

**HEALTH, SAFETY AND
CONTINGENCY PLAN
ALTERNATIVE-SPECIFIC
REMEDIAL INVESTIGATION**

**Tecumseh Products Company
Sheboygan, Wisconsin**

October 1989



**BLASLAND & BOUCK ENGINEERS, P.C.
BLASLAND, BOUCK & LEE**
ENGINEERS & GEOSCIENTISTS

**SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE-SPECIFIC REMEDIAL INVESTIGATION**

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Sheboygan River and Harbor
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October 1989

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HEALTH, SAFETY AND CONTINGENCY PLAN

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1.0 INTRODUCTION

1.1 General

This Health, Safety and Contingency Plan (HSCP) is based in part on an earlier Health and Safety Plan produced by Camp Dresser & McKee, Inc. (CDM). The CDM document was prepared for remedial investigations to be performed at Sheboygan River and Harbor by E.P.A. or its subcontractors. A HSCP dated April 1987, was prepared by Blasland & Bouck Engineers, P.C., as part of a Remedial Investigation conducted under contract with Tecumseh Products Company. *This document supersedes* the April 1987 document.

1.2 Objectives

Procedures are specified in this plan for the Alternative Specific Remedial Investigation (ASRI) at the Sheboygan River and Harbor, including pilot study activities conducted on the upper River near Sheboygan Falls, Wisconsin. This plan includes health and safety protocols required for all work conducted at the site, with specific directives for various scheduled activities. It has been designed to meet the following objectives:

- Evaluation of the risks associated with each operation conducted.
- Identification of key personnel and alternates responsible for both site safety and response operations.
- Recommendation of appropriate levels of protection to be utilized by personnel during site work.
- Presentation of a Contingency Plan, which encompasses evacuation procedures, emergency communications (internal and external), and procedures to be followed in the event of a flood or emergency.
- Location of, and arrangements with, the nearest medical (and mobile medical) units for emergency medical care for injuries or illness.

This document will be periodically reviewed to ensure that it is current and technically correct.

1.3 Background

The Sheboygan Harbor is a diversified cargo port located on the western shore of Lake Michigan, approximately 50 miles north of Milwaukee. The Harbor is approximately 96 acres and is formed by two breakwalls projecting into Lake Michigan. The Sheboygan River discharges to Lake Michigan through the Harbor. The River has a mean annual discharge of about 250 cfs and drains a watershed of 432 square miles. The Sheboygan River and Harbor Superfund Site consists of the Sheboygan Harbor and the first 13 miles of the Sheboygan River, as shown in Figure 1. This site was placed on the National Priorities List (NPL) under the Comprehensive Environmental Response and Liability Act (CERCLA) in May 1986.

Prior to 1970, Harbor sediments were dredged periodically by the Army Corps of Engineers and were disposed of in the offshore waters of Lake Michigan. Investigations of Harbor sediments have shown that sediments in the Inner Harbor are contaminated with PCBs and various heavy metals. River sediments have also been found to be contaminated with PCBs and, to a limited extent, heavy metals. Ranges of PCB and heavy metal concentrations found in both River and Harbor sediments are given in Table 1. The Wisconsin Department of Natural Resources (WDNR) has named the lower Sheboygan River as an area of concern regarding human consumption of gamefish and waterfowl due to the presence of PCBs.

The physical, chemical and toxicological properties of several PCB Aroclors and heavy metals are presented in Attachment 1. This attachment also lists recommended personnel protective equipment, first aid procedures and emergency material handling procedures.

In general, there are three potential routes by which workers could be exposed to contaminants:

- o Dermal (skin) contact
- o Ingestion
- o Inhalation

The first route is minimized through the use of personal protective clothing (e.g., gloves, boots, Tyvek suits). The second route is minimized by avoiding hand-to-mouth contact, and by requiring workers to wash themselves prior to eating or leaving the site. The third route is not considered significant at this site due to the nature of the contaminants. PCBs and heavy metals both have a strong affinity for particles and are generally non-volatile. Moreover, the release of contaminated particles as a dry dust is highly unlikely as the materials being removed are *moist or wet sediments*. *Dust suppression (water spray) will be employed in those instances where dry sediments could become airborne as a dust.* Therefore, respiratory protection is not required.

1.4 Health and Safety Responsibilities

Project organization charts are presented in Figures 2 and 3. As shown, Richard P. DiFiore will continue his role as Safety Coordinator (SC) for this project. He will also have responsibilities related to environmental oversight

of the project. In addition, there are two Field Managers involved in this project: one will oversee construction and filling of the Pilot CTF, and the other will oversee sediment removal, armoring, and handling activities. Each Field Manager will share responsibility for implementing and monitoring site health and safety-related activities with the Safety Coordinator.

The Safety Coordinator (SC) is responsible for the documentation of all safety, decontamination, environmental monitoring and field medical monitoring activities. The SC is also responsible for ensuring that all field personnel comply with the provisions of this HSCP. The SC or his designated representative has the authority to stop site work in the event of safety violations, or to require that an upgraded level of personnel protection *be employed*. The SC, in conjunction with the EPA and WDNR, has the authority to stop any operation that could threaten the health or safety of field personnel or the surrounding populace.

1.5 Occupational Safety and Health Administration Requirements (OSHA)

Section 126(e) of the 1986 Superfund Amendments and Reauthorization Act (SARA) requires that employee protection regulations be issued by the Occupational Safety and Health Administration (OSHA). OSHA has issued rules for workers who will be engaged in hazardous waste operations entitled Hazardous Waste Operations and Emergency Response Final Rule (29 CFR 1910).

This rule regulates the health and safety of employees involved in investigation and cleanup activities at CERCLA remedial sites and was finalized on March 6, 1989. It will replace the interim Final Rule dated

finalized on March 6, 1989. It will replace the interim Final Rule dated December 1986.

As in the Interim Final Rule, the Final Rule (FR) requires that all general site workers who handle materials containing hazardous substances receive a minimum of 40 hours of initial off-site training and a minimum of 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. However, the FR allows for less stringent training requirements for workers on site only occasionally for a specific limited task, and who are unlikely to be exposed over permissible exposure limits, or workers regularly on site who work in areas which have been monitored and fully characterized as under permissible exposure limits. These workers are required to receive a minimum of 24 hours of initial off-site training and a minimum of 1 day of actual field experience. Under the FR, supervisors and managers are still required to receive at least 8 additional hours of specialized training.

Conversations with personnel in OSHA's Standards Office indicate that compliance with the FR requirements is appropriate for current hazardous waste activities, even though the FR is not technically in effect until March 6, 1990.

A listing of personnel who may be engaged in investigative work at this site is given in Table 2. Each of the project personnel listed has had the formal training as required. In addition, many of these personnel have many years of experience at hazardous materials sites. This on-site experience augments the formal training previously obtained to meet the new OSHA requirements. Mr. DiFiore has been the Site Safety Coordinator for this Superfund site (Sheboygan) for over two years. He has also been

responsible for the health and safety of sampling personnel at numerous other hazardous waste sites.

A listing of persons engaged in construction work at this site will be presented when available.

1.6 Scope of Work

This HSCP addresses field work performed as part of the Alternative-Specific Remedial Investigation (ASRI). Tasks to be performed are described in detail in the ASRI Work Plan/QAPP dated August 1989. These tasks fall into two broad categories: sampling activities and construction activities. These are outlined below.

Sampling activities are those tasks or subtasks which involve the collection of soil, sediment, water, or fish samples from various areas of the site. Health and safety procedures for these activities, *as discussed in Section 2*, are essentially the same as those employed during the Remedial Investigation.

Construction activities encompass tasks which are related to on-site Pilot Study activities. These activities include:

- o preparation of the pilot confined treatment facility (CTF) site;
- o construction of the pilot CTF and related structures;
- o construction of access roads and loading facilities;
- o removal and transport of sediments;
- o placement of sediments into the pilot CTF;
- o armoring of sediments in place; and
- o cleaning/decontamination of equipment.

The HSCP directives are designed to protect field personnel against direct skin contact with or ingestion of contaminants that are present in the River and Harbor sediments. No respiratory protection is necessary for this site since the contaminants are generally non-volatile.

2.0 FIELD DIRECTIVES

2.1 Work Zones

The Sheboygan River from Sheboygan Falls Dam to and including, the Harbor is designated as a "site" under CERCLA or "Superfund" (see Figure 1). This defines the site limits for sampling purposes. In contrast, all Pilot Study activities will be restricted to a portion of the site which is referred to as the "Upper River." As shown in Figure 4, this area includes the River from the Tecumseh plant to just beyond the upper Kohler Dam (River Bend). It should be noted that much of the site is not restricted from public access or use.

Property owned by the Tecumseh Products Company is located at the western end of the Upper River area. The pilot CTF will be located on this property, with access restricted by means of fencing and posted signs. This area is hereafter referred to as the "pilot CTF site." A decontamination area designated for cleaning/decontaminating construction equipment and field trailers will also be located at the pilot CTF site.

Access points, located in Rochester Park and on private property in Kohler, WI, will be established to facilitate access to the River. Temporary fencing and warning signs will be employed at each area to restrict public access.

2.2 General Work Rules

- o Persons involved in field activities are required to attend a safety meeting, read the HSCP and sign the Site Personnel Protection and

Safety Evaluation form attesting to this, prior to beginning work at the site. All personnel entering or exiting the pilot CTF site must indicate this on the Personnel Sign-In Sheet presented in Attachment 2.

- o Field work will only be conducted during daylight hours unless adequate artificial lighting is provided. Sampling and construction personnel will work in two-person teams at all times and, when working over water, are required to wear U.S. Coast Guard (U.S.C.G.) - approved flotation devices.
- o Some types of work (both sampling and construction activities) may be performed from barges and whalers or flat-bottom boats. Equipment and procedures to be used in sampling are discussed in the ASRI Work Plan and Sampling and Analysis Plan. Specific construction equipment will be specified by the contractor in conjunction with Blasland & Bouck Engineers, P.C.
- o No eating, drinking or smoking will be permitted when contact with potentially contaminated sediments could occur.
- o All personnel shall be knowledgeable in the use of the first aid equipment outlined in Attachment 3. Personnel will be advised of the precautions to be taken against sunburn, heat stroke, frostbite, and hypothermia.
- o *Subcontractors engaged in construction activities shall comply with:*
 - a) *OSHA requirements specified in Safety and Health Regulations for Construction (29 CFR 1926), as applicable, and b) all state and local codes regarding the safety and protection of persons employed*

in construction and demolition work.

2.2.1 Non-Exposure Activities

Several of the site activities which do not involve the handling or removal of contaminated material have low associated hazards for occupational exposure. Activities in this category include:

- o clearing and grubbing of the pilot CTF site;
- o grading of the pilot CTF site;
- o construction of access roads and access points; and
- o construction of the pilot CTF and associated structures (prior to transport of sediments to the site).

While the above activities do not involve significant exposure risks, various physical hazards do exist. General hazards associated with these activities include the following:

- o personnel slipping, tripping, and falling as a result of improperly stored equipment and materials;
- o puncture wounds and lacerations from sharp edges of power and hand tools;
- o personnel being struck by equipment, tools, and vehicles;
- o eye injuries from flying particles and protruding objects;
- o burns from heating and welding equipment;
- o injuries to feet from falling objects, rolling heavy equipment, or sharp objects;
- o back and other muscle injuries or strains from improper or excessive lifting;
- o head injuries resulting from improperly secured overhead equipment; and
- o electrical shock from electrical equipment.

To minimize the possibility of such injuries, the following general precautions will be taken:

- o all hand and power tools will be maintained in a safe condition;
- o safety guards will be kept in place during use;
- o power tools will be double-insulated and/or properly grounded;
- o walkways will be kept clear of equipment, vegetation, excavated material, or other obstructions;
- o proper work gloves will be provided and used when the possibility of burns, lacerations, or other injury exists;
- o hard hats, safety glasses with side shields, and steel-toed boots will be worn;
- o employees exposed to vehicular traffic will wear warning vests;
- o employees will observe proper lifting techniques and obey sensible lifting limits; and
- o heavy equipment will be equipped with stabilizers to prevent rollovers.

2.2.2 Exposure Activities

Certain construction activities will involve potential exposure to PCB-contaminated sediments. These activities and the associated risks are presented below:

A. Sediment Removal

Based on reported concentrations of PCBs, the excavation of sediments from the River will generate a potential risk of exposure to workers. Use of mechanical equipment for removal will reduce the potential of worker contact with the sediments.

B. Sediment Transport

Transport operations present a minimal risk of exposure to personnel since sediments will be transported (via truck or barge) in sealed containers.

C. Decontamination

Potential exposure for workers conducting equipment decontamination will vary depending on weather conditions (such as wind) contaminant concentration, the condition of the equipment (i.e., dry or wet), and amount of contaminated material to be removed.

D. Sediment Armoring

Armoring activities will present a minimal risk of exposure since sediments will be anchored in place (under water). Contact with sediments during these activities should be limited.

E. Filling the CTF

Unloading of the sediments from the transport containers into the CTF will present a potential risk of exposure.

Workers engaged in those activities designated A, C, and E will be required to wear the additional protective gear as described in Section 2.4. The basic level of protective gear will be required for personnel involved in transport (B) or armoring (D) activities.

In general, workers are not allowed to eat, drink, or smoke while engaged in sediment handling activities. Workers exposed to potentially contaminated materials must remove their outer protective wear and wash their hands with soap and water prior to eating, drinking, or smoking.

2.3 Public Exposure

The potential for exposure of the public to contaminants will be minimal since PCB-contaminated sediments will be contained within the confines of

each work area, or within sealed containers. Also, the non-volatile nature of PCBs, as well as the saturated condition of the sediments, make the magnitude of off-site airborne exposure extremely small. At all access points, and at the pilot CTF site, the potential for contaminant release will be unlikely due to: 1) material handling procedures which are designed to minimize spills, *and 2) restricted access.*

The activities which have a potential for public exposure are described below:

- o Potential for public exposure from the transportation of sediments from the access sites to the CTF is minimal. Contaminated material will be transported in sealed containers either on covered trucks or on barges. Public exposure is possible only if the truck or barge is involved in an accident or if the container holding the sediments fails. The possibility of exposure as a result of an accident would be mitigated by the contingency procedures presented in Section 3.0.
- o Removal and armoring of sediments in the River also represents a minor risk for public exposure to contaminants. The Upper River is not frequented by the public *especially during cold weather. The River* is accessible to a limited extent at Rochester Park. *During sediment removal and armoring activities, access to the River at Rochester Park will be impeded by fencing surrounding the three access areas located there.* Access to the remainder of the Upper River is only possible through privately-owned land. *Consequently, few if any people are expected to be on or near this part of the*

River. Furthermore, work areas will have silt curtains erected entirely around *them* to control the release of sediments downstream. Access to the excavation *and armoring* sites will be physically limited by the silt curtains.

Other activities, including decontamination and filling the CTF, should not potentially expose the public since these activities will be performed in restricted areas.

2.4 Required Protective Equipment

2.4.1 Non Exposure Activities

Some of the activities associated with this project do not involve exposure to contaminated sediments. These were described in Section 2.2.1. Workers performing these tasks will be required to observe the general work rules described in Section 2.2. Personal protective gear for these includes hard hats, safety glasses, steel-toed boots, and work gloves. Hard hats are required when working in the presence of overhead machinery or obstructions.

2.4.2 Exposure Activities

The primary route for PCB exposure is via dermal contact with contaminated sediments. Consequently, a basic level of personal protection is required for work activities which could result in worker contact with potentially contaminated sediments. The basic protective equipment is as follows:

1. Tyvek *coveralls* or waterproof clothing,
2. Hardhats (when working near construction equipment),

3. Steel-toed boots with waterproof boot covers, and
4. Disposable, waterproof gloves.

Additionally, all personnel working over water will wear U.S.C.G.-approved flotation devices.

The greatest potential for PCB exposure exists for those workers engaged in the following:

1. Sediment removal;
2. Decontamination of equipment;
3. Filling of the CTF; and
4. Cleanup of spills or leaks.

Workers engaged in these activities shall wear the following equipment (in addition to that specified above) to prevent and/or minimize contact with the sediments:

- o eye protection (splash guard or goggles);
- o Poly-coated Tyvek coveralls;

In the event that an upgraded level of protection is required by the Safety Coordinator, the following equipment will be considered to further reduce dermal contact:

- o *coveralls equipped with hoods;*
- o *Saran-coated Tyvek coveralls (Saranac^R);*
- o *face shields; and*
- o *dust masks.*

The first three items are appropriate where workers are directly in contact with sediments over a substantial portion of their bodies, or where splattering is a concern. The fourth item may be appropriate for

those instances where sediments have dried and could become airborne as dust.

2.5 Cleaning Procedures

An equipment cleaning area will be set up at the location of the CTF and each access area for performing decontamination. Cleaning will be performed for all reusable equipment which directly contacts potentially contaminated sediments. Cleaning of large equipment (boats, *clamshells, etc.*) and small reusable equipment (*tools, etc.*) will be performed at the location of the CTF or on the geomembrane at each respective access area. Cleaning will be accomplished using steam and/or by manually washing. After cleaning, each piece of equipment will be inspected by the foreman and operator for residual sediments. Cleaning will be repeated, as necessary, until all residual sediments are removed. Wash/rinse water will be collected, treated (as necessary), analyzed for PCBs, and if acceptable, discharged to the Sheboygan River *in accordance with discharge limits established by the WDNR.*

In addition, equipment seats will be covered with plastic or vinyl. *These shall be removed and properly disposed prior to removal of the equipment from the site.*

All water, *soil*, and sediment sampling equipment will be cleaned prior to use and between samples using the following procedure:

1. Potable water rinse *with brushing or scrubbing to remove sediments and soils;*
2. Acetone or hexane rinse/swabbing; and

3. Controlled water rinse.

Rinse water from the first step will be discharged *at the sampling site, as was done during the Remedial Investigation*. Waste hexane/acetone and water from steps 2 and 3 will be captured and disposed of or treated as contaminated materials. Solids (e.g. disposable gloves and other disposable equipment) resulting from sampling activities will be placed in plastic bags. These bags will be transferred into *larger containers* and transported to a licensed disposal facility.

