CH2M HILL
SITE SAFETY PLAN FOR FIELD INVESTIGATIONS

I. GENERAL INFORMATION

CLIENT: EPA REM IV
JOB NO: W63340.QS
WA NUMBER: EPA5-SLM7.0
PROJECT MANAGER: Drew Diefendorf/GLO
SITE: Moss American
SITE LOCATION: Milwaukee, Wisconsin
PURPOSE OF FIELD VISIT(S):

- Collect 250 soil samples to a depth of 4 feet using a trailer mounted drill rig and split spoon soil sampler (190 onsite and 60 in other areas) (3 weeks)
- Collect 156 river sediment samples (at 3 locations in 26 cross sections at depths of 0 to 1 and 1 to 2 feet) (3 weeks)
- Collect an additional 76 center channel sediment samples at a depth of 0 to 1 foot.
- Collect an additional 25 sediment samples from river dredgings, flood plain deposits and background locations.
- Install and sample onsite groundwater monitoring wells (15-shallow, 5-intermediate, and 5-deep) (5 weeks)
- Collect 8 surface water samples (2 days)

DATE OF VISIT(S): August - October 1986
BACKGROUND INFORMATION: Complete _____ Preliminary X
INFORMATION AVAILABLE FROM: GLO (office)
OVERALL HAZARD SUMMARY: Serious _____ Moderate X
Low _____ Unknown _____

II. SITE CHARACTERISTICS

FACILITY DESCRIPTION

Former creosote treatment plant located in the NW part of the City of Milwaukee, on Brown Deer Road. The 88-acre site is generally flat with the Little Menomonee River running through the east end. The maximum record flow of this river is 360 cfs and there are extended periods of little or no flow. The site boundaries are roughly the Chicago and Northwestern RR and Brown Deer Road to the north, and the Wisconsin and Southern RR to the south. Surrounding area has gently rolling hills, with elevations ranging from 720 to 750 feet, msl.

The plant was in operation for 55 years and after its closing in 1976, all plant facilities were removed. Today, the western 23.3 acres are an automobile storage and loading area for the Chicago and Northwestern RR and the remaining 65 acres are a public park.

Principal Disposal Method (type and location):

Waste oil and creosote were collected in settling ponds or an oil separator before the waste water was discharged into the river sludges were disposed of on the site (U.S. EPA file reports). The original ground surface has been largely covered by 1 to 3 feet of clay and cinder fill. EPA estimates that 4,125 cubic yards of creosote and fuel oil sludges and contaminated soils are present on the site.

Features and Unusual Features (water supply, telephone, radio, power lines, gas lines, watermains, terrain, etc.):

Western one-third of the site is paved and used as an auto storage lot. The eastern half of the site is officially an unimproved public park.

Status (active, inactive, unknown): Inactive

History (worker or non-worker injury; complaints from public; previous agency action):

1921 - A wood preserving plant was established on the site by T.J. Moss Tie Company to preserve wooden railroad ties, poles and fence posts. Until 1971, spilled oil, creosote, and runoff were diverted to the Little Monomonee River.

1971 - Group of young people receive chemical burns from creosote-contaminated river sediments. 1,700 feet of the river near the site and two waste ponds are dredged. Water, sediment, and sludge sampling by U.S. EPA, Army Corps of Engineers, and Kerr-McGee. The dredged sediments were placed along the embankment or in a small landfill in the NE corner of the site.

1972-1973 - Additional 4,000 feet of the river are dredged and cleaned.

1976 - Treatment operations cease and buildings are dismantled.

1977 - River sediment and water sampling to U.S. EPA. Six soil borings completed by NEIC and U.S. EPA.

III. WASTE CHARACTERISTICS

WASTE TYPE(S)

Liquid X Solid X Sludge X Gas_____

CHARACTERISTIC(S)

Corrosive____ Ignitable X Radioactive____
Volatile X Toxic X Reactive____ Unknown___ Other (Name)___

IV. HAZARD EVALUATION

Overall Hazard Level

Wastes disposed of on the site are waste oil and creosote sludges from the treatment plant. Waste water from the settling ponds was discharged to the river. Creosote has been detected in the Little Menomonee River water and sediments from the site to the Menomonee River 5 miles downstream. Exposure may occur via skin contact with soils or waters or via inhalation of vapors or contaminated dusts.

A 1972 analysis of hexane and benzene extracts of a sludge sample taken from the site identified the following constituents: 2-methyl naphthalene, 1-methyl naphthalene, biphenyl, acenaphthene, dibenzofuran, fluorene, phenanthrene, carbazole, methyl anthracene (probable), anthraquinone, elemental sulfur, pyrene, fluoranthene, benzofluorene, a polynuclear N-hetero aromatic, benzophenanthrene, another polynuclear N-hetero aromatic, and three benzopyrene isomers.

