Please print)	EMPLOYEE SIGNATURE	COMPANY	DATE

Attachment 2

Project-Specific Chemical Product Hazard Communication Form

Project-Specific Chemical Product Hazard Communication Form

This form must be completed prior to performing activities that expose personnel to hazardous chemicals products. Upon completion of this form, the SSC shall verify that training is provided on the hazards associated with these chemicals and the control measures to be used to prevent exposure to CH2M HILL and subcontractor personnel. Labeling and MSDS systems will also be explained.

Project Name: **Project Number:**

MSDSs will be maintained at the following location(s): Field Vehicle

Hazardous Chemical Products Inventory

Chemical	Quantity	Location	MSDS Available	Container labels	
				Identity	Hazard

Refer to SOP HS-05 *Hazard Communication* for more detailed information.

Attachment 3

Chemical-Specific Training Form

CH2MHILL

CHEMICAL-SPECIFIC TRAINING FORM

Location:	Project # :
HCC:	Trainer:

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

The HCC shall use the product MSDS to provide the following information concerning each of the products listed above.

☐ Physical and health hazards

☐ Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)

☐ Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants shall have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and CH2M HILL's written hazard communication program shall be made available for employee review in the facility/project hazard communication file.

Attachment 4

Project Activity Self-Assessment Checklists

H&S Self-Assessment Checklist - DRILLING

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees are potentially exposed to hazards associated with drilling operations (complete Sections 1 and 3), and/or 2) CH2M HILL oversight of a drilling subcontractor is required (complete entire checklist).

SSC/DSC may consult with drilling subcontractors when completing this checklist, but shall not direct the means and methods of drilling operations nor direct the details of corrective actions. Drilling subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the health and safety manager for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____

Date: _____

This specific checklist has been completed to:

☐ Evaluate CH2M HILL employee exposures to drilling hazards
☐ Evaluate a CH2M HILL subcontractor's compliance with drilling H&S requirements
Subcontractors Name: _____

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the drilling subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-35.

SECTION 1	Yes	No	N/A	N/O
PERSONNEL SAFE WORK PRACTICES (3.1)				
1. Only authorized personnel operating drill rig	☐	☐	☐	☐
2. Personnel cleared during rig startup	☐	☐	☐	☐
3. Personnel clear of rotating parts	☐	☐	☐	☐
4. Personnel not positioned under hoisted loads	☐	☐	☐	☐
5. Loose clothing and jewelry removed	☐	☐	☐	☐
6. Personnel instructed not to approach equipment that has become electrically energized	☐	☐	☐	☐
7. Smoking is prohibited around drilling operation	☐	☐	☐	☐
8. Personnel wearing appropriate PPE, per HSP/FSI	☐	☐	☐	☐

SECTION 2	Yes	No	N/A	N/O
GENERAL (3.2.1)				
9. Daily safety briefing/meeting conducted with crew	☐	☐	☐	☐
10. Daily inspection of drill rig and equipment conducted before use	☐	☐	☐	☐
DRILL RIG PLACEMENT (3.2.2)				
11. Location of underground utilities identified	☐	☐	☐	☐
12. Safe clearance distance maintained from overhead powerlines	☐	☐	☐	☐
13. Drilling pad established, when necessary	☐	☐	☐	☐
14. Drill rig leveled and stabilized	☐	☐	☐	☐
DRILL RIG TRAVEL (3.2.3)				
15. Rig shut down and mast lowered and secured prior to rig movement	☐	☐	☐	☐
16. Tools and equipment secured prior to rig movement	☐	☐	☐	☐
17. Only personnel seated in cab are riding on rig during movement	☐	☐	☐	☐
18. Safe clearance distance maintained while traveling under overhead powerlines	☐	☐	☐	☐
19. Backup alarm or spotter used when backing rig	☐	☐	☐	☐
DRILL RIG OPERATION (3.2.4)				
20. Kill switch clearly identified and operational	☐	☐	☐	☐
21. All machine guards are in place	☐	☐	☐	☐
22. Rig ropes not wrapped around body parts	☐	☐	☐	☐
23. Pressurized lines and hoses secured from whipping hazards	☐	☐	☐	☐
24. Drill operation stopped during inclement weather	☐	☐	☐	☐
25. Air monitoring conducted per HSP/FSI for hazardous atmospheres	☐	☐	☐	☐
26. Rig placed in neutral when operator not at controls	☐	☐	☐	☐
DRILL RIG MAINTENANCE (3.2.5)				
27. Defective components repaired immediately	☐	☐	☐	☐
28. Lockout/tagout procedures used prior to maintenance	☐	☐	☐	☐
29. Cathead in clean, sound condition	☐	☐	☐	☐
30. Drill rig ropes in clean, sound condition	☐	☐	☐	☐
31. Fall protection used for fall exposures of 6 feet or greater	☐	☐	☐	☐
32. Rig in neutral and augers stopped rotating before cleaning	☐	☐	☐	☐
33. Good housekeeping maintained on and around rig	☐	☐	☐	☐
DRILLING AT HAZARDOUS WASTE SITES (3.2.6)				
34. Waste disposed of according to HSP	☐	☐	☐	☐
35. Appropriate decontamination procedures being followed, per HSP	☐	☐	☐	☐

SECTION 3

Complete this section for all items checked "No" in Sections 1 or 2. Deficient items must be corrected in a timely manner.

Item No.	Corrective Action Planned/Taken	Date Corrected