2.6 Health Monitoring

Medical surveillance is provided for employees as required by Occupational Safety and Health Standards (OSHA) regulations, 29CFR, Part 1910. In addition, during work conducted in the winter months, caution will be exercised to avoid hypothermia and frostbite. In the summer months, if temperatures rise above 70°F, personnel will exercise caution to avoid heat stress or sunburn.

2.7 Personal Clothing and Gear

In general, much of the work involving contaminated materials will be done using heavy equipment (backhoes, clamshells, cranes, etc.). This reduces the potential for contact between workers and contaminated sediments.

A worker shower/locker trailer will be located at the CTF site *and at Area No. 1* for the workers to don, store, and remove protective equipment. *The specific locations of these two trailers has been provided separately. As shown in Attachment 4, each* trailer will be provided with the following:

- o "Dirty" change room, adjacent to the CTF site, to put on outer protective garments (boots, gloves, Tyvek suits, goggles, etc.)
- o "Clean" change room with lockers for storage of personnel belongings and street clothes (if necessary)
- o Showers

No eating will be allowed in *these* trailers. *Portable eye-wash stations will be available at each trailer and at each active access area.* Toilets will be available separately.

Exit from *each* work area must be made by first passing through the shower/locker trailer. *Workers at the CTF site must pass through the CTF trailer, while workers at Access Area No. 1 must pass through the trailer there. Workers at Access Area No. 2 and 3 will be transported upstream (via boat or barge) to Access Area No. 1 for use of the trailer there.* Prior to entering the trailer, personnel will remove most sediments and mud from non-disposable gear (*e.g., boots, gloves*) at the decontamination area. A water wash will be sufficient to remove the majority of contamination. *Generally, soiled outer garments will be removed outside the trailer, so as to minimize the quantity of sediments brought into the trailer.*

Disposable *gloves and coveralls* will be *placed directly in plastic bags* for disposal. (*Coveralls with no visible signs of contamination may be reused, if appropriate.*) If other protective clothing is deemed contaminated, the Safety Coordinator (SC) may decide to dispose of, rather than decontaminate these materials. Personnel, if directly exposed to contaminants, will use the shower facilities before changing into their street clothes at the end of their work shift. All *non-disposable* outer garments will be left in the change facility. Except for moving between the various access points and

the pilot CTF site, outer garments will not be transported outside the project area.

If access to sediment areas downstream of Rochester Park (within the village of Kohler) is granted, then additional trailers will be employed during removal/armoring operations at Access Area Nos. 4, 5, and 6 (see Figure 4). A trailer identical to the one employed at Area No. 1 will be installed for armoring/removal activities at each of these locations. Trailers may be relocated from one area to another if the construction schedule permits.

3.0 CONTINGENCY PLAN

3.1 General

The following Contingency Plan has been developed to include instruction and procedures for emergency vehicular access, evacuation procedures for personnel, methods of containing a fire and medical emergencies. All extraordinary conditions that require concise and timely action must be dealt with in a manner that minimizes the health and safety risks to the immediate site personnel and the general public.

3.2 General Response Considerations

All on-site personnel shall be familiar with the Contingency Plan described herein. This section will be posted in the field office and each employee will be given a copy prior to beginning work at this site.

The Sheboygan River and Harbor site is not a "typical" Superfund site in that it continues to be utilized as a recreational facility by the general public. Due to the nature of this "site," the emergencies or extraordinary conditions that may arise are more than likely limited to personnel accidents requiring first aid, exposure to contaminated sediments, potential fire near mechanical equipment, and flooding. The following procedures shall be implemented in the event of an emergency:

- o First aid or other appropriate initial action will be administered by those closest to the accident/event. This assistance will be coordinated by the ranking individual on-site and will be conducted in a manner so that those rendering assistance are not placed in a situation of unacceptable risk. The primary concern is to avoid placing a greater number of workers in jeopardy.
- o Employees shall report all accidents and unusual events to the Safety Coordinator (SC) and/or the Field Managers.

- o The SC and other on site personnel are responsible for conducting the emergency response in an efficient, rapid and safe manner. The SC will decide if off-site assistance and/or medical treatment is required and shall be responsible for alerting off-site authorities and arranging for their assistance.
- o The SC will provide, to the above personnel, an Incident Report which includes the following:
 - 1. A description of the emergency (including date, time and duration)
 - 2. Date, time, and name of all persons/agencies notified and their response
 - 3. A description of corrective actions implemented or other resolution of the incident
- o All workers on-site are responsible for conducting themselves in a mature, calm manner in the event of an accident/unusual event. All personnel must conduct themselves in a manner to avoid spreading the danger to themselves and to surrounding workers.

3.3 Responsibilities

The SC or a designated substitute shall have responsibility for directing response activities in the event of an emergency. He or she will:

1. Assess the situation
2. Determine required response measures
3. Notify appropriate response teams
4. Determine and direct on-site personnel during the emergency

The SC or substitute shall coordinate the response activities of on-site personnel with those of public agencies.

3.4 Public Response Agencies

A list of public response agencies to be contacted and who may, depending on the nature of the situation, assume authority for emergency

response is included as Attachment 4. This attachment presents local emergency numbers, including local hospitals, (which include poison control centers), the local health department, ambulance service, fire and police departments and others. Contacts at WDNR, EPA, and Blasland & Bouck are also listed. In addition, nationwide hotline numbers provided by the EPA for emergency assistance are listed. These phone lists should be retained by all field personnel and posted by the phone in all field trailers.

There are two hospitals located in the City of Sheboygan, as shown on Figure 5. The routes to these two hospitals have been driven by the SC. The SC and/or Field Managers will provide directions and/or maps to these facilities to all field personnel.

Prior to the initiation of work which involves sediment handling, we will notify the local police and fire departments. This notification will take the form of a letter describing both on-site and off-site (transport) activities. If requested, a briefing will be held to further explain the type of activities and equipment which are associated with this project. Emergency procedures will also be discussed.

3.5 Accidents and Non-Routine Events

Several types of emergencies are outlined in the following subsections. These are not intended to cover all potential situations, and the corresponding response procedures should be followed using common sense. Every accident is a unique event that must be dealt with by trained personnel working in a calm, controlled manner. In the event of an accident/unusual event, the prime consideration is to provide the appropriate

initial response to assist those in jeopardy without placing additional personnel at an unnecessary risk. Employees shall be instructed to report all injuries and illness to the SC.

In extraordinary circumstances, emergency evacuation of the site may be necessary. Fires involving spilled fuels and flooding are two situations which would warrant evacuation. Workers will be notified of the need to evacuate either verbally or by signalling with an air horn. If the situation is deemed an emergency, workers will be instructed to leave the site immediately, using the closest available evacuation route (see Figure 4). Otherwise, workers will be expected to go through normal decontamination procedures before leaving the site. In either case, workers will be instructed to rendezvous at a central location, such as the Tecumseh Products plant or pilot CTF site. A head count will be made there to ensure that all personnel are safe and accounted for.

All barges and boats will be secured as the situation allows. Also, engines and motorized equipment will be shut off before the site is evacuated.

3.5.1 Worker Injury

If a person working on the site is physically injured, Red Cross first aid procedures shall be followed. Depending on the severity of the injury, emergency medical response may be sought. If the employee can be moved, he/she will be taken to the edge of the work area where contaminated clothing (if any) will be removed, and emergency first aid administered. If necessary, transportation to a local emergency medical facility will be provided as soon as possible.

If a worker can only be moved by emergency medical personnel, the SC will decide what protective equipment (if any) is required to be

worn by emergency personnel. Each work area will have extra equipment available for emergencies.

If the injury to the worker involves chemical exposure, the following first aid procedures are generally initiated as soon as possible:

1. Eye Exposure - If contaminated solid or liquid gets into the eyes, wash eyes immediately at the emergency eyewash station using water and lifting the lower and upper lids occasionally. Obtain medical attention immediately if symptoms warrant.
2. Skin Exposure - If contaminated solid or liquid gets on the skin, wash skin immediately at the emergency eyewash station using water. Obtain medical attention immediately if symptoms warrant.
3. Inhalation - If a person inhales large amounts of organic vapor, move him/her to fresh air at once. If breathing has stopped, perform artificial resuscitation. Keep the affected person warm and at rest. Obtain medical attention as soon as possible.
4. Ingestion - If contaminated solid or liquid is swallowed, medical attention shall be obtained immediately by consulting the Poison Control Center.

The SC shall inform the Project Manager of the injury/accident, and a written report detailing the accident, its causes, and consequences shall be submitted to the Project Manager within five working days of the incident.

3.5.2 Temperature-Related Problems

Adverse weather conditions are important considerations in planning and conducting site operations. Hot or cold weather can cause physical discomfort, loss of efficiency, and personal injury. One or more of the following control measures shall be employed to help control heat stress:

- o Provision for adequate liquids to replace lost body fluids. Employees must replace water and salt lost through perspiration. Employees will be encouraged to drink more than the amount required to satisfy thirst, since thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement.

Replacement fluids can be a 0.1 percent salt solution, commercial mixes such as Gatorade or Quick Kick, or a combination of these with fresh water.

- o Establishment of a work regimen that will provide adequate rest periods for cooling down.
- o Use of cooling devices such as vortex tubes or cooling vests which can be worn beneath protective garments.
- o Rest breaks are to be taken in a cool, shaded area during hot weather.
- o Employees shall not be assigned other tasks during rest periods.
- o All employees shall be informed of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress.

To guard against injury caused by exposure to cold temperatures, the following measures will be taken:

- o Workers will be outfitted with adequate winter clothing.
- o Clothing will be immediately changed if it becomes wet.
- o Warm shelters (trailers) and regular rest periods will be available for workers.
- o Training sessions will be regularly held to emphasize warning symptoms of hypothermia or frostbite such as reduced coordination, drowsiness, impaired judgment, fatigue, and numbing of toes and fingers.
- o Warm beverages will be provided.

3.5.3 Fires

Personnel in each work group will be knowledgeable in fire-extinguishing techniques. They shall be instructed in proper use and maintenance of the fire extinguishers supplied at the work sites.

3.5.4 Vehicle Accident

Routes from each site to the CTF have been selected to minimize the potential for public exposure in the event of an accident. Maximum

speed limits for primary and secondary roads will be 45 and 35 miles per hour, respectively. All vehicles will be required to meet applicable state inspection standards. All drivers will be required to have a good driving record and must have all necessary licenses to operate their vehicle.

The phone numbers of the Tecumseh Plant Manager, the field trailer and SC will be carried in each truck used to transport sediments. These numbers will also be provided to all police, fire, rescue, and other emergency agencies in the area.

3.5.5 Spills

Vehicle accidents, as well as other activities associated with removing and armoring sediments could result in an inadvertent or accidental release of chemicals (motor fuel) or sediments. In this unlikely event, spill cleanup activities will be initiated as soon as possible. Cleanup will be performed in accordance with the National Oil and Hazardous Substances Contingency Plan. If the spill involves sediments or other materials which are likely to contain PCBs, the Toxic Substances Control Act (Subpart G: PCB spill cleanup policy), will be used to verify cleanup.

Upon notification of a spill, Tecumseh Products Co. will make available any personnel and equipment at its disposal to aid in the cleanup. For example, the following equipment may be supplied:

- o sorbent materials to contain/control liquids;
- o front-end loaders to pick up solids;
- o dust-suppression materials to control dust;

- o trucks to haul collected material; and
- o appropriate protective gear for cleanup workers.

The supervision and operation of all Tecumseh personnel and equipment will be coordinated with the authorities at the scene of the accident.

3.5.6 Precipitation

In general, both sampling and construction activities can be conducted during mildly adverse weather conditions, including light rain or snowfall, or light fog. If rain (or snow) becomes moderate to heavy it may be necessary to cease all river activities. Under these conditions, each decontamination pad will be covered with plastic sheeting to prevent the contact of rainwater with the surface of the pad. Sheeting will be secured with sandbags (or equivalent). Also, the valve on piping leading to the holding tank will be closed. All construction operations will be halted in the event of a thunder and lightning storm.

3.5.7 Flooding

Flooding, in addition to fire, is considered an event which could require emergency evacuation of personnel from the site. Procedures for emergency evacuation are discussed above (Section 3.5). Evacuation routes are shown in Figure 4.

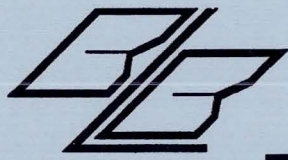
With proper planning, preparations can be made in advance of most floods. Floods are generally either caused by large amounts of precipitation over a short time period, rapid melting of snow already on the ground, or a combination of the two. These floods are usually characterized by a gradual increase in flow in the River over a period

of several hours. The impact of these floods can be minimized by:

- ceasing all operations during periods of heavy, sustained rain;
and
- regularly monitoring River stage height, especially during those periods when rapid snow melt is likely.

River stage height will be monitored by installing a temporary staff gage at Rochester Park and possibly a second gage further downstream. These gages will be calibrated to the U.S.G.S. gaging station so that readings taken at each "local" gage can be correlated to approximate flows. The local gage will be monitored on at least a daily basis. In addition, weather forecasts will be monitored on a daily basis. If flood warnings are issued, all river-based activities will be postponed. If weather likely to cause flooding is forecast, these operations will be minimized or postponed.

The determination of when to stop all river-based activities will be made by the Field Manager for Sediment Removal, Armoring, and Transport (S. Handley). The Field Manager will determine, based on site-specific conditions, whether barges must be removed from the River to prevent loss or damage. If not removed, barges will be physically secured for flood conditions. Land-based activities, such as transport of sediment by truck, decontamination of equipment, transfer of sediment into the CTF, and so forth, may continue under these conditions. However, no activities may continue if the River is likely to overtop its banks. Therefore, all work would be stopped when the River reaches a stage height (at the local gage) corresponding to a flow of 3,000 cfs at the USGS gaging station. This flow, which is equivalent to the two-year flood, represents the approximate limit of the river channel capacity.



Tables

TABLE 1

SHEBOYGAN RIVER AND HARBOR
HEALTH, SAFETY AND CONTINGENCY PLAN

Contaminant Levels In Sheboygan River and Harbor
Sediments and Soils

	<u>River Sediments</u> (ppm, dry weight)	<u>Harbor Sediments</u> (ppm, dry weight)	<u>Floodplain Soils</u> (ppm, dry weight)
PCBs	ND - 4,500	ND - 220	ND - 71
Targeted Metals:			
Arsenic	1.3 - 23	0.7 - 20	1.6 - 12.6
Cadmium	ND - 3.1	ND - 3.2	ND - 3.4
Chromium	ND - 143	2.2 - 414	1.4 - 68
Copper	ND - 158	ND - 149	6.9 - 51
Lead	3.7 - 716	1.0 - 783	4.4 - 92
Mercury	ND - 0.42	ND - 0.68	ND - 0.26
Nickel	ND - 90	ND - 212	ND - 31
Zinc	ND - 299	ND - 369	17.1 - 164

Note:

ND = not detected.