These constituents are consistent with coal tar distillates which comprise creosote. The levels of contamination today are largely unknown, but results of 1973 and 1977 analysis show river sediments with up to 43,483 mg/kg and soil samples with up to 279,000 mg/kg solvent extractables. Detectable levels in soils were found down to depths of 15 feet below surface. Groundwater contamination (1977) was measured at up to 4,190 mg/l of solvent extractables. Phenol has been found in surface water at levels as high as 4 mg/l (1971) and in soils to 211 mg/kg (1977).

Physical Hazards

Creosote is flammable and has a flash point of 165°F to 185°F. Spark sources must not be present in the vicinity of active drill rigs.

Sampling the river or river banks presents hazards of slips and falls. If sediments must be collected from water depths greater than 24 inches, water safety must be considered.

Chemical Hazards

Creosote is a coal tar distillate composed of a complex mixture of phenol, cresols, pyrol, pyridine, and other aromatic compounds. Workers exposed to creosote in wood preserving plants have been reported to develop skin burns. Fair skinned workers tend to be more susceptible than dark skinned workers. Other skin effects are burning and itching, redness, and, in isolated cases, skin cancer. Creosote is a strong eye irritant. Creosote is readily absorbed through the skin and is then excreted via urine and by way of the lungs. It may impart a "smoky" appearance to the urine. Effects of creosote may include salivation, vomiting, respiratory difficulties, dizziness, headache, loss of pupillary reflexes, hypothermia, cyanosis, and mild convulsions. Fatalities have occurred 14 to 36 hours following ingestion of 7 grams by adults. A creosote odor can be detected in water samples with as little as 0.125 mg/l creosote.

A TLV for creosote has not been established. However, creosote is composed of many of the same constituents as coal tar pitch volatiles, for which a TLV has been established. The coal tar pitch volatiles TLV is 0.2 mg/m^3 and has been recommended to prevent an increase in the incidence of lung and other tumors. Many of the constituents of creosote are recognized human carcinogens, particularly the polycyclic hydrocarbons.

Phenol is one of many aromatic compounds present in creosote. It is readily absorbed through intact skins and is excreted in the urine, expired breath, and feces. The TLV for phenol is 5 ppm and it carries a "skin" designation which means that skin should be protected from 8 hour average air concentrations above this level. The odor threshold of 0.18 mg/m^3 is much lower than the TLV of 19 mg/l. This means that the perception of a phenol odor does not necessarily mean an overexposure and that this warning property makes the use of Level C respiratory protection an appropriate choice when TLV's may be exceeded.

Hazards Posed by Site Activities

Aged creosote and waste oils are not very volatile, so vapor emissions from the undisturbed site are unlikely to pose a significant threat. However, disturbance of the soil may expose creosote and oil which may still retain some volatile constituents. Visible dust emissions from the site could pose an exposure hazard.

V. PROCEDURES

SITE ORGANIZATION

Map/Sketch Attached Yes Site Secured No
Perimeter Identified Yes Zone(s) of Contamination Identified Yes

SITE PERSONNEL

Team Organization

Team Member	Responsibility
Drew Diefendorf	Project Manager--restricted to areas open to the general public
Stuart Grubb	Team leader
Randy Videkovich	SSC

Note: SSC must complete form 533 each week and mail it to D. LaBar/DEN.

Level of Protection:

A _____ B _____ C X D X

Modifications:

For site survey (no soil disturbance): Steel toe steel shank neoprene boots, washable clothing, safety glasses. For drilling and sampling: Add tyvek coveralls, butyl or neoprene outer gloves with surgical inner gloves, hard hat (within 20 feet of drill rig). Carry a full face NIOSH/MSHA approved air purifying respirator with organic vapor/particulate cartridges. Tape boots and gloves to coveralls. For river sampling: Add rubber waders. If water is deeper than 24 inches, wear a Coast Guard approved life vest.

Safety Equipment and Materials:

First aid kit, eye wash, stretcher or blanket, clean water, paper cups, 20 lb. ABC fire extinguisher, outdoor thermometers, wind flag. CH2M HILL personnel to wear TLD badge.

Monitoring:

- Explosimeter/O_2 meter: Use during drilling groundwater monitoring wells.

  0-20% LEL--continue with caution

  20-50% LEL--proceed with caution, but be prepared to shut down and evacuate

  Greater than 50% LEL--Shut down, evacuate, call fire department

- Rad-mini--Use during initial site reconnaisance and during groundwater monitoring well drilling.

  Background--continue

  Above background to 0.3/mR/3 hr--find source location and perimeter of elevated readings. Call EPA

  Above 0.3 mR/hr--Stay outside this zone, identify perimeter and call EPA

- HNU with 10.2eV lamp: Record breathing zone levels every 30 minutes during soil disturbance activities and every 60 minutes otherwise.

  Background to 0.4 ppm above background: Level D

  0.4 ppm to 5 ppm above background for 5 minutes or longer: Level C

  Greater than 5 ppm above background for 10 minutes or longer: Evacuate until levels subside to less than 5 ppm above background.

SITE ENTRY PROCEDURES

- Locate nearest available telephone.
- Confirm and post emergency telephone numbers and route to hospital.
- Designate at least one vehicle for emergency use.
- Determine wind direction, establish hotline and set up decontamination facilities.
- If temperatures are expected to exceed 75°F, set up a shaded rest area.