TABLE 2

**SHEBOYGAN RIVER AND HARBOR
HEALTH, SAFETY AND CONTINGENCY PLAN**

Alternative-Specific Remedial Investigation Personnel

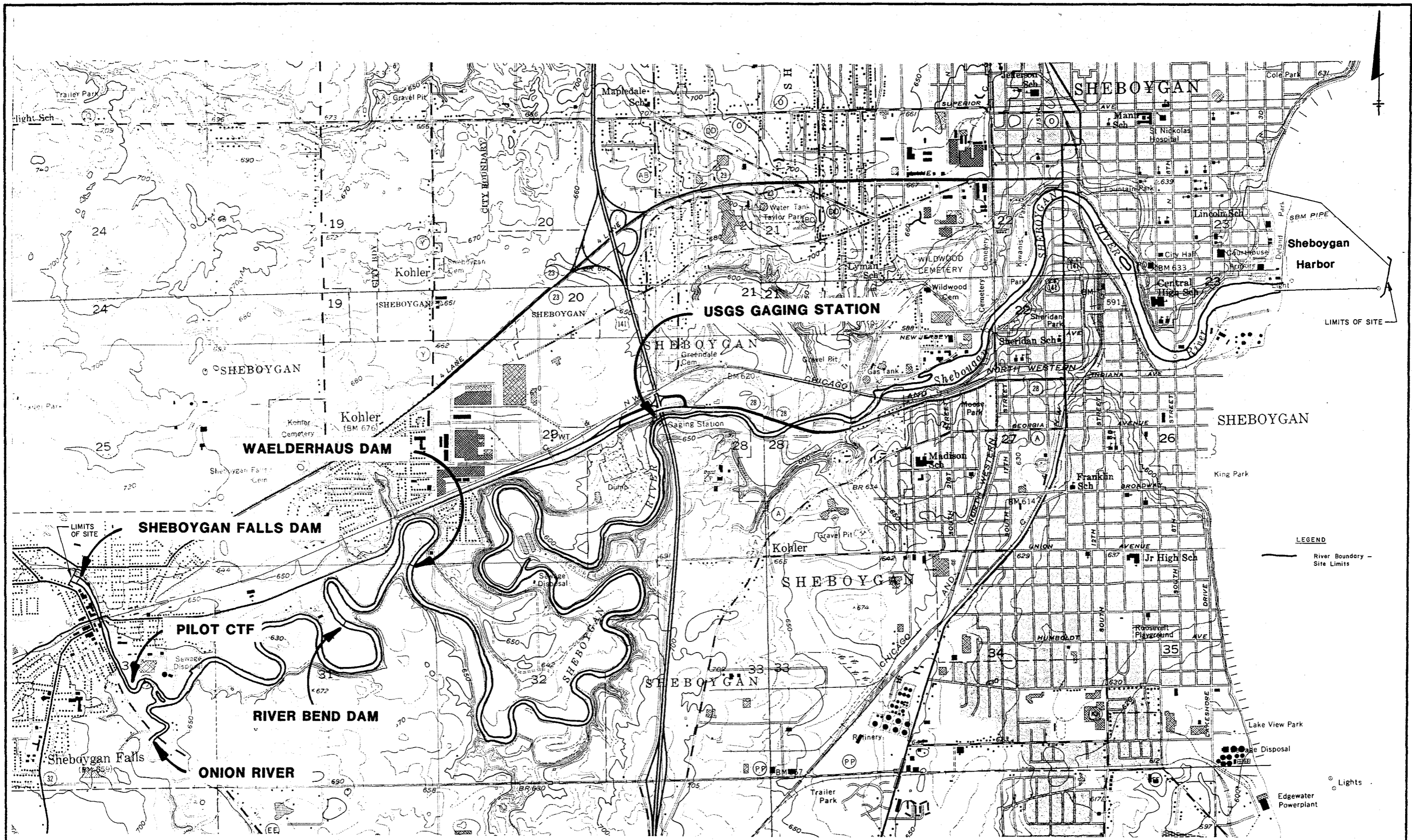
Name	Company ⁽¹⁾ Affiliation	Years of Experience	Formal Training		
			Title	Course Hours	Dates
Richard P. DiFiore	B&B	9	Safety at Hazardous Materials Sites	40	June 1986 ^{2,3}
			OSHA Supervisory Training	8	June 1989
Gregg A. Rabasco	B&B	2	Safety at Hazardous Materials Sites	40	April 1987 ^{2,3}
Richard J. Price	B&B	2	OSHA Hazardous Waste Health & Safety Training	40	May 1987 ^{2,3}
Penelope C. Thompson	B&B	3	Hazardous Materials Incident Management	40	Sept. 1985 ^{2,3}
Julie R. Mooney	B&B	2	OSHA Hazardous Waste Health & Safety Training	40	May 1987 ^{2,3}
Donald J. Hughes	B&B	2	OSHA Hazardous Waste Health & Safety Training	40	May 1987 ^{2,3}
James M. Nuss	B&B	2	OSHA Hazardous Waste Health & Safety Training	40	May 1987 ^{2,3}
James D. Mulderig	BBLES	2	Health and Safety for Workers at Hazardous Waste Sites	40	Sept. 1988 ³
			OSHA Supervisory Training	8	Sept. 1988
Raymond R. Moreno	B&B	1	Health and Safety for Workers at Hazardous Waste Sites	40	April 1989
Anthony P. Robinson	B&B	3	Health and Safety for Workers at Hazardous Waste Sites	40	June 1989
Stephen C. Handley	BBLES	4	Health and Safety for Workers for Hazardous Waste Sites	40	Oct. 1987 ⁽³⁾

Notes:

- (1) B&B - Blasland & Bouck Engineers, P.C.; BBLES - BBL Environmental Services, Inc.
- (2) Personnel received an 8-hour OSHA Hazardous Waste Health and Safety Training refresher course on May 16, 1988.
- (3) Personnel received an 8-hour OSHA Hazardous Waste Health and Safety Training refresher course on June 5, 1989.



Figures



Scale:
 1" = 1000'
 0 1000' 2000'

NO ALTERATIONS PERMITTED EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

In charge of _____
 Designed by _____
 Drawn by RLP
 Checked by _____

BLASLAND & BOUCK ENGINEERS, P.C.
 Syracuse, New York
 White Plains, New York

SHEBOYGAN RIVER AND HARBOR
 HEALTH SAFETY & CONTINENCY PLAN

SITE PLAN

File Number 176.07.01	1
Date SEPT. 1989	

FIGURE 2

**Project Organization Chart
Blasland & Bouck Engineers, P.C.**

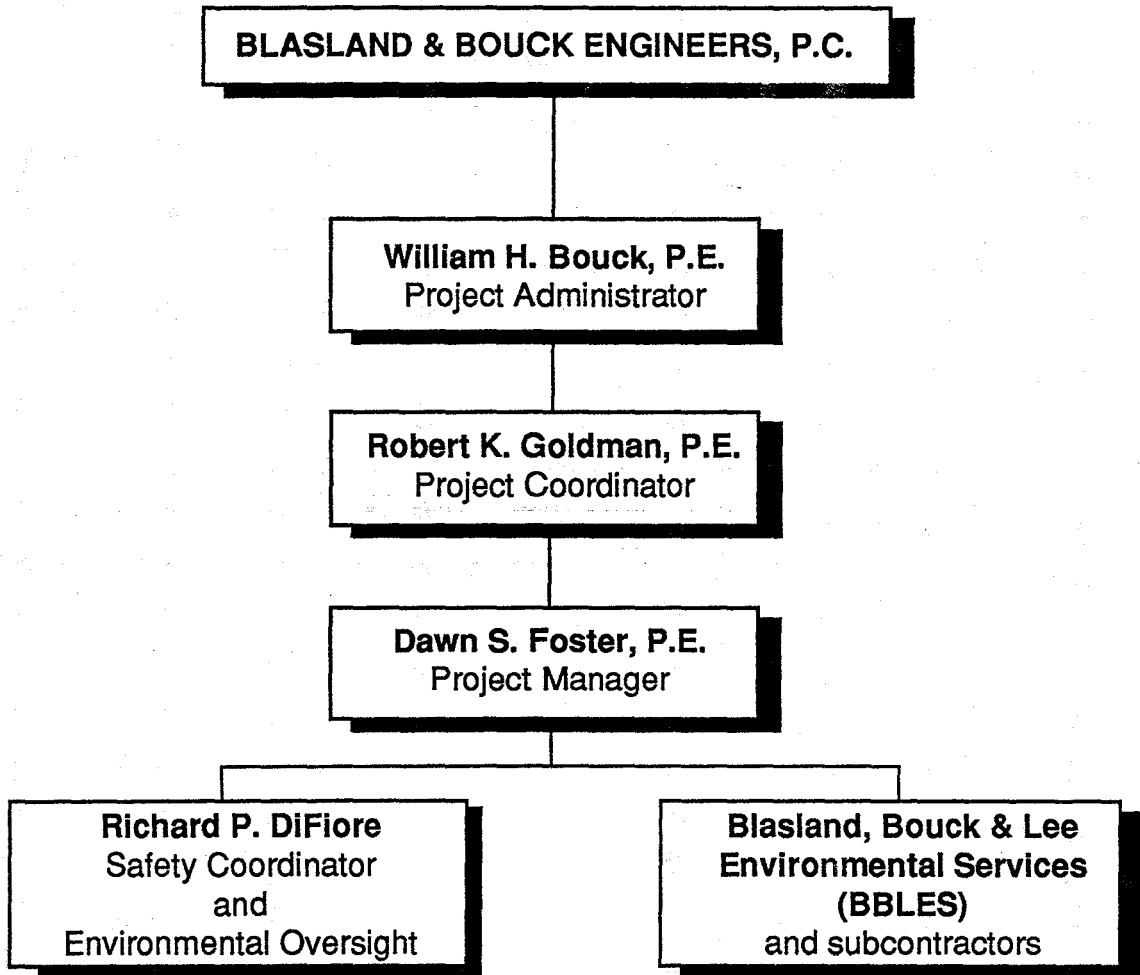
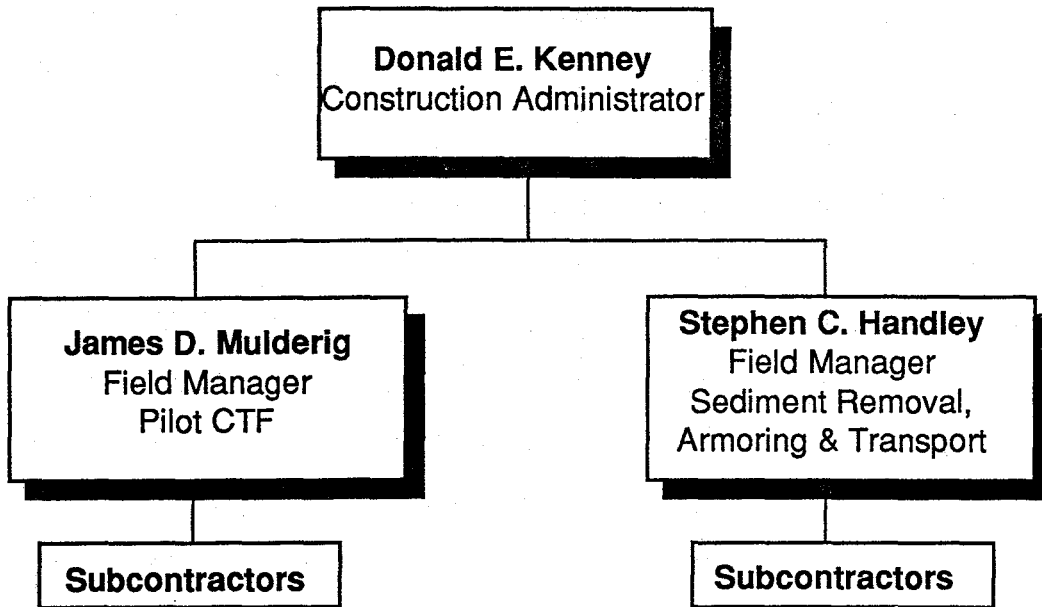
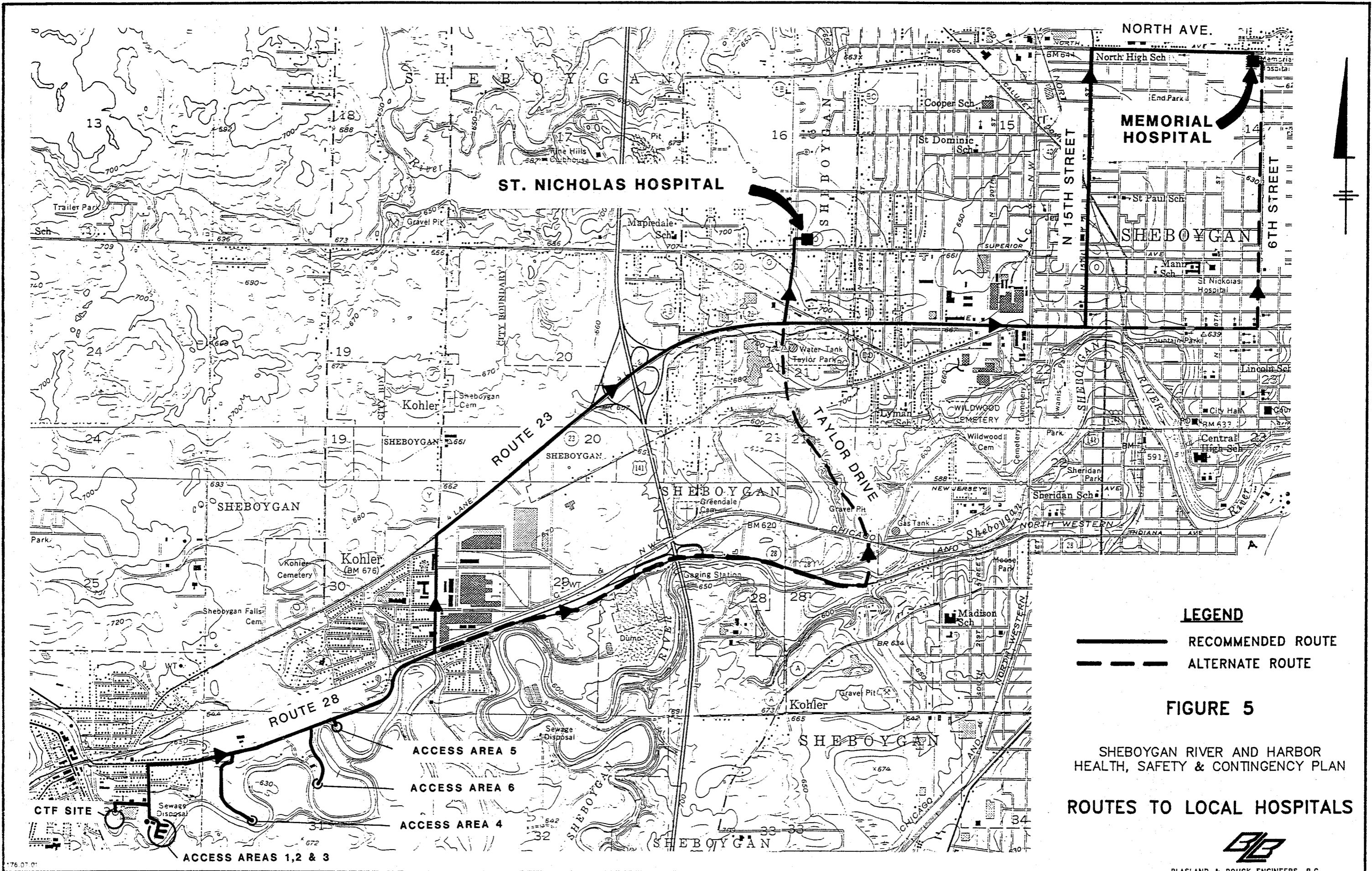


FIGURE 3

**Project Organization Chart
BBL Environmental Services (BBLES)**





LEGEND

- RECOMMENDED ROUTE
- - - - - ALTERNATE ROUTE

FIGURE 5

SHEBOYGAN RIVER AND HARBOR
HEALTH, SAFETY & CONTINGENCY PLAN

ROUTES TO LOCAL HOSPITALS





Attachments

ATTACHMENT 1
TOXICOLOGICAL PROPERTIES OF KNOWN CONTAMINANTS

COPYRIGHT 1984 OCCUPATIONAL HEALTH SERVICES, INC.

OCCUPATIONAL HEALTH SERVICES, INC.
400 PLAZA DRIVE
SECAUCUS, NEW JERSEY 07094
(800) 223-8978

FOR EMERGENCY SOURCE INFORMATION
CONTACT JOHN V. BRANFORD, JR.
(610) 389-5999 OR (610) 302-1150

---- ATTENTION --- ATTENTION --- ATTENTION ----

MATERIAL SAFETY DATA SHEETS ARE NOW AVAILABLE ONLINE FROM
OCCUPATIONAL HEALTH SERVICES, INC. TO FIND OUT HOW TO ACCESS
THEM, CALL: A. BERGER AT UMS 200/223-8978 OR 201/365-7500
EXT 301.

THE HAZARDLINE/EHM SYSTEM WILL BE UNAVAILABLE AT THE FOLLOWING
TIMES:

TUESDAY	JANUARY 15, 1985	12:00 MIDNIGHT TO 04:00AM EST
WEDNESDAY	JANUARY 16, 1985	12:00 MIDNIGHT TO 04:00AM EST
THURSDAY	JANUARY 17, 1985	12:00 MIDNIGHT TO 04:00AM EST

ENTER NAME, KEYWORD, SYMPTOM, STLA, NAMELIST, HELP, OR QUIT

NAME

ENTER CHEMICAL NAME

AROCLOR 1242 ← PCB 1242

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
SYNM

SYNONYMS

AROCHLOR 1242
CHLORODIPHENYL 42% CL
UN 3315
PCB
POLYCHLORINATED BIPHENYL
POLYCHLORINATED BIPHENYL (AROCLOR 1242)
DHS01900

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
EXPO

PERMISSIBLE EXPOSURE LIMIT

1.0 MG/M3 OSHA TWA (SKIN NOTATION)
1.0 UG/M3 NIOSH RECOMMENDED TWA
1 MG/M3 ACGIH TWA (SKIN NOTATION)
2 MG/M3 ACGIH STEL
SUSPECT HUMAN CARCINOGEN (IARC, NTP)
REPORTABLE QUANTITIES - 10 LB CWA 311(B)(4) - 1 LB CWA 307(A)
1 LB PROPOSED RQ
CERCLA HAZARD RATINGS - TOXICITY 2 - IGNITABILITY 0 - REACTIVITY 0 -
PERSISTENCE 3

TOXICOLOGY: POLYCHLORINATED BIPHENYLS ARE PRIMARY SKIN IRRITANTS AND
HEPATOTOXINS.

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
IDLH

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONCENTRATION

NONE SPECIFIED

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/

PHYSICAL DESCRIPTION

CLEAR, MOBILE OIL. MILD HYDROCARBON ODOR
WITH FEW CONTAINING 42% CHLORINE
TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
PROV

CHEMICAL AND PHYSICAL PROPERTIES

MOLECULAR WEIGHT: 255
BOILING POINT AT 1 MM. Hg: 617 TO 691 F
SOLUBILITY IN WATER, G/100 G WATER AT 20C: 0.10 PPM AT 75 F
FLASH POINT, CLOSED CUP, F (OR OPEN CUP IF 90C): 249 F
VAPOUR PRESSURE @ 20 C. MMHG: 0.001 mm
MELTING POINT, F: -21
UPPER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: COMBUSTIBLE
LOWER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: COMBUSTIBLE
SPECIFIC GRAVITY: 1.381-1.392
TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
INFO

INCOMPATIBILITIES

THERMAL DECOMPOSITION PRODUCTS ARE HAZARDOUS AND/OR TOXIC
STRONG OXIDIZERS
TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
CLO.
PROV
PERSONAL PROTECTIVE EQUI
PMENT

FOLLOWING INFORMATION FROM NIOSH/OSHA "OCCUPATIONAL HEALTH GUIDELINES
FOR CHEMICAL HAZARDS":

PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH LIQUID
WEAR IMPERVIOUS CLOTHING
WEAR GLOVES
WEAR FACESHIELD (8 INCH MINIMUM)

PLACE CONTAMINATED CLOTHING IN CLOSED CONTAINERS FOR STORAGE UNTIL
LAUNDERED OR DISCARDED
IF CLOTHING IS TO BE LAUNDERED, INFORM PERSON PERFORMING OPERATION OF
CONTAMINANT'S HAZARDOUS PROPERTIES

ACGIH "GUIDELINES FOR SELECTION OF CHEMICAL PROTECTIVE
CLOTHING" INDICATES THE FOLLOWING MATERIALS AND
PROTECTIVE RATINGS BY INDEPENDENT VENDORS AGAINST
POLYCHLORINATED BIPHENYLS (UNDILUTED):

EXCELLENT/GOOD:
BUTYL RUBBER
NEOPRENE
NITRILE RUBBER
POLYETHYLENE
POLYVINYL ALCOHOL
VITON
SARANEX
POLYTETRAFLUOROETHYLENE (TFE)

GOOD/FAIR:
CHLORINATED POLYETHYLENE

FAIR/POOR:
NATURAL RUBBER

POLYVINYL CHLORIDE

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND). /HELP/. OR /NONE/.
PROV

SPECIFIC EMERGENCY PROVISIONS

EYE-WASH FOUNTAIN WITHIN IMMEDIATE WORK AREA WHERE EMPLOYEES' EYES MAY
BE EXPOSED TO SUBSTANCE

QUICK DRENCHING FACILITIES WITHIN IMMEDIATE WORK AREA WHERE EMPLOYEES
MAY BE EXPOSED TO SUBSTANCE

EATING AND SMOKING SHOULD NOT BE PERMITTED IN IMMEDIATE WORK AREA

WATER FOUNTAIN PROHIBITED IN WORK AREA

CLOSED SYSTEM IF SUBSTANCE TO BE USED

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND). /HELP/. OR /NONE/.
PLBP

RESPIRATOR SELECTION (UPPER LIMIT DEVICES PERMITTED)

10 mg/m3

- SUPPLIED-AIR RESPIRATOR
WITH A FULL FACE-PIECE, HELMET, OR HOOD
- SELF-CONTAINED BREATHING APPARATUS
WITH A FULL FACE-PIECE

ESCAPE

- GAS MASK
WITH A PESTICIDE CANISTER
(CHIN-STYLE OR FRONT- OR BACK-MOUNTED CANISTER)
- SELF-CONTAINED BREATHING APPARATUS

FIREFIGHTING

- SELF-CONTAINED BREATHING APPARATUS
WITH A FULL FACE-PIECE
OPERATED IN PRESSURE-DEMAND OR POSITIVE-PRESSURE MODE

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND). /HELP/. OR /NONE/.
ROUT

ROUTE OF ENTRY INTO BODY

SKIN OR EYE CONTACT

INHALATION

INGESTION

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND). /HELP/, OR /NONE/.
SYMP

SYMPTOMS

- SKIN IRRITATION
- CHLORACNE
- DERMATITIS
- NAUSEA
- VOMITING
- DIARRHEA
- HEADACHE
- EYE IRRITATION
- CONJUNCTIVITIS

RESPIRATORY DISTURBANCE
GASTROINTESTINAL DISTURBANCE
PIGMENTATION
WEAKNESS
PARESIS/NESTIA
NUMBNESS EXTREMITIES
TOXIC HEPATITIS
DARK URINE
LIVER DAMAGE
MUCOUS MEMBRANE IRRITATION
RESPIRATORY IRRITATION

TYPE WHAT INFORMATION YOU REQUIRE:
/ALL. SPECIFIC INFORMATION (BY 4-LETTER COMMAND). /HELP/. OR /NONE/.
ORGA

ORGANS
SKIN
EYES
KIDNEYS
LIVER
HEART
CENTRAL NERVOUS SYSTEM

TYPE WHAT INFORMATION YOU REQUIRE:
/ALL. SPECIFIC INFORMATION (BY 4-LETTER COMMAND). /HELP/. OR /NONE/.
STAT

STATUS OF REGULATORY ENFORCEMENT

OSHA STANDARD 29CFR1910.1200 HAZARD COMMUNICATION
REQUIRES CHEMICAL MANUFACTURERS AND IMPORTERS TO ASSESS THE HAZARDS
OF CHEMICALS WHICH THEY PRODUCE OR IMPORT, AND ALL EMPLOYERS HAVING
WORKPLACES IN THE MANUFACTURING DIVISION, STANDARD INDUSTRIAL CLASS-
IFICATION CODES 20 THROUGH 39, TO PROVIDE INFORMATION TO THEIR EMPLOYEES
CONCERNING HAZARDOUS CHEMICALS BY MEANS OF HAZARD COMMUNICATION PROGRAMS
INCLUDING LABELS, MATERIAL SAFETY DATA SHEETS, TRAINING, AND ACCESS TO
WRITTEN RECORDS
48FR53280 11/25/83

FOLLOWING OSHA STANDARDS APPLICABLE TO SUBSTANCES LISTED 29CFR1910,
OTHERWISE ADVISE:

OSHA STANDARD 29CFR1910.94 VENTILATION

OSHA STANDARD 29CFR1910.134 RESPIRATORY PROTECTION

OSHA STANDARD 29CFR1910.1000 AIR CONTAMINANTS
TABLE 2-1

OSHA STANDARD 29CFR1910.20 ACCESS TO EMPLOYEE EXPOSURE AND MEDICAL
RECORDS

OSHA STANDARD 29CFR1910.132 PERSONAL PROTECTIVE EQUIPMENT

OSHA STANDARD 29CFR1910.141 SANITATION

OSHA STANDARD 29CFR1910.151 MEDICAL SERVICES AND FIRST AID

OSHA STANDARD 29CFR1910.133 EYE AND FACE PROTECTION

40CFR717 RECORDS AND REPORTS OF ALLEGATIONS THAT CHEMICAL SUBSTANCES
CAUSE SIGNIFICANT ADVERSE REACTIONS TO HEALTH OR THE ENVIRONMENT
REQUIRES MANUFACTURERS AND CERTAIN PROCESSORS OF CHEMICAL SUBSTANCES
AND MIXTURES TO KEEP RECORDS OF SIGNIFICANT ADVERSE REACTIONS TO HEALTH
OR THE ENVIRONMENT ALLEGED TO HAVE BEEN CAUSED BY A SUBSTANCE OR
MIXTURE. EPA MAY INSPECT AND REQUIRE REPORTING OF SUCH RECORDS.
48FR38178 08/22/83

5

OSHA STANDARD 29CFR1910.106 FLAMMABLE AND COMBUSTIBLE LIQUIDS
APPLIES TO THE HANDLING, STORAGE, AND USE OF FLAMMABLE AND COMBUSTIBLE
LIQUIDS WITH A FLASH POINT BELOW 200 F

SUBSTANCE LISTED TOXIC SUBSTANCES CONTROL ACT INVENTORY

SUBSTANCE ESTABLISHED AS CONFIRMED OR SUSPECTED CARCINOGEN (POTENTIAL
CARCINOGEN) BY THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC)

SUBSTANCE LISTED AS KNOWN TO BE CARCINOGENIC OR MAY REASONABLY BE AN-
TICIPATED TO BE CARCINOGENIC IN NATIONAL TOXICOLOGY PROGRAM (NTP) THIRD
ANNUAL REPORT ON CARCINOGENS

49CFR172.101 TABLES OF HAZARDOUS MATERIALS. THEIR DESCRIPTION,
PROPER SHIPPING NAME, CLASS, LABEL, PACKAGING, AND OTHER RE-
QUIREMENTS

DESIGNATED IN HAZARDOUS MATERIALS TABLE AS HAZARDOUS MATER-
IAL FOR THE PURPOSE OF TRANSPORTATION.

41FF13996 04/15/76
45FR34528 05/22/80 (AMENDMENT)
45FR46420 07/10/80 (AMENDMENT)
45FR62080 09/18/80 (AMENDMENT)
45FR74649 11/10/80 (AMENDMENT)
46FR17739 03/19/81 (AMENDMENT)
46FR19235 03/30/81 (AMENDMENT)

49CFR172.102 TABLES OF HAZARDOUS MATERIALS. THEIR DESCRIPTION,
PROPER SHIPPING NAME, CLASS, LABEL, PACKAGING, AND OTHER RE-
QUIREMENTS

DESIGNATED IN OPTIONAL HAZARDOUS MATERIALS TABLE WITH ALTER-
NATIVES TO CORRESPONDING REQUIREMENTS IN 49CFR172.101 FOR IN-
TERNATIONAL SHIPMENTS AS AUTHORIZED BY 49CFR171.12

41FF13996 04/15/76
46FR29393 06/01/81 (AMENDMENT)
46FR32250 06/22/81 (AMENDMENT)

SUBSTANCES LISTED APPENDIX A - CONSENT DECREE LIST OF
INDUSTRIES AND TOXIC POLLUTANTS. SETTLEMENT AGREEMENT BETWEEN
U.S. EPA AND NATIONAL RESOURCES DEFENSE COUNCIL, ET AL
U.S. DISTRICT COURT DISTRICT OF COLUMBIA, JUNE 7, 1976.
SITE PERC2120. DDC 1976. MODIFIED MARCH 2, 1979, SITE
12ERC1833. DDC 1979 AND AGAIN ON OCTOBER 26, 1982.

40CFR122. APPENDIX D - NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT APPLICATION TESTING REQUIREMENTS

TABLE II - ORGANIC TOXIC POLLUTANTS IN EACH OF FOUR FRACTIONS IN
ANALYSIS BY GAS CHROMATOGRAPHY/MASS SPECTROSCOPY (GC/MS)
40FR14153 04/01/83

SUBSTANCE LISTED WEST VIRGINIA DEPARTMENT OF LABOR LISTING OF
HAZARDOUS SUBSTANCES

40CFR761 POLYCHLORINATED BIPHENYLS (PCBS) MANUFACTURING, PROCESSING,
DISTRIBUTION IN COMMERCE, AND USE PROHIBITIONS

ESTABLISHES PROHIBITIONS OF, AND REQUIREMENTS FOR, THE MANUFACTURE,
PROCESSING, DISTRIBUTION IN COMMERCE, USE, DISPOSAL, STORAGE, AND
MARKING OF PCBS AND PCB ITEMS

44FR31542 05/31/79
44FR54297 05/19/79
45FR20475 03/28/80
47FR19527 05/06/82 (REDESIGNATION)
47FR22098 05/21/82
47FR37342 08/25/82
47FR46980 10/21/82

48FR5729 02/08/83
48FR13181 03/30/83
48FR52304 11/17/83
49FR44534 11/08/84 (MODIFICATION OF DEFINITION TOTALLY ENCLOSED MANNER)

21CFR109.15 USE OF POLYCHLORINATED BIPHENYLS (PCB'S) IN
ESTABLISHMENTS MANUFACTURING FOOD-PACKAGING MATERIALS
42FR52819 09/30/77

21CFR109.30 TOLERANCES FOR POLYCHLORINATED BIPHENYLS (PCB'S)
38FR22794 08/24/73 (STAY OF 109.30(A)(9))
42FR52819 09/30/77
44FR30240 06/29/79 (REVISION OF 109.30(A)(7))
44FR57389 10/05/79 (STAY OF 109.30(A)(7))
46FR6459 01/27/81
48FR10811 03/15/83

THE FOOD AND DRUG ADMINISTRATION IS CONFIRMING THE EFFECTIVE
DATE FOR COMPLIANCE WITH THE FINAL RULE CONCERNING A TOLERANCE
FOR PCB'S IN PAPER FOOD-PACKAGING MATERIAL (21CFR109). THE
AGENCY IS ALSO CORRECTING THE PREAMBLE TO THE RULE.
48FR45544 10/06/83

CLEAN WATER ACT (CWA) SECTION 304(A)
WATER QUALITY CRITERIA FOR POLYCHLORINATED BIPHENYLS:
0.001 UG/L FOR FRESHWATER MARINE AQUATIC LIFE AND FOR CON-
SUMERS THEREOF.
GREAT REASONABLE EFFORT SHOULD BE MADE TO MINIMIZE HUMAN
EXPOSURE.

40CFR129.105 POLYCHLORINATED BIPHENYLS (PCB'S)
TOXIC POLLUTANT EFFLUENT STANDARDS
42FR65555 02/02/77

TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
ERT

CERTIFICATIONS

NO FEDERAL AGENCY REQUIREMENT. BUT DUE TO HAZARDOUS NATURE OF
SUBSTANCE. ADVISE FOLLOWING:

HEALTH STATUS CLASSIFICATION

OSHA RESPIRATOR CERTIFICATION 29CFR1910.134

DEPARTMENT OF TRANSPORTATION IF OPERATES HEAVY EQUIPMENT

EMPLOYEE HAZARDOUS MATERIALS EDUCATION RECEIPT

EMPLOYEE MEDICAL RECORDS RECEIPT

TOXIC SUBSTANCES CONTROL ACT (TSCA) SECTION 8(C) RULE
REQUIRES MANUFACTURERS AND CERTAIN PROCESSORS OF CHEMICAL
SUBSTANCES AND MIXTURES TO KEEP RECORDS OF SIGNIFICANT
ADVERSE REACTIONS TO EMPLOYEE HEALTH FOR 30 YEARS.
CONTACT: JACK P. MCCARTHY, OFFICE OF TOXIC SUBSTANCES,
EPA (800)424-1404. 48FR38178 8/22/83

MEDICAL WARNING REQUIRED FOR MEDICAL EXAM REFUSAL SIGNED
BY EMPLOYEE

TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
TEST

SPECIAL DIAGNOSTIC TESTS

BLOOD CHEMISTRY
BASELINE LIVER AND RENAL FUNCTIONS
TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
LEAK

LEAKS AND SPILL PROCEDURES

DEPARTMENT OF TRANSPORTATION HAZARD CLASS
49CFR172.101 HAZARDOUS MATERIALS TABLE

POLYCHLORINATED BIPHENYLS
ORM-E
UN 2315

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS
49CFR172.101 (SUBJECT TO ADDITIONAL LABELING REQUIREMENTS OF
49CFR172.402)

NOTE

INTERGOVERNMENTAL MARITIME ORGANIZATION HAZARD CLASS
49CFR172.102 OPTIONAL HAZARDOUS MATERIALS TABLE

CLASS 9-MICELLANEOUS DANGEROUS SUBSTANCES

INTERGOVERNMENTAL MARITIME ORGANIZATION LABELING SPECIFICATIONS FOR
DOMESTIC AND EXPORT SHIPMENTS
49CFR172.102

NOTE

FOLLOWING INFORMATION FROM BUREAU OF EXPLOSIVES "EMERGENCY HANDLING OF
HAZARDOUS MATERIALS":

IF MATERIAL ON FIRE OR INVOLVED IN FIRE:

- * EXTINGUISH FIRE USING AGENT SUITABLE FOR TYPE OF SURROUNDING FIRE
(MATERIAL ITSELF DOES NOT BURN OR BURNS WITH DIFFICULTY)

IF MATERIAL IS NOT ON FIRE AND IS NOT INVOLVED IN FIRE:

- * KEEP MATERIAL OUT OF WATER SOURCES AND SEWERS
- * BUILD DIKES TO CONTAIN FLOW AS NECESSARY

PERSONNEL PROTECTION:

- * KEEP UPWIND
- * WEAR BOOTS, PROTECTIVE GLOVES AND GAS TIGHT GOGGLES
- * AVOID BREATHING DUST/VAPORS/FUMES FROM MATERIAL
- * WASH AWAY ANY MATERIALS WHICH MAY HAVE CONTACTED THE BODY WITH
COPIOUS AMOUNTS OF WATER OR SOAP AND WATER

- * DIG A PIT, POND, LAGOON OR HOLDING AREA TO CONTAIN LIQUID OR SOLID MATERIAL
- * DIKE SURFACE FLOW USING SOIL, SANDBAGS, FOAMED POLYURETHANE OR FOAMED CONCRETE
- * ABSORB BULK LIQUID WITH FLY ASH OR CEMENT POWDER

WATER SPILL:

- * USE NATURAL DEEP WATER POCKETS, EXCAVATED LAGOONS, OR SAND BAG BARRIERS TO TRAP MATERIAL AT BOTTOM
- * IF DISSOLVED, APPLY ACTIVATED CARBON AT 10 TIMES SPILLED AMOUNT AT 10PPM OR GREATER CONCENTRATION
- * REMOVE TRAPPED MATERIAL WITH SUCTION HOSES
- * USE MECHANICAL DREDGES OR LIFTS TO REMOVE IMMOBILIZED MASSES OF POLLUTION AND PRECIPITATES

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
CASN

CAS NUMBER

53469-21-9

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
BULL

BULLETINS

LOW LEVEL, CHRONIC EXPOSURE TO PCB'S FROM CONSUMPTION OF LAKE MICHIGAN FISH BY PREGNANT WOMEN CAUSED DECREASED BIRTH WEIGHTS, HEAD CIRCUMFERENCE, AND GESTATIONAL AGE OF NEWBORN. BEHAVIORAL DEFICIENCIES WERE OBSERVED IN THE INFANTS EXPOSED TO PCB'S. EPA-600/3-84-060.