WORK LIMITATIONS (Time of day, etc.)

- No eating, drinking, or smoking onsite.
- No contact lenses onsite.
- No facial hair that would interfere with respirator fit.
- Buddy system at all times in exclusion zone.
- CH2M HILL employees to wear TLD badge at all times when on or near the site.
- Schedule a beverage break every 90 minutes when temperatures exceed 75°F (for Level C) or 80°F (Level D).

DECONTAMINATION PROCEDURES

Personnel: Wash boots and outer gloves in TSP and water. Remove outer gloves. Remove tyveks. Remove respirator (if worn). Remove inner gloves. Wash hands and face with soap and water.

Sampling equipment: Follow procedures in QAPP.

Samples: Follow procedures in QAPP.

Heavy equipment: Steam clean vehicles and drill rigs to remove visible contamination before equipment leaves the site.

Please Note: It is the responsibility of the Site Safety Coordinator to make sure that all pieces of equipment coming offsite are properly decontaminated according to the procedure outlined above.

Documentation of decontamination must be made in the field log notebook that will then become part of the permanent project file. A suitable tag is to be placed on each piece of decontaminated CH2M HILL equipment (or group of equipment, such as a bag of hand tools), stating the date of decontamination and initialed by the SSC.

DISPOSAL OF MATERIALS GENERATED ON SITE

Follow procedures approved by EPA in work plan and QAPP.

VI. EMERGENCY INFORMATION:

If an injury occurs, take the following steps:

- o Prevent further injury and notify SSC and TL.
- o Initiate first aid and get medical attention for the injured immediately.
- o Depending upon the type and severity of the injury, call the occupational physician and/or medical consultant.
- o Notify the Health and Safety Manager.
- o Notify the injured person's personnel office.
- o Prepare an incident report. The SSC is responsible for ensuring its preparation and submittal to the Health and Safety Director and CH2M HILL corporate personnel office within 48 hours.
- o The SSC will assume charge during a medical emergency.

LOCAL

Ambulance: 414/347-2323

Hospital: 414/251-1010

Poison Control Center: 414/931-4114

Police/Sheriff: 414/765-2323

Fire: 414/347-2323

Electric Co.: 414/277-3333

Gas Co.: 414/273-8500

Water Co.: 414/278-3710

Airport: 414/747-5360

Explosives Unit: 414/765-2323

EMERGENCY ROUTES

HOSPITAL

Community Memorial Hospital in Menomonee Falls. Take Brown Deer Road west to Town Hall Road south. Hospital is 1 mile south of Brown Deer Road on Town Hall Road.

EMERGENCY CONTACTS

1. Dr. Raymond Harbison, Ph.D. (University of Arkansas, Medical)
   Phone: 501-661-5766 or 661-5767
   501-370-8263 (24 hr)

2. Mary Anne Chillingworth/WDC, Health and Safety Manager
   Phone: 703-471-1441 (O)
   703-476-0882 (H)

3. Donna J. LaBar/DEN, Assistant Health and Safety Manager
   Phone: 303-771-0900 (O)
   303-693-0636 (H)

4. Occupational Physician
   Name: Milwaukee Industrial Clinic
   Phone: 414/931-7600
   Address: 500 North 19th Street
   Milwaukee, Wisconsin 53233

   Team members under his care:

   Drew Diefendorf
   Stuart Grubb
   Randy Videkovich

5. Project Manager
   Name: Drew Diefendorf/CH2M HILL-GLO
   Phone: 414/272-2426

6. Client Contact
   Name: Wendy Ruddy/U.S. EPA Region V
   Phone: 312/886-7571

7. Regional Manager
   Name: Mike Jury/GLO
   Phone: 414/272-2426

8. Personnel Office--CH2M HILL

   Name: Marty Oldham/GLO
   Phone: 414/272-2426

If an injury occurs, notify the injured person's personnel office as soon as possible after obtaining medical attention for the injured. Notification MUST be made within 24 hours of the injury.

o CH2M HILL Director of Health and Safety

   Name: John Hochstrasser/WDC
   Phone: 703/472-1441
   Address: 625 Herndon Parkway
   Herndon, VA 22070

o CH2M HILL Corporate Personnel Office

   Name: Marty Oldham/GLO
   Phone: 414/272-2426
   Address: 310 West Wisconsin Avenue, Suite 700
   Milwaukee, WI 53202

VII. PLAN APPROVAL

This site safety plan has been written for the use of CH2M HILL, its employees and subcontractors. CH2M HILL claims no responsibility for its use by others. The plan is written for the specific site conditions, purposes, dates and personnel specified and must be amended if these conditions change.

PLAN PREPARED BY: Mary Anne Chillingworth Date: 7/7/86

APPROVED BY: _____ Date: _____

Distribution of approved plan:

Site manager (responsible for distribution to team members and client)
Health and Safety Manager
Assistant Health and Safety Manager

WDM23/055
GLT595/15