NTIS PB84-188687

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
SPEC

SPECIAL INFORMATION

CONTAINS 3% MONOCHLORO-, 13% DICHLORO-, 29% TRICHLORO-, 30% TETRACHLORO-, 23% PENTACHLORO-, 4% HEXACHLOROBIPHENYLS

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
SILA

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
SILA

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
NOI

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
NONE

ENTER NAME, KEYWORD, SYMPTOM, SILA, NAMELIST, HELP, OR QUIT

NAME

ENTER CHEMICAL NAME

CARBON DISULFIDE

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
SYNM

SYNONYMS

CARBON BISULFIDE
NCI-C04591
DITHIOCARBONIC ANHYDRIDE
UN 1131
CARBON DISULPHIDE
CARBON BISULPHIDE
SULPHOCARBONIC ANHYDRIDE

SYNONYMS

AROCHLOR 1254 ← PCB 1254
CHLORODIPHENYL 54% CL
UN 2315
NCI-C02664
PCB
POLYCHLORINATED BIPHENYL
POLYCHLORINATED BIPHENYL (AROCLOR 1254)
OHS01220

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
EXPO

PERMISSIBLE EXPOSURE LIMIT

0.5 MG/M3 OSHA TWA (SKIN NOTATION)
1.0 UG/M3 NIOSH RECOMMENDED TWA
0.5 MG/M3 ACGIH TWA (SKIN NOTATION)
1 MG/M3 ACGIH STEL
MUTAGENIC DATA (RTEC)
TERATOGENIC DATA (RTEC)
SUSPECT HUMAN CARCINOGEN (IARC, NTP)
REPORTABLE QUANTITIES - 10 LB CWA 311(B)(4) - 1 LB CWA 307(A)
CERCLA HAZARD RATINGS - TOXICITY 2 - IGNITABILITY 0 - REACTIVITY 0 -
PERSISTENCE 3

TOXICOLOGY: POLYCHLORINATED BIPHENYLS ARE PRIMARY SKIN IRRITANTS AND
HEPATOXINS.

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
IDLH

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONCENTRATION

NONE SPECIFIED

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
DESC

PHYSICAL DESCRIPTION

LIGHT YELLOW, VISCOUS LIQUID
MILD HYDROCARBON ODOR

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
PROP

CHEMICAL AND PHYSICAL PROPERTIES

MOLECULAR WEIGHT: 326
BOILING POINT AT 1 ATM. F: 689 F
SOLUBILITY IN WATER, G/100 G WATER AT 20C: INSOLUBLE
FLASH POINT, CLOSED CUP, F (OR OPEN CUP IF OC): 432 F
VAPOR PRESSURE @ 20 C. MMHG: 0.00006 MM
MELTING POINT, F: 50 F
UPPER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: COMBUSTIBLE
LOWER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: COMBUSTIBLE
SPECIFIC GRAVITY: 1.495 TO 1.505

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
INCO

INCOMPATIBILITIES

THERMAL DECOMPOSITION PRODUCTS ARE HAZARDOUS AND/OR TOXIC
STRONG OXIDIZERS

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).

PERSONAL PROTECTIVE EQUIPMENT

FOLLOWING INFORMATION FROM NIOSH/OSHA "OCCUPATIONAL HEALTH GUIDELINES FOR CHEMICAL HAZARDS":

PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH LIQUID
WEAR IMPERVIOUS CLOTHING
WEAR GLOVES
WEAR FACESHIELD (8 INCH MINIMUM)

PLACE CONTAMINATED CLOTHING IN CLOSED CONTAINERS FOR STORAGE UNTIL LAUNDERED OR DISCARDED
IF CLOTHING IS TO BE LAUNDERED, INFORM PERSON PERFORMING OPERATION OF CONTAMINANT'S HAZARDOUS PROPERTIES

ACGIH "GUIDELINES FOR SELECTION OF CHEMICAL PROTECTIVE CLOTHING" INDICATES THE FOLLOWING MATERIALS AND PROTECTIVE RATINGS BY INDEPENDENT VENDORS AGAINST POLYCHLORINATED BIPHENYLS (UNBLENDED):

EXCELLENT/GOOD:

BUTYL RUBBER
NEOPRENE
NITRILE RUBBER
POLYETHYLENE
POLYVINYL ALCOHOL
VITON
SARANEX
POLYTETRAFLUOROETHYLENE (TFE)

GOOD/FAIR:

CHLORINATED POLYETHYLENE

FAIR/POOR:

NATURAL RUBBER

FAIR/GOOD:

POLYVINYL CHLORIDE

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/.
PROV

SPECIFIC EMERGENCY PROVISIONS

EYE-WASH FOUNTAIN WITHIN IMMEDIATE WORK AREA WHERE EMPLOYEES' EYES MAY BE EXPOSED TO SUBSTANCE

QUICK DRENCHING FACILITIES WITHIN IMMEDIATE WORK AREA WHERE EMPLOYEES MAY BE EXPOSED TO SUBSTANCE

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/.
RESP

RESPIRATOR SELECTION (UPPER LIMIT DEVICES PERMITTED)

5 MG/M3

- SUPPLIED-AIR RESPIRATOR
WITH A FULL FACE-PIECE, HELMET, OR HOOD
- SELF-CONTAINED BREATHING APPARATUS
WITH A FULL FACE-PIECE

ESCAPE

- GAS MASK
WITH A PESTICIDE CANISTER
(CHIN-STYLE OR FRONT- OR BACK-MOUNTED CANISTER)
- SELF-CONTAINED BREATHING APPARATUS

FIREFIGHTING

- SELF-CONTAINED BREATHING APPARATUS
WITH A FULL FACE-PIECE
OPERATED IN PRESSURE-DEMAND OR POSITIVE-PRESSURE MODE

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/.

ROUT

ROUTE OF ENTRY INTO BODY

- SKIN OR EYE CONTACT
- INGESTION
- INHALATION

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/.

SYMP

SYMPTOMS

- SKIN IRRITATION
- CHLORACNE
- DERMATITIS
- NAUSEA
- VOMITING
- DIARRHEA
- HEADACHE
- EYE IRRITATION
- CONJUNCTIVITIS
- VISUAL DISTURBANCE
- RESPIRATORY DISTURBANCE
- GASTROINTESTINAL DISTURBANCE
- PIGMENTATION
- WEAKNESS
- PAKSTHESIA
- TOXIC HEPATITIS
- NUMBNESS EXTREMITIES
- DARK URINE
- LIVER DAMAGE
- RESPIRATORY IRRITATION
- REPRODUCTIVE EFFECTS IN EXPERIMENTAL ANIMALS
- HEPATOCELLULAR CARCINOMA IN EXPERIMENTAL ANIMALS

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/.

FIRA

FIRST AID PROCEDURES FOLLOWING EXPOSURE

IF THIS CHEMICAL GETS INTO THE EYES, IMMEDIATELY WASH THE EYES WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING THE LOWER AND UPPER LIDS. GET MEDICAL ATTENTION IMMEDIATELY. CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH THIS CHEMICAL.

IF THIS CHEMICAL GETS ON THE SKIN, IMMEDIATELY WASH CONTAMINATED SKIN WITH SOAP OR MILD DETERGENT & WATER. IF THIS CHEMICAL SOAKS CLOTHING, IMMEDIATELY REMOVE CLOTHING & WASH SKIN WITH SOAP OR MILD DETERGENT & WATER. GET MEDICAL ATTENTION PROMPTLY.

IF A PERSON BREATHE IN LARGE AMOUNTS OF THIS CHEMICAL. MOVE THE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED PERFORM ARTIFICIAL RESPIRATION. KEEP THE AFFECTED PERSON WARM AND AT REST. GET MEDICAL ATTENTION AS SOON AS POSSIBLE.

EMERGENCY TREATMENT - REMOVE FROM EXPOSURE.
FURTHER TREATMENT - TREAT LIVER DAMAGE.
(DREISBACH, HANDBOOK OF POISONING, 11TH ED.)

LIVER DAMAGE - REMOVE FROM EXPOSURE TO ALL CHEMICALS AND
DRUGS. MAINTAIN COMPLETE BED REST. AVOID ANESTHESIA OR
SURGICAL PROCEDURES. AVOID DEHYDRATION OR OVERHYDRATION.
IF VOMITING SEVERE AND ORAL FLUIDS NOT RETAINED, REPLACE
VOMITUS WITH AN EQUAL QUANTITY OF 100% DEXTROSE IN NORMAL
SALINE. IN RENAL FUNCTION ADEQUATE, GIVE 1 LITER OF 5%
DEXTROSE OR INVERT SUGAR IN NORMAL SALINE PLUS 1-3 LITERS
OF 10% DEXTROSE OR INVERT SUGAR IN DISTILLED WATER INTRA-
VENOUSLY EVERY TWENTY-FOUR HOURS.
(DREISBACH, HANDBOOK OF POISONING, 11TH ED.)

TYPE WHAT INFORMATION YOU REQUIRE
/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/.
ORGA

ORGANS
SKIN
EYES
LIVER
CENTRAL NERVOUS SYSTEM
KIDNEYS
HEART

TYPE WHAT INFORMATION YOU REQUIRE
/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/.
NONE
AROCLO 1254 - NO MORE HITS IN DATABASE.

ENTER NAME, KEYWORD, SYMPTOM, STLA, NAMELIST, HELP, OR QUIT.
NAME
ENTER CHEMICAL NAME

LEAD
TYPE WHAT INFORMATION YOU REQUIRE

SYNM

SYNONYMS

WHITE LEAD
C.I. PIGMENT METAL 4
C.I. 77575
LEAD FLAKE
KS-4
LEAD S2
SI
SO
S 1
PLUMBUM
OHS12510

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
EXPO

PERMISSIBLE EXPOSURE LIMIT

50 UG(PB)/M3 OSHA TWA
150 UG(PB)/M3 ACGIH TWA
0.10 MG(PB)/M3 NIOSH RECOMMENDED TWA
INDEFINITE ANIMAL CARCINOGEN (IARC)
TERATOGENIC DATA (RTEC)
MUTAGENIC DATA (RTEC)
REPORTABLE QUANTITIES - 1 LB CWA 307(A)
CEPCLA HAZARD RATINGS - TOXICITY 3 - IGNITABILITY 0 - REACTIVITY 2 -
PERSISTENCE 3

TOXICOLOGY: LEAD IS A CUMULATIVE NEUROTOXIN. THE PRINCIPAL SYMPTOMS OF POISONING ARE GASTROINTESTINAL UPSET, PERIPHERAL NEUROPATHY, AND ANEMIA.

ACUTE POISONING FOLLOWING INGESTION OF SOLUBLE LEAD COMPOUNDS CAUSES METALLIC TASTE, ABDOMINAL PAIN, VOMITING, DIARRHEA, BLACK STOOLS, OLIGURIA, COLLAPSE AND COMA.

CHRONIC EXPOSURE FROM INGESTION, INHALATION, OR SKIN ABSORPTION IS CHARACTERIZED BY CENTRAL NERVOUS SYSTEM AND GASTROINTESTINAL DISTURBANCES AND ANEMIA.

THE THRESHOLD LIMIT VALUE WAS SET TO PREVENT SYSTEMIC EFFECTS.

ORL-WMN IDLO: 450 MG/KG/6 YR

ORL-PGN LDLO: 160 MG/KG

IPR-RAT LDLO:1000 MG/KG

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
IDLH

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONCENTRATION

NONE SPECIFIED

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
DESC

PHYSICAL DESCRIPTION

BLuish-WHITE, SILVERY, GRAY METAL. HIGHLY LUSTROUS WHEN FRESHLY CUT TARNISHES UPON EXPOSURE TO AIR. MALLEABLE.

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
PROP

CHEMICAL AND PHYSICAL PROPERTIES

MOLECULAR WEIGHT: 207.19

BOILING POINT AT 1 ATM, F: 3164 F

SOLUBILITY IN WATER, G/100 G WATER AT 20C: INSOLUBLE

FLASH POINT, CLOSED CUP, F (OR OPEN CUP IF OC): INCOMBUSTABLE

VAPOR PRESSURE @ 20 C, MMHG: 0.00MM

14
LOWER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: INCOMBUSTIBLE
SPECIFIC GRAVITY: 11.3437 AT 61 F

TYPE WHAT INFORMATION YOU REQUIRE
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
INCO

INCOMPATIBILITIES
STRONG OXIDIZERS
PEROXIDES
ACTIVE METALS
SODIUM
POTASSIUM

TYPE WHAT INFORMATION YOU REQUIRE
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
CLOT

PERSONAL PROTECTIVE EQUIPMENT

29CFR1910.1025 LEAD

(G) PROTECTIVE WORK CLOTHING AND EQUIPMENT

(1) PROVISION AND USE. IF AN EMPLOYEE IS EXPOSED TO LEAD ABOVE THE PEL, WITHOUT REGARD TO THE USE OF RESPIRATORS OR WHERE THE POSSIBILITY OF SKIN OR IRRITATION EXISTS, THE EMPLOYER SHALL PROVIDE AT NO COST TO THE EMPLOYEE AND ASSURE THAT THE EMPLOYEE USES THE APPROPRIATE PROTECTIVE WORK CLOTHING AND EQUIPMENT SUCH AS, BUT NOT LIMITED TO:

(I) COVERALLS OR SIMILAR FULL-BODY WORK CLOTHING;

(II) GLOVES, HATS, AND SHOES OR DISPOSABLE SHOE COVERLETS; AND

(III) FACE SHIELDS, VENTED GOGGLES, OR OTHER APPROPRIATE PROTECTIVE EQUIPMENT WHICH COMPLIES WITH SECTION 1910.133 OF THIS PART.

TYPE WHAT INFORMATION YOU REQUIRE
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
PROV

SPECIFIC EMERGENCY PROVISIONS

EYE-WASH FOUNTAIN WITHIN IMMEDIATE WORK AREA WHERE EMPLOYEES' EYES MAY BE EXPOSED TO SUBSTANCE

QUICK DRENCHING FACILITIES WITHIN IMMEDIATE WORK AREA WHERE EMPLOYEES MAY BE EXPOSED TO SUBSTANCE

TYPE WHAT INFORMATION YOU REQUIRE
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
RESP

RESPIRATOR SELECTION (UPPER LIMIT DEVICES PERMITTED)

0.5 MG/M3

- HIGH-EFFICIENCY PARTICULATE RESPIRATOR

2.5 MG/M3

- HIGH-EFFICIENCY PARTICULATE RESPIRATOR
WITH A FULL FACE-PIECE

50 MG/M3

- POWERED AIR-PURIFYING RESPIRATOR
WITH A HIGH-EFFICIENCY FILTER

- TYPE 'C' SUPPLIED-AIR RESPIRATOR

- SUPPLIED-AIR RESPIRATOR

OPERATED IN PRESSURE-DEMAND, POSITIVE-PRESSURE, OR CONTINUOUS-FLOW
MODE

100 MG/M3

- TYPE 'C' SUPPLIED-AIR RESPIRATOR

- SUPPLIED-AIR RESPIRATOR

- OPERATED IN PRESSURE-DEMAND, POSITIVE-PRESSURE, OR CONTINUOUS-FLOW
MODE
- TYPE 'C' SUPPLIED-AIR RESPIRATOR
 - SUPPLIED-AIR RESPIRATOR
WITH A FULL FACE-PIECE, HELMET, OR HOOD
OPERATED IN PRESSURE-DEMAND, POSITIVE-PRESSURE, OR CONTINUOUS-FLOW
MODE

FIREFIGHTING

- SELF-CONTAINED BREATHING APPARATUS
WITH A FULL FACE-PIECE
OPERATED IN PRESSURE-DEMAND OR POSITIVE-PRESSURE MODE

TYPE WHAT INFORMATION YOU REQUIRE
/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/.
ROUT

ROUTE OF ENTRY INTO BODY

INGESTION
INHALATION
SKIN ABSORPTION
SKIN OR EYE CONTACT

TYPE WHAT INFORMATION YOU REQUIRE
/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/.
SYMP

SYMPTOMS

SPERM COUNT DEPRESSION
INSOMNIA
HEADACHE
OPTIC NEURITIS
GINGIVAL BLACK LINE
ANOREXIA
WEIGHT LOSS
MALNUTRITION
CONSTIPATION
ABDOMINAL PAIN
HYPERTENSION
ANEMIA
TREMORS
WRIST DROP
REPRODUCTIVE EFFECTS
ENCEPHALOPATHY
METALLIC TASTE
VOMITING
DIARRHEA
OLIGURIA
COLLAPSE
COMATOSE
IRRITABILITY
APATHY
FATIGUE
NERVOUSNESS
INCOORDINATION
ARTHRALGIA
NUMBNESS EXTREMITIES
FOOTDROP
ATAXIA
CRANIAL NERVE PARALYSIS
CONVULSIONS
DELIRIUM
DIZZINESS

STUPOR
VISUAL DISTURBANCE
PALLOR
LASSITUDE
SALIVATION
NOCTURIA
ALBUMINURIA
UREMIA
GLYCOSURIA
HEMATURIA
PROTEINURIA
MUSCULAR ATROPHY
MUSCULAR ACHE

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/.
FIRA

FIRST AID PROCEDURES FOLLOWING EXPOSURE

IF THIS CHEMICAL GETS INTO THE EYES, IMMEDIATELY WASH THE EYES WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING THE LOWER AND UPPER LIDS. GET MEDICAL ATTENTION IMMEDIATELY. CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH THIS CHEMICAL.

IF THIS CHEMICAL GETS ON THE SKIN, IMMEDIATELY WASH CONTAMINATED SKIN WITH SOAP OR MILD DETERGENT & WATER. IF THIS CHEMICAL SOAKS CLOTHING, IMMEDIATELY REMOVE CLOTHING & WASH SKIN WITH SOAP OR MILD DETERGENT & WATER. GET MEDICAL ATTENTION PROMPTLY.

IF A PERSON BREATHES IN LARGE AMOUNTS OF THIS CHEMICAL, MOVE THE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED PERFORM ARTIFICIAL RESPIRATION. KEEP THE AFFECTED PERSON WARM AND AT REST. GET MEDICAL ATTENTION AS SOON AS POSSIBLE.

INGESTED LEAD:

EMERGENCY TREATMENT - REMOVE BY GASTRIC LAVAGE WITH DILUTE MAGNESIUM SULFATE OR SODIUM SULFATE SOLUTION OR BY EMESIS. TREAT CEREBRAL EDEMA WITH MANNITOL AND PREDNISOLONE OR OTHER CORTICOSTEROID.

ANTIDOTE - INITIATE URINE FLOW. GIVE 10% DEXTROSE IN WATER INTRAVENOUSLY, 10-20 ML/KG. FOR ONE TO TWO HOURS. IF URINE FLOW DOES NOT START, GIVE 20% SOLUTION OF MANNITOL, 5-10 ML/KG INTRAVENOUSLY, OVER TWENTY MINUTES. LIMIT FLUID TO REQUIREMENTS, AND CATHETERIZATION MAY BE NECESSARY IN COMA. URINE OUTPUT SHOULD BE 350-500 ML/M²/DAY. EXCESSIVE FLUIDS MAY INCREASE EDEMA. FOR ACUTE ENCEPHALOPATHY, GIVE DIMERCAPROL, 4 MG/KG INTRAMUSCULARLY, EVERY FOUR HOURS FOR 30 DOSES.

FOUR HOURS LATER, GIVE CALCIUM DISODIUM EDETATE AT SEPARATE INJECTION SITE, 12.5 MG/KG INTRAMUSCULARLY, EVERY FOUR HOURS AS 20% SOLUTION, WITH 0.5% PROCAINE ADDED, FOR TOTAL OF 30 DOSES. IF SIGNIFICANT IMPROVEMENT DOES NOT OCCUR BY FOURTH DAY, INCREASE NUMBER OF INJECTIONS BY TEN FOR EACH DRUG. FOR PATIENTS RESPONDING WELL WITHOUT ENCEPHALOPATHY, DISCONTINUE DIMERCAPROL AFTER THIRD OR FOURTH DAY AND REDUCE EDETATE TO 50 MG/KG/DAY FOR REMAINING FIVE DAYS. TWO TO THREE WEEKS AFTER FIRST COURSE, IF BLOOD LEAD LEVEL REMAINS ABOVE 80 UG/DL, GIVE SECOND COURSE OF THIRTY INJECTIONS EACH OF BOTH DRUGS. COURSES OF CALCIUM DISODIUM EDETATE SHOULD NOT EXCEED 500 MG/KG, WITH AT LEAST ONE WEEK BETWEEN COURSES.

FOR OTHER SYMPTOMATIC PATIENTS, THE COURSE OF DIMERCAPROL AND CALCIUM DISODIUM EDETATE CAN BE SHORTENED OR CALCIUM DISODIUM EDETATE ONLY CAN BE GIVEN IN A DOSAGE OF 50 MG/KG INTRAVENOUSLY AS 0.5% SOLUTION IN 5% DEXTROSE IN WATER OR NORMAL SALINE BY INFUSION OVER NOT LESS THAN EIGHT HOURS FOR NOT MORE THAN FIVE DAYS. FOLLOW WITH PENICILLAMINE, 500-

SEVERE EFFECTS BELOW 0.5 MG/24 HOURS.
(ANTIDOTES MUST BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL)
FURTHER TREATMENT - TREAT ACUTE ENCEPHALOPATHY.
SPECIAL TREATMENT - DIALYSIS IS MANDATORY FOR IMPAIRED RENAL
FUNCTION. CORRECT WRIST AND FOOT DROP BY SPLINTING. TOXICITY
OF TETRAETHYL LEAD AND TETRAMETHYL LEAD DOES NOT RESPOND TO
CHELATION THERAPY. GIVE DIAZEPAM TO CONTROL HYPERACTIVITY.
(DREISBACH. HANDBOOK OF POISONING. 11TH ED.)

ACUTE RENAL FAILURE - TREAT SHOCK. FOR HEMOLYTIC REACTIONS.
GIVE SODIUM BICARONATE. 5 G EVERY 1-2 HOURS AS NECESSARY TO
MAINTAIN AN ALKALINE URINE.
(MEDICATION MUST BE GIVEN BY QUALIFIED MEDICAL PERSONNEL)
(DREISBACH. HANDBOOK OF POISONING. 11TH ED.)

HYPERACTIVITY/DELIRIUM/MANIA - PROTECT PATIENT FROM PHYSICAL
INJURY. AVOID MECHANICAL RESTRAINTS. REASSURE PATIENT IN A
CALM. QUIET MANNER. AVOID STRANGE SENSORY STIMULI. ABSOLUTE
SILENCE SHOULD BE AVOIDED. HOWEVER. USE RELATIVES AND FRIENDS
AS ATTENDANTS TO REDUCE APPREHENSION. USE ONE OF THE FOLLOWING
DRUGS:

- PARALDEHYDE, 4-16 ML ORALLY IN CRACKED ICE, MILK, FRUIT
JUICE, OR WHISKEY; OR 8-32 ML IN TWO VOLUMES OF VEGETABLE OIL
RECTALLY.
- SCOPOLAMINE HYDROBROMIDE. 0.5 MG SUBCUTANEOUSLY.
- CHLORPROMAZINE (THORAZINE), 25-50 MG BY DEEP INTRAMUSCULAR
INJECTION OR ORALLY. REPEAT AT INTERVALS OF 4-6 HOURS.
- PROMAZINE (SPARINE). 50-100 MG ORALLY. INTRAMUSCULARLY, OR
INTRAVENOUSLY AT INTERVALS OF 4-6 HOURS.
- DIAZEPAM. 2-5 MG INTRAVENOUSLY AT A RATE OF 1 MG/MIN.
(MEDICATION MUST BE GIVEN BY QUALIFIED MEDICAL PERSONNEL)
(DREISBACH. HANDBOOK OF POISONING. 11TH ED.)

GASTRIC LAVAGE - GIVE PATIENT GLASS OF WATER PRIOR TO
PASSING OF STOMACH TUBE. LAY PATIENT ON ONE SIDE, WITH
HEAD LOWER THAN WAIST. IMMOBILIZE A STRUGGLING PATIENT
WITH A SHEET OR BLANKET. MEASURE DISTANCE ON TUBE FROM
MOUTH TO EPIGASTRIUM. MARK TUBE WITH INDELIBLE MARKING
OR TAPE. REMOVE DENTURES AND OTHER FOREIGN OBJECTS FROM
MOUTH. OPEN MOUTH, USE GAG IF NECESSARY. EXTEND HEAD BY
LIFTING THE CHIN. PASS TUBE OVER TONGUE AND TOWARD BACK
OF THROAT WITHOUT EXTENDING HEAD OR NECK. IF OBSTRUCTION
IS MET BEFORE THE MARK ON TUBE REACHES LEVELS OF TEETH,
DO NOT FORCE, BUT REMOVE TUBE AND REPEAT PROCEDURE UNTIL
TUBE PASSES TO MARK. PLACE END OF TUBE IN GLASS OF WATER.
IF TUBE IS OBSTRUCTED WHEN INTRODUCED ABOUT HALFWAY TO THE
MARK. IT MAY HAVE ENTERED TRACHEA.

AFTER TUBE IS PLACED IN STOMACH, ASPIRATE FIRST TO
REMOVE STOMACH CONTENTS BY IRRIGATION SYRINGE. SAVE STOMACH
CONTENTS FOR EXAMINATION. AND REPEAT INTRODUCTION AND
WITHDRAWAL OF 100-300 ML WARM WATER UNTIL AT LEAST 3 LITERS
OF CLEAR RETURN ARE OBTAINED. USE ACTIVATED CHARCOAL AT
BEGINNING OF LAVAGE TO AID IN POISON INACTIVATION. LEAVE
50 GRAMS OF CHARCOAL SUSPENDED IN WATER IN THE STOMACH.
IF INTRODUCTION AND REMOVAL OF LAVAGE FLUID BY GRAVITY
REQUIRES MORE THAN FIVE MINUTES. ASSIST WITH ASEPTO SYR-
INGE. PREVENT ASPIRATION WITH CUFFED ENDOTRACHEAL TUBE.
AVOID GIVING LARGE QUANTITIES OF WATER.

MASSAGE OF EPIGASTRIUM WHILE STOMACH TUBE IS BEING
ASPIRATED MAY AID IN POISON REMOVAL.

IF PATIENT COMATOSE. INTUBATE TRACHEA WITH CUFFED ENDO-
TRACHEAL TUBE. SUCCINYLCHLORINE MAY BE ADMINISTERED BY QUAL-
IFIED MEDICAL PERSONNEL TO EASE INSERTION OF TRACHEAL CATH-
ETER PRIOR TO PASSAGE OF STOMACH TUBE.
(DREISBACH, HANDBOOK OF POISONING. 11TH ED.)

TYPE WHAT INFORMATION YOU REQUIRE
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).
ORGA

ORGANS

CENTRAL NERVOUS SYSTEM
CARDIOVASCULAR SYSTEM
GASTROINTESTINAL
KIDNEYS
REPRODUCTIVE SYSTEM
GINGIVAL TISSUE

TYPE WHAT INFORMATION YOU REQUIRE

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND, /HELP/, OR /NONE/).

NONE

LEAD - NO MORE HITS IN DATABASE.

ENTER NAME, KEYWORD, SYMPTOM, SLA, NAMELIST, HELP, OR QUIT.

QUIT

CADMIUM

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
SYNM

SYND.YMS

C.I. 77180
CADMIUM DUST
OHS03720

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
EXPO

PERMISSIBLE EXPOSURE LIMIT

0.2 MG/M3 OSHA TWA (DUST)
0.6 MG/M3 OSHA CEILING (DUST)
0.1 MG/M3 OSHA TWA (FUME)
0.3 MG/M3 OSHA CEILING (FUME)
0.05 MG/M3 ACGIH TWA (DUST)
0.04 MG/M3 NIOSH RECOMMENDED TWA
0.2 MG/M3 NIOSH RECOMMENDED 15 MINUTE CEILING

SUSPECT HUMAN CARCINOGEN (NTP)

ANIMAL CARCINOGEN (IARC)

MUTAGENIC DATA (RTEC)

REPORTABLE QUANTITIES - 1 LB CWA 307(A)

CERCLA HAZARD RATINGS - TOXICITY 3 - IGNITABILITY 2 - REACTIVITY 2 -
PERSISTENCE 3

TOXICOLOGY: ACUTE POISONING FROM INGESTION CAUSES GASTROINTESTINAL
UPSET, SALIVATION, SHOCK, LIVER AND KIDNEY DAMAGE. FUME INHALATION
CAUSES PULMONARY DISTURBANCES, WEAKNESS, AND LEG PAIN, PROGRESSING TO
FEVER AND LUNG CONGESTION.

CHRONIC INHALATION PRODUCES ANOSMIA, DYSPNEA, WEIGHT LOSS, AND YELLOW
DISCOLORATION OF THE TEETH. IRREVERSIBLE LUNG INJURY HAS RESULTED,
AS HAS KIDNEY DAMAGE. HYPERTENSION HAS RECENTLY BEEN REPORTED.

EVIDENCE FOR CARCINOGENICITY OF CADMIUM AND CERTAIN COMPOUNDS IS

20

CADMIUM POWDER AND CADMIUM SULFATE PRODUCE LOCAL SARCOMAS IN RATS FOLLOWING INTRAMUSCULAR ADMINISTRATION. CADMIUM CHLORIDE AND SULFATE PRODUCE TESTICULAR TUMORS IN MICE AND RATS FOLLOWING SUBCUTANEOUS ADMINISTRATION. EVIDENCE FOR CARCINOGENICITY IN HUMANS IS LIMITED. STUDIES SUGGEST OCCUPATIONAL EXPOSURE TO SOME FORM OF CADMIUM, POSSIBLY THE OXIDE, INCREASES THE RISK OF PROSTATE, RESPIRATORY, AND GENITOURINARY CANCERS IN HUMANS.

THE THRESHOLD LIMIT VALUE WAS SET TO PREVENT SYSTEMIC EFFECTS FROM CHRONIC POISONING.

IHL-MAN TCLO: 88 UG/M3/8.6 YR ORL-RBT LDLO: 70 MG/KG
IHL-MAN LCLO: 39 MG/M3/20 MIN
UNK-MAN LDLO: 15 MG/KG
OPL-RBT LD50: 225 MG/KG

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
IDLH

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONCENTRATION

40 MG/M3

OSHA/NIOSH

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
DESC

PHYSICAL DESCRIPTION

SILVER-WHITE, BLUE-TINGED, LUSTROUS METAL OR GRAYISH WHITE POWDER.
MALLEABLE

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
PROP

CHEMICAL AND PHYSICAL PROPERTIES

MOLECULAR WEIGHT: 112.4

BOILING POINT AT 1 ATM, F: 1409 F

SOLUBILITY IN WATER, G/100 G WATER AT 20C: INSOLUBLE

FLASH POINT, CLOSED CUP, F (OR OPEN CUP IF OC): FLAMMABLE

VAPOR PRESSURE @ 20 C, MMHG: 0.00 MM

MELTING POINT, F: 610 F

UPPER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: 1059F CLOUD

LOWER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: COMBUSTIBLE

AUTOIGNITION TEMPERATURE: 482 F

SPECIFIC GRAVITY: 8.642

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
INCO

INCOMPATIBILITIES

STRONG OXIDIZERS

SULFUR

SELENIUM

TELLURIUM

SPONTANEOUSLY FLAMMABLE IN AIR

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
CEOT

PERSONAL PROTECTIVE EQUIPMENT

FOLLOWING INFORMATION FROM NIOSH/OSHA "OCCUPATIONAL HEALTH GUIDELINES FOR CHEMICAL HAZARDS":

PLACE CONTAMINATED CLOTHING IN CLOSED CONTAINERS FOR STORAGE UNTIL LAUNDERED OR DISCARDED

IF CLOTHING IS TO BE LAUNDERED, INFORM PERSON PERFORMING OPERATION OF CONTAMINANT'S HAZARDOUS PROPERTIES

TYPE WHAT INFORMATION YOU REQUIRE:

PROV

SPECIFIC EMERGENCY PROVISIONS

FOLLOWING INFORMATION FROM NIOSH/OSHA "OCCUPATIONAL HEALTH GUIDELINES FOR CHEMICAL HAZARDS":

AN EYE-WASH FOUNTAIN SHOULD BE PROVIDED WITHIN THE IMMEDIATE WORK AREA WHERE THERE IS ANY POSSIBILITY THAT EMPLOYEES' EYES MAY BE EXPOSED TO CADMIUM CHLORIDE DUST
NO EATING OR SMOKING IN AREAS WHERE CADMIUM FUMES MAY BE GENERATED, OR WHERE CADMIUM DUST IS HANDLED, PROCESSED, OR STORED
WASH HANDS WITH SOAP OR MILD DETERGENT AND WATER BEFORE EATING OR SMOKING

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/. RESP

RESPIRATOR SELECTION (UPPER LIMIT DEVICES PERMITTED)

1 MG/M3

- DUST MASK
(EXCEPT SINGLE-USE RESPIRATORS)

2 MG/M3

- DUST MASK
(EXCEPT SINGLE-USE RESPIRATORS AND QUARTER-MASK RESPIRATORS)
- HIGH-EFFICIENCY PARTICULATE RESPIRATOR
- SUPPLIED-AIR RESPIRATOR
- SELF-CONTAINED BREATHING APPARATUS

10 mg/M3

- HIGH-EFFICIENCY PARTICULATE RESPIRATOR WITH A FULL FACE-PIECE, HELMET, OR HOOD
- SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACE-PIECE

40 MG/M3

- POWERED AIR-PURIFYING RESPIRATOR WITH A HIGH-EFFICIENCY PARTICULATE FILTER
- TYPE 'C' SUPPLIED-AIR RESPIRATOR OPERATED IN PRESSURE-DEMAND, POSITIVE-PRESSURE, OR CONTINUOUS-FLOW MODE

ESCAPE

- DUST MASK
(EXCEPT SINGLE-USE RESPIRATORS)
- SELF-CONTAINED BREATHING APPARATUS

FIREFIGHTING

- SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACE-PIECE OPERATED IN PRESSURE-DEMAND OR POSITIVE-PRESSURE MODE

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/. ROUT

INHALATION

INGESTION

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

SYMP

SYMPTOMS

EYE IRRITATION

SKIN IRRITATION

MUCOUS MEMBRANE IRRITATION

CENTRAL NERVOUS SYSTEM DEPRESSION

RESPIRATORY DISTRESS

WEARINESS

ANOSMIA

HEADACHE

MUSCULAR PAIN

ABDOMINAL CRAMPS

NAUSEA

DIARRHEA

DYSPNEA

VOMITING

PROTEINURIA

KIDNEY DAMAGE

LIVER DAMAGE

RESPIRATORY EDEMA

SHOCK

SATIATION

FEVER

WEIGHT LOSS

RESPIRATORY IRRITATION

HYPERTENSION

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

ORGA

ORGANS

EYES

SKIN

RESPIRATORY SYSTEM

CENTRAL NERVOUS SYSTEM

CARDIOVASCULAR SYSTEM

KIDNEYS

LIVER

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

NONE

ENTER NAME, KEYWORD, SYMPTOM, STLA, NAMELIST, HELP, OR QUIT

NAME

ENTER CHEMICAL NAME

ZINC

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/. OR /NONE/.
SYNM

SYNONYMS

- BLUE POWDER
- C.I. 77945
- C.I. PIGMENT BLACK 16
- C.I. PIGMENT METAL 6
- EMANAY ZINC DUST
- GRANULAR ZINC
- UN 1436
- ZINC DUST
- JASAD
- ZINC POWDER
- ASARCO L 15
- OH525230

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/. OR /NONE/.
EXPO

PERMISSIBLE EXPOSURE LIMIT

NONE ESTABLISHED

CERCLA HAZARD RATINGS - TOXICITY 1 - IGNITABILITY 2 - REACTIVITY 1 -
PERSISTENCE 3

TOXICOLOGY: ZINC FUMES CAUSE METAL-FUME FEVER. SYMPTOMS OF INHALTION OF ZINC OXIDE FUME ARE FEVER, CHILLS, NAUSEA AND VOMITING, MUSCULAR ACHES AND WEAKNESS. FUMES FROM SOLUBLE ZINC SALTS MAY CAUSE PULMONARY EDEMA, WITH CYANOSIS AND DYSPNEA.

THE THRESHOLD LIMIT VALUE FOR ZINC OXIDE FUME WAS SET TO PREVENT METAL FUME FEVER.

IHL-HMN TCLO:124 MG/M3/50 MIN

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

24
IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONCENTRATION
NONE SPECIFIED

TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
DESC

PHYSICAL DESCRIPTION

BLUISH-WHITE METAL

TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
PROP

CHEMICAL AND PHYSICAL PROPERTIES

MOLECULAR WEIGHT: 65.37

BOILING POINT AT 1 ATM. F: 1665 F

SOLUBILITY IN WATER, G/100 G WATER AT 20C: INSOLUBLE

FLASH POINT, CLOSED CUP, F (OR OPEN CUP IF 0C): NONFLAMABLE

VAPOR PRESSURE @ 20 C, MMHG: 1 MM AT 909 F

MELTING POINT, F: 787 F

UPPER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: 500 G/CM3

LOWER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: NA

AUTOIGNITION TEMPERATURE: 860 F (DUST)

SPECIFIC GRAVITY: 7.14

TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
INCO

INCOMPATIBILITIES

THERMAL DECOMPOSITION PRODUCTS ARE HAZARDOUS AND/OR TOXIC

ACIDS

NITRIC ACID

AMMONIUM SALTS

PERFORMIC ACID

POTASSIUM CHLORATE

POTASSIUM NITRATE

SELENIUM

SODIUM PEROXIDE

SULFUR

TELLURIUM

WATER

CARBON DISULFIDE

CHLORATES

CHLORINE

CHLORINE TRIFLUORIDE

CHROMIC ANHYDRIDE

FLUORINE

HYDROXYLAMINE

MAGNESIUM

TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
CLOT

PERSONAL PROTECTIVE EQUIPMENT

NO NIOSH/OSHA DATA; RECOMMEND

PREVENT REPEATED OR PROLONGED SKIN CONTACT

WEAR IMPERVIOUS CLOTHING

WEAR GLOVES

WEAR FACESHIELD (8 INCH MINIMUM)

PLACE CONTAMINATED CLOTHING IN CLOSED CONTAINERS FOR STORAGE UNTIL
LAUNDERED OR DISCARDED

IF CLOTHING IS TO BE LAUNDERED, INFORM PERSON PERFORMING OPERATION OF
CONTAMINANT'S HAZARDOUS PROPERTIES

TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/

SPECIFIC EMERGENCY PROVISIONS

NO NIOSH/OSHA DATA, ADVISE:

EYE-WASH FOUNTAIN WITHIN IMMEDIATE WORK AREA WHERE EMPLOYEES' EYES MAY BE EXPOSED TO SUBSTANCE

QUICK DRENCHING FACILITIES WITHIN IMMEDIATE WORK AREA WHERE EMPLOYEES MAY BE EXPOSED TO SUBSTANCE

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
RESP

RESPIRATOR SELECTION (UPPER LIMIT DEVICES PERMITTED)

HIGH LEVELS

- DUST MASK

FIREFIGHTING

- SELF-CONTAINED BREATHING APPARATUS
WITH A FULL FACE-PIECE
OPERATED IN PRESSURE-DEMAND OR POSITIVE-PRESSURE MODE

FIREFIGHTING

- SELF-CONTAINED BREATHING APPARATUS
WITH A FULL FACE-PIECE
OPERATED IN PRESSURE-DEMAND OR POSITIVE-PRESSURE MODE

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
ROUT

ROUTE OF ENTRY INTO BODY

SKIN ABSORPTION

SKIN OR EYE CONTACT

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
SYMP

SYMPTOMS

SKIN IRRITATION

THIRST

COUGHING

WEAKNESS

MUSCULAR ACHE

FEVER

NAUSEA

VOMITING

ABDOMINAL CRAMPS

DIARRHEA

TREMORS

HYPOTHERMIA

CYANOSIS

DYSPNEA

DERMATITIS

PNEUMONIA

HEADACHE

MALaise

METALLIC TASTE

RESPIRATORY TRIMMA

BRONCHITIS

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
ORGA

ORGANS

EYES

SKIN

RESPIRATORY SYSTEM

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

NONE

ENTER NAME, KEYWORD, SYMPTOM, SLA, NAMELIST, HELP, OR QUIT

NAME

ENTER CHEMICAL NAME

27
ENTER NAME, KEYWORD, SYMPTOM, STLA, NAMELIST, HELP, OR QUIT

NAME

ENTER CHEMICAL NAME

MERCURY

TYPE WHAT INFORMATION YOU REQUIRE:

ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

M

CHEMICAL NAME

MERCURY

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

SYNM

DYNOYMS

METALLIC MERCURY

INORGANIC MERCURY

MERCURY, METALLIC

MERCURY, INORGANIC

QUICKSILVER

NA 2809

COLLOIDAL MERCURY

NCI-C60399

QUICK SILVER

QUECKSILBER

DHS14020

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

EXPO

PERMISSIBLE EXPOSURE LIMIT

0.1 MG/M3 OSHA CEILING

50 UG/M3 ACGIH TWA

150 UG/M3 ACGIH STEL

0.05 MG(HG)/M3 NIOSH RECOMMENDED TWA

INDEFINITE ANIMAL CARCINOGEN (RTEC)

REPORTABLE QUANTITIES - 1 LB CWA 307(A) - 1 LB CWA 112

1 LB RCRA 3001 - 1 LB PROPOSED

CERCLA HAZARD RATINGS - TOXICITY 3 - IGNITABILITY 0 - REACTIVITY 2 -
PERSISTENCE 3

TOXICOLOGY: MERCURY IS A PRIMARY SKIN IRRITANT. SKIN SENSITIZER.
NEPHROTOXIN AND NEUROTOXIN.

ACUTE POISONING FOLLOWING INGESTION CAUSES METALLIC TASTE, THIRST,
ABDOMINAL PAIN, VOMITING AND BLOODY DIARRHEA. DEATH MAY OCCUR FROM
UREMIA. INHALATION OF VAPOR RESULTS IN DYSPNEA, COUGH, FEVER, NAUSEA,
VOMITING, DIARRHEA, STOMATITIS, SALIVATION AND METALLIC TASTE. PULMON-
ARY DISTURBANCES MAY FOLLOW. ANURIA MAY OCCUR.

CHRONIC INGESTION CAUSES SKIN DISORDERS, SALIVATION, DIARRHEA, ANEMIA,
LEUKOPENIA, LIVER AND KIDNEY DAMAGE. INHALATION MAY RESULT IN TREMORS,
SALIVATION, STOMATITIS, LOSSENING OF THE TEETH, BLUE GUM LINE,
PERIPHERAL NEUROPATHY, NEPHRITIS, DIARRHEA, ANXIETY, HEADACHE, WEIGHT
LOSS, ANOREXIA, AND PSYCHIC DISTURBANCES.

THE THRESHOLD LIMIT VALUE WAS SET TO PREVENT CHRONIC POISONING.

IHL-WMN TCLO:150 UG/M3/46 DAYS

IHL-RBT LCLO: 29 MG/M3/30 HR

TYPE WHAT INFORMATION YOU REQUIRE:

ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

PROP

CHEMICAL AND PHYSICAL PROPERTIES

MOLECULAR WEIGHT: 201

BOILING POINT AT 1 ATM. F: 674 F

SOLUBILITY IN WATER, G/100 G WATER AT 20C: INSOLUBLE

MELTING POINT, F: -38 F
 LOWER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: NOT APPLICABLE
 SPECIFIC GRAVITY: 13.5939
 VAPOR DENSITY (AIR=1): 7.0
 TYPE WHAT INFORMATION YOU REQUIRE:
 /ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

INCOMPATIBILITIES

ACETYLENE GAS
 AMMONIA
 TYPE WHAT INFORMATION YOU REQUIRE:
 /ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

PERSONAL PROTECTIVE EQUIPMENT

FOLLOWING INFORMATION FROM NIOSH/OSHA "OCCUPATIONAL HEALTH GUIDELINES FOR CHEMICAL HAZARDS":

- PREVENT SKIN CONTACT. WHERE SKIN CONTACT MAY OCCUR
- WEAR IMPERVIOUS CLOTHING
- WEAR GLOVES
- WEAR FACESHIELD (8 INCH MINIMUM)

PLACE CONTAMINATED CLOTHING IN CLOSED CONTAINERS FOR STORAGE UNTIL LAUNDERED OR DISCARDED
 IF CLOTHING IS TO BE LAUNDERED, INFORM PERSON PERFORMING OPERATION OF CONTAMINANT'S HAZARDOUS PROPERTIES

TYPE WHAT INFORMATION YOU REQUIRE:
 /ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

RESPIRATOR SELECTION (UPPER LIMIT DEVICES PERMITTED)

- 1 MG/M3
 - SUPPLIED-AIR RESPIRATOR
 - SELF-CONTAINED BREATHING APPARATUS
- 5 MG/M3
 - SUPPLIED-AIR RESPIRATOR WITH A FULL FACE-PIECE
 - SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACE-PIECE
- 28 MG/M3
 - TYPE 'C' SUPPLIED-AIR RESPIRATOR
 - SUPPLIED-AIR RESPIRATOR OPERATED IN PRESSURE-DEMAND, POSITIVE-PRESSURE, OR CONTINUOUS-FLOW MODE

ESCAPE

- GAS MASK WITH AN ORGANIC VAPOR CANISTER (CHIN-STYLE OR FRONT- OR BACK-MOUNTED CANISTER)
- SELF-CONTAINED BREATHING APPARATUS

- 28 MG/M3
 - TYPE 'C' SUPPLIED-AIR RESPIRATOR OPERATED IN PRESSURE-DEMAND, POSITIVE-PRESSURE, OR CONTINUOUS-FLOW MODE

ESCAPE

- GAS MASK
WITH A CANISTER
PROVIDING PROTECTION AGAINST SPECIFIC COMPOUND OF CONCERN
(FRONT- OR BACK-MOUNTED)

TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
ROUT

ROUTE OF ENTRY INTO BODY

- INHALATION
- INGESTION
- SKIN OR EYE CONTACT

TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
SYMP

SYMPTOMS

- COUGHING
- DYSPNEA
- DERMATITIS
- SALIVATION
- LACRIMATION
- THIRST
- METALLIC TASTE
- NAUSEA
- VOMITING
- GASTROINTESTINAL PAIN
- RESPIRATORY EDEMA
- PNEUMONIA
- BRONCHITIS
- ACIDOSIS
- LEUKOPENIA
- HEMATURIA
- PROTEINURIA
- DIARRHEA
- BLOODY STOOLS
- GINGIVAL LEAD LINE
- CENTRAL NERVOUS SYSTEM DEPRESSION
- DYSARTHIA
- HEADACHE
- FATIGUE
- WEAKNESS
- IRRITABILITY
- INSOMNIA
- DIZZINESS
- INCOORDINATION
- NERVOUSNESS
- MENTAL DEPRESSION
- HALLUCINATIONS
- STOMATITIS
- PARESTHESIA
- ANEMIA
- ANOREXIA
- WEIGHT LOSS
- TREMORS
- CONVULSIONS
- CARDIAC DEPRESSION
- PHOTOPHOBIA
- NEPHRITIS
- UREMIA

ANURIA
 LIVER DAMAGE
 HEMATURIA
 KIDNEY DAMAGE
 NUMBNESS EXTREMITIES
 TYPE WHAT INFORMATION YOU REQUIRE:
 CALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/. OR /NONE/.
 DA

FIRST AID PROCEDURES FOLLOWING EXPOSURE

IF THIS CHEMICAL GETS INTO THE EYES, IMMEDIATELY WASH THE EYES WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING THE LOWER AND UPPER LIDS. GET MEDICAL ATTENTION IMMEDIATELY. CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH THIS CHEMICAL.

IF THIS CHEMICAL GETS ON THE SKIN, IMMEDIATELY WASH CONTAMINATED SKIN WITH SOAP OR MILD DETERGENT & WATER. IF THIS CHEMICAL SOAKS CLOTHING, IMMEDIATELY REMOVE CLOTHING & WASH SKIN WITH SOAP OR MILD DETERGENT & WATER. GET MEDICAL ATTENTION PROMPTLY.

IF A PERSON BREATHES IN LARGE AMOUNTS OF THIS CHEMICAL, MOVE THE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED PERFORM ARTIFICIAL RESPIRATION. KEEP THE AFFECTED PERSON WARM AND AT REST. GET MEDICAL ATTENTION AS SOON AS POSSIBLE.

INGESTED MERCURY:

EMERGENCY TREATMENT - REMOVE BY GASTRIC LAVAGE WITH TAP WATER OR BY EMESIS AND CATHARSIS.
 ANTIIDOTE - GIVE DIMERCAPROL. HEMODIALYSIS SPEEDS REMOVAL OF MERCURY-DIMERCAPROL COMPLEX. PENICILLAMINE IS ALSO EFFECTIVE. PENICILLAMINE/DIMERCAPROL TREATMENT IS INEFFECTIVE FOR NEUROLOGIC EFFECTS OF ALKYL MERCURY COMPOUNDS. THE USE OF N-ACETYL-D,L-PENICILLAMINE IS EFFECTIVE FOR ALKYL MERCURY IN EXPERIMENTAL ANIMALS. CONTINUE WITH CHELATION TREATMENT UNTIL URINE MERCURY FALLS BELOW 50 UG/24 HOURS.
 FURTHER TREATMENT - TREAT ANURIA AND SHOCK. TREAT STENOTIC LESIONS OF GASTROINTESTINAL TRACT AFTER ENDOSCOPY. RUSTAM SUGGESTS NEOSTIGMINE, 15-22.5 MG, AND ATROPINE, 2-3 MG DAILY IN DIVIDED DOSES, INCREASES MUSCLE STRENGTH IN LATER STAGES OF ALKYL MERCURY POISONING.
 (ANTIIDOTES MUST BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL)
 (DREISBACH, HANDBOOK OF POISONING, 11TH ED.)

GASTRIC LAVAGE - GIVE PATIENT GLASS OF WATER PRIOR TO PASSING OF STOMACH TUBE. LAY PATIENT ON ONE SIDE, WITH HEAD LOWER THAN WAIST. IMMOBILIZE A STRUGGLING PATIENT WITH A SHEET OR BLANKET. MEASURE DISTANCE ON TUBE FROM MOUTH TO EPIGASTRIUM. MARK TUBE WITH INDELIBLE MARKING OR TAPE. REMOVE DENTURES AND OTHER FOREIGN OBJECTS FROM MOUTH. OPEN MOUTH, USE GAG IF NECESSARY. EXTEND HEAD BY LIFTING THE CHIN. PASS TUBE OVER TONGUE AND TOWARD BACK OF THROAT WITHOUT EXTENDING HEAD OR NECK. IF OBSTRUCTION IS MET BEFORE THE MARK ON TUBE REACHES LEVELS OF TEETH, DO NOT FORCE. BUT REMOVE TUBE AND REPEAT PROCEDURE UNTIL TUBE PASSES TO MARK. PLACE END OF TUBE IN GLASS OF WATER. IF TUBE IS OBSTRUCTED WHEN INTRODUCED ABOUT HALFWAY TO THE MARK, IT MAY HAVE ENTERED TRACHEA.

AFTER TUBE IS PLACED IN STOMACH, ASPIRATE FIRST TO REMOVE STOMACH CONTENTS BY IRRIGATION SYRINGE. SAVE STOMACH CONTENTS FOR EXAMINATION, AND REPEAT INTRODUCTION AND WITHDRAWAL OF 100-300 ML WARM WATER UNTIL AT LEAST 3 LITERS OF CLEAR RETURN ARE OBTAINED. USE ACTIVATED CHARCOAL AT BEGINNING OF LAVAGE TO AID IN POISON INACTIVATION. LEAVE 50 GRAMS OF CHARCOAL SUSPENDED IN WATER IN THE STOMACH. IF INTRODUCTION AND REMOVAL OF LAVAGE FLUID BY GRAVITY

AIDP181233.8.2920662
DIAL COMPLETE

RINGING

CONNECT

TELENET
617 1135

TERMINAL=D1

QC 615600

615 600J CONNECTED
CONNECTED TO HAZARDLINE.
ENTER)LOGON COMMAND AND ACCOUNT NUMBER. PRESS /RETURN/.
)LOGON PWU11406
LOGGED ON LINE #07, DATE = 07/26/84. TIME = 13-58-51
ENTER PASSWORD

ML84####

ENTER WHICH OHS SERVICE YOU WISH TO ACCESS:
IF YOU WISH TO ACCESS HAZARDLINE, TYPE /HAZARD/.
IF YOU WISH TO ACCESS ENVIRONMENTAL HEALTH NEWS, TYPE /EHN/.
IF YOU WISH TO EXIT THE SYSTEM, TYPE /LOGOFF/.
PRESS RETURN AFTER THIS COMMAND AND EVERY COMMAND.

HAZARD

*****HAZARDLINE*****

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OCCUPATIONAL HEALTH SERVICES, INC. FOR EMERGENCY SOURCE INFORMATION
400 PLAZA DRIVE CONTACT JOHN S. BRANSFORD, JR:
SECAUCUS, NEW JERSEY 07094 (615) 889-8999 OR (615) 292-1180
(800) 223-8978

--- ATTENTION --- ATTENTION --- ATTENTION ---

OSHA ISSUES ETHYLENE OXIDE STANDARD SETTING EXPOSURE
LIMIT AT ONE PPM, ACTION LEVEL AT 0.5 PPM, NO STEL
- ACCESS EHN ITEM 01754 FOR STORY ON OSHA'S ACTION
- PUBLIC CITIZEN, AFL-CIO SUE OSHA OVER LACK OF
SHORT-TERM EXPOSURE LIMIT IN EHN ITEM 01775
- FOR FULL TEXT OF STANDARD. SEE EHN ITEM 01759

ENTER NAME, KEYWORD, SYMPTOM, STLA, NAMELIST, HELP, OR QUIT
NAME

ENTER CHEMICAL NAME

CHROMIUM

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
EXPO

PERMISSIBLE EXPOSURE LIMIT

1 MG/M3 OSHA TWA

0.5 MG/M3 ACGIH TWA

INDEFINITE ANIMAL CARCINOGEN (IARC)

REPORTABLE QUANTITIES - 1 LB CWA 307(A)

CERCLA HAZARD RATINGS - TOXICITY 0 - IGNITABILITY 0 - REACTIVITY 0 -
PERSISTENCE 3

TOXICOLOGY: SEE SPECIFIC CHROMIUM COMPOUND.

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/ SPECIFIC INFORMATION (BY 4-LETTER COMMAND) /HELP/ OR /NONE/

PHYSICAL DESCRIPTION

SHINY ODORLESS METAL

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
PROP

CHEMICAL AND PHYSICAL PROPERTIES

MOLECULAR WEIGHT: 52

BOILING POINT AT 1 ATM, F: 4784F

SOLUBILITY IN WATER, G/100 G WATER AT 20C: INSOLUBLE

FLASH POINT, CLOSED CUP, F (OR OPEN CUP IF OC: AUTOIGN 752F

VAPOR PRESSURE AT 20C MM HG: 0.00MM

MELTING POINT, F: 3452F

UPPER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: DUST IS EXPLOSIVE

LOWER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: 0.230%

SPECIFIC GRAVITY 7.14

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
RESP

RESPIRATOR SELECTION (UPPER LIMIT DEVICES PERMITTED)

5 MG/M3

- DUST AND MIST RESPIRATOR

10 MG/M3

- DUST AND MIST RESPIRATOR
(EXCEPT SINGLE-USE RESPIRATORS)
AND QUARTER-MASK RESPIRATORS
- FUME OR HIGH-EFFICIENCY PARTICULATE RESPIRATOR
- SUPPLIED-AIR RESPIRATOR
- SELF-CONTAINED BREATHING APPARATUS

50 MG/M3

- HIGH-EFFICIENCY PARTICULATE RESPIRATOR
WITH A FULL FACE-PIECE
- SUPPLIED-AIR RESPIRATOR
WITH A FULL FACE-PIECE, HELMENT, OR HOOD
- SELF-CONTAINED BREATHING APPARATUS
WITH A FULL FACE-PIECE

FIREFIGHTING

- SELF-CONTAINED BREATHING APPARATUS
WITH A FULL FACE-PIECE
OPERATED IN PRESSURE-DEMAND OR POSITIVE-PRESSURE MODE

ESCAPE

- POWERED AIR-PURIFYING RESPIRATOR
WITH A HIGH-EFFICIENCY PARTICULATE FILTER
- TYPE 'C' SUPPLIED-AIR RESPIRATOR
- SUPPLIED-AIR RESPIRATOR
OPERATED IN PRESSURE-DEMAND, POSITIVE-PRESSURE, OR CONTINUOUS-FLOW
MODE

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

OMS
 PIRATORY IRRITATION
 MATITIS
 :EMA
 :ZINESS
 ITING
 TEINURIA
 MATURIA
 IGURIA
 JRIA
 -EMIA
 OCK

WHAT INFORMATION YOU REQUIRE:
 /, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
 ER NAME, KEYWORD, SYMPTOM. STLA, NAMELIST, HELP, OR QUIT

AVOID GIVING LARGE QUANTITIES OF WATER.

PASSAGE OF EPIGASTRIUM WHILE STOMACH TUBE IS BEING ASPIRATED MAY AID IN POISON REMOVAL.

IF PATIENT COMATOSE. INTUBATE TRACHEA WITH CUFFED ENDO-TRACHEAL TUBE. SUCCINYLCHLORINE MAY BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL TO EASE INSERTION OF TRACHEAL CATHETER PRIOR TO PASSAGE OF STOMACH TUBE.

(DREISBACH, HANDBOOK OF POISONING, 11TH ED.)

CATHARSIS - GIVE 30 GRAMS OF SODIUM SULFATE DISSOLVED IN A GLASS OF WATER OR 15-60 ML OF ELEET'S PHOSPHO-SODA DILUTED 1:4. CATHARTIC EFFECT SHOULD OCCUR WITHIN 30-60 MINUTES.

- DO NOT USE CATHARSIS IN PATIENT SHOWING ELECTROLYTE IMBALANCE.

- DO NOT GIVE MAGNESIUM-CONTAINING CATHARTICS TO PATIENT WITH RENAL DISEASE OR THOSE EXPOSED TO NEPHROTOXINS. OR TO PATIENT WITH POSSIBLE MYOGLOBINURIA OR HEMOGLOBINURIA.

- HYPERTONIC CATHARTICS AND ENEMAS ARE HAZARDOUS IN THE PRESENCE OF IMPAIRED RENAL FUNCTION.

- DO NOT GIVE CATHARTIC FOR TREATMENT OF INGESTED CORROSIVE.

(DREISBACH, HANDBOOK OF POISONING, 11TH ED.)

ACUTE RENAL FAILURE - TREAT SHOCK. FOR HEMOLYTIC REACTIONS. GIVE SODIUM BICARONATE. 5 G EVERY 1-2 HOURS AS NECESSARY TO MAINTAIN AN ALKALINE URINE.

(MEDICATION MUST BE GIVEN BY QUALIFIED MEDICAL PERSONNEL)

(DREISBACH, HANDBOOK OF POISONING, 11TH ED.)

CIRCULATORY FAILURE/SHOCK - PLACE PATIENT IN SUPINE POSITION WITH FEET ELEVATED. ESTABLISH AND MAINTAIN AN ADEQUATE AIRWAY. MAINTAIN BODY WARMTH BY APPLICATION OF BLANKETS. BUT DO NOT APPLY EXTERNAL HEAT. RELIEVE PAIN WITH MORPHINE SULFATE. 10 MG/70 KG SUBCUTANEOUSLY OR INTRAVENOUSLY, FOR OTHERWISE UNCONTROLLABLE PAIN. DO NOT GIVE MORPHINE TO CHILDREN UNDER 5 YEARS OF AGE OR TO UNCONSCIOUS OR STUPOROUS PATIENTS. PATIENTS WITH DEPRESSED RESPIRATION SHOULD NOT BE GIVEN MORPHINE UNLESS PERSONNEL AND EQUIPMENT TO MAINTAIN RESPIRATION ARE IMMEDIATELY AVAILABLE. RESTORE AND MAINTAIN ADEQUATE BLOOD VOLUME. GET FURTHER MEDICAL TREATMENT IMMEDIATELY.

(MEDICATION MUST BE GIVEN BY QUALIFIED MEDICAL PERSONNEL)

(DREISBACH, HANDBOOK OF POISONING, 11TH ED.)

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/. OR /NONE/. ORGA

ORGANS

SKIN

EYES

RESPIRATORY SYSTEM

KIDNEYS

LIVER

CENTRAL NERVOUS SYSTEM

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

NONE

ENTER NAME, KEYWORD, SYMPTOM, SYLA, NAMELIST, HELP, OR QUIT

NAME

ENTER CHEMICAL NAME

ARSENIC

TYPE WHAT INFORMATION YOU REQUIRE:

/ALL/. SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.

SIGN IN/OUT SHEET

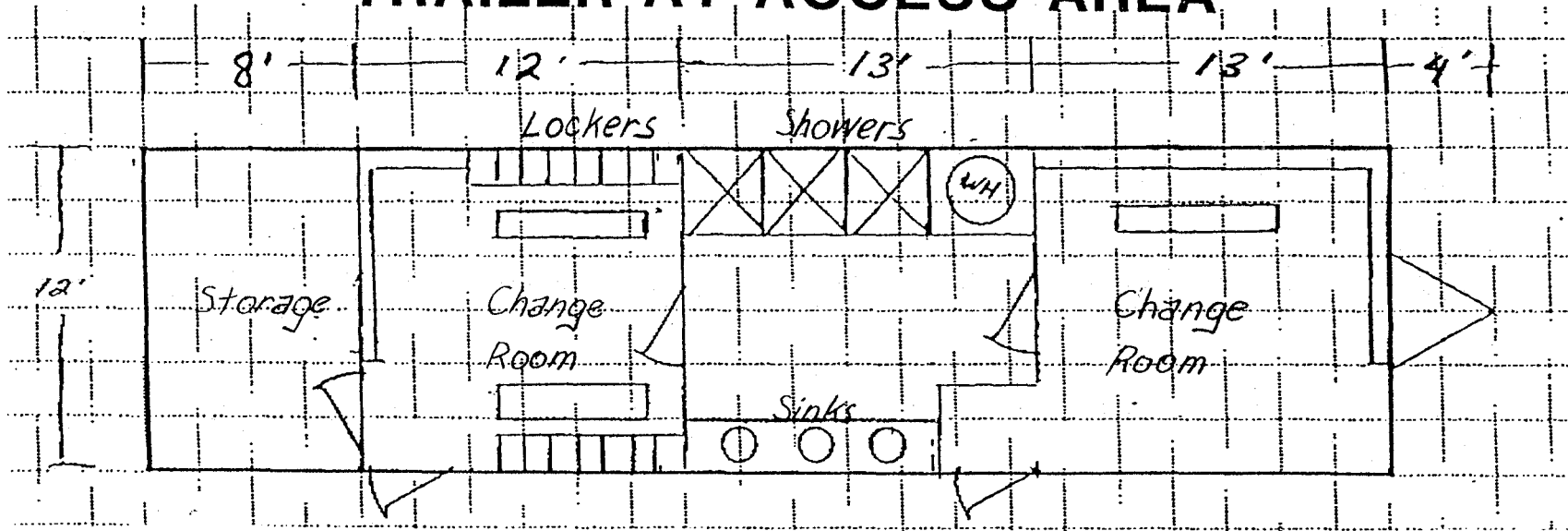
Date	Name	Firm/ Organization	Time IN	Time OUT

ATTACHMENT 3

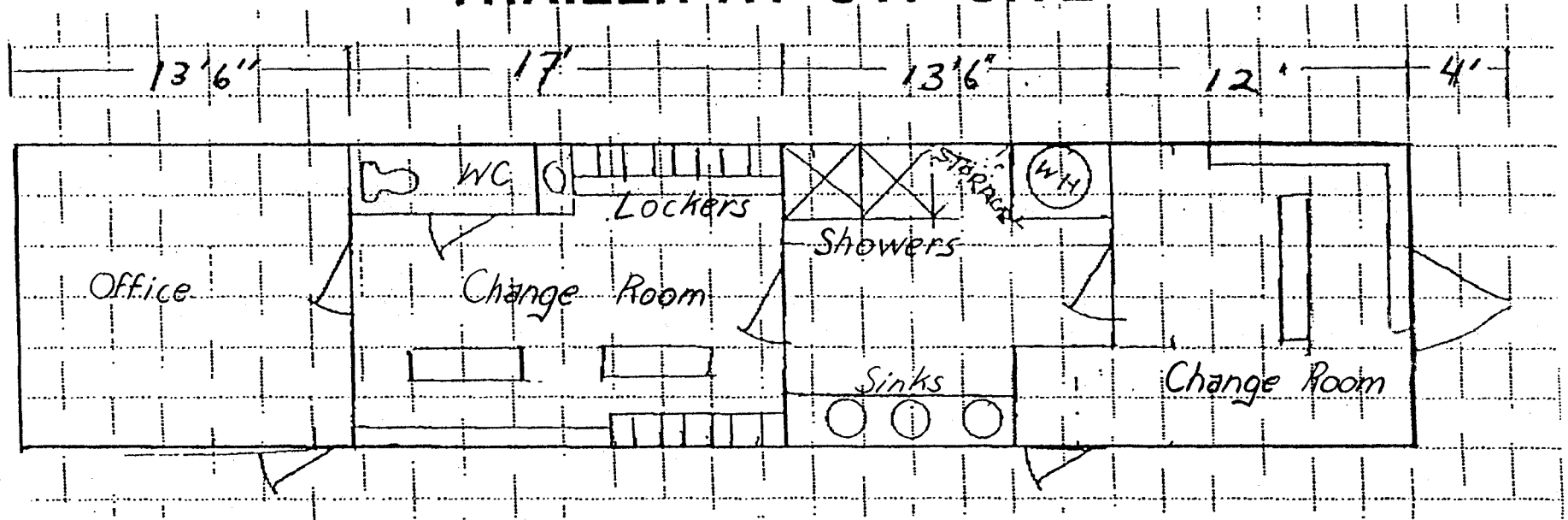
FIRST AID EQUIPMENT LIST

- American National Red Cross First Aid Handbook
- A Standard Type D Unit First Aid Kit, containing:
 - Compresses
 - Gauze and gauze roller bandage
 - Triangular bandages
 - Eye dressing packet
 - Ammonia inhalant
 - Baking soda
 - Salt or other emetic
 - Portable eyewash unit
 - Soap or waterless hand cleaner and towels
 - Band aids
 - Tape
 - Scissors
 - Tweezers
 - Razors

TRAILER AT ACCESS AREA



TRAILER AT CTF SITE



ATTACHMENT 5

CONTINGENCY CONTACT
TELEPHONE LIST

<u>1. Local Emergency Contacts</u>	<u>Phone No.</u>	<u>Location</u>
Sheboygan Fire Department	(414) 459-3322	Sheboygan
Sheboygan Police	(414) 459-3333	Sheboygan
Sheboygan Falls Police	(414) 459-3193	Sheboygan Falls
Village of Kohler Police	(414) 459-3877	Kohler
Sheboygan County Health Dept.	(414) 467-4648	Sheboygan
Sheboygan County Sheriff	(414) 459-3111	Sheboygan
<u>2. Medical Emergency Contacts</u>		
Memorial Hospital Emergency Room/Poison Control Center 2629 N. Seventh Street	(414) 457-5553	Sheboygan
Ambulance Service (24 hr.) Orange Cross Ambulance	(414) 457-4233	Sheboygan
St. Nicholas Hospital Emergency Room/Poison Control Center 1601 N. Taylor Drive	(414) 459-4762	Sheboygan
<u>3. Project Contacts</u>		
<u>Wisconsin Department of Natural Resources</u>		
Local Office	(414) 892-8750	Plymouth
Robin Schmidt, Project Coordinator	(608) 267-7569	Madison
Frank Trcka, Southeast District	(414) 562-9540	Milwaukee
Dean Kelly, Southeast District Spill Coordinator	(414) 562-9656	Milwaukee
<u>U.S. EPA - Region 5</u>		
Bonnie Eleder, Project Manager	(312) 886-4885	Chicago
Emergency Response Team	(312) 353-2318	Chicago

ATTACHMENT 5 (cont'd)

CONTINGENCY TELEPHONE LIST

<u>Blasland & Bouck Engineers, P.C./BBLES</u>	<u>Phone No.</u>	<u>Location</u>
Rick DiFiore, Safety Coordinator	(414) 459-2504	Sheboygan (Yanko)
Pilot CTF Trailer	(414) 467-4000	Sheboygan Falls
Dawn Foster, Project Manager	(315) 446-9120	Syracuse
<u>Tecumseh Products Company</u>		
Ken Miller, Sheboygan Falls Plant Manager	(414) 467-6161	Sheboygan Falls

4. Other

Southeast District Spill Contractor

A. E & K Hazardous Waste Haulers	(414) 458-6030	Sheboygan
B. Triple-A Environmental	(414) 541-1440	Milwaukee
Wisconsin State Patrol	(414) 929-3700	Milwaukee

5. National Organizations

USEPA, Emergency Response Team	(201) 321-6660	New Jersey
US Coast Guard, National Response Team	(800) 424-8802 or (202) 267-2675	Washington, D.C.
CHEMTREC, Chemical Emergencies	(800) 424-9300	
National Foam Center, Emergency Response	(215) 363-1400	Pennsylvania

ATTACHMENT 6

SITE PERSONNEL
PROTECTION AND SAFETY EVALUATION
FORM

SITE PERSONNEL PROTECTION & SAFETY EVALUATION FORMS

SITE: Sheboygan River and Harbor

LOCATION: Sheboygan County, Wisconsin

SITE DESCRIPTION: The Sheboygan River and Harbor is located on the western shore of Lake Michigan in Sheboygan County, Wisconsin. Sediments deposited by natural siltation are known to contain PCBs, and eight heavy metals at various concentrations. The highest concentrations of PCBs have been found in the *Upper River, while the highest concentration of heavy metals occur in the Harbor.*

Contaminants of Concern:

Polychlorinated Biphenyls (PCBs)

- Aroclor 1248
- Aroclor 1254

Heavy Metals

- | | |
|------------|-----------|
| - Arsenic | - Lead |
| - Cadmium | - Mercury |
| - Copper | - Nickel |
| - Chromium | - Zinc |

CONTAMINANT CONCENTRATIONS:

Air: Not Available

Surface Water: Trace levels of PCBs (0-0.5 ppb)

Groundwater: Not Available

Soils and Sediments: *See Table 1.*

ACTIVITIES PLANNED

1. Construction of a Confined Treatment Facility
2. Construction of River Access Points
3. Removal and Transport of River Sediments
4. Armoring of River Sediments
5. Environmental Sampling of Sediment, Soils, Water, and Fish

PROPOSED DATES OF WORK:

August 1989-December 1990

PROPOSED ASRI TEAMS

Environmental Sampling

	<u>Name</u>	<u>Firm</u>	<u>Responsibilities</u>
1.	<u>Richard P. DiFiore</u>	<u>B & B</u>	<u>Field Manager/Safety Coordinator</u>
2.	<u>Penelope C. Thompson</u>	<u>"</u>	<u>Sampling/Decon.</u>
3.	<u>Rick Pierce</u>	<u>"</u>	<u>Surveying</u>
4.	<u>Greg Rabasco</u>	<u>"</u>	<u>Sampling/Decon.</u>
5.	<u>Others</u> - See Table 2		

Construction

1.	<u>James Mulderig</u>	<u>BBLES</u>	<u>Construction Field Manager</u>
2.	<u>Stephen C. Handley</u>	<u>BBLES</u>	<u>River Field Manager</u>
3.	<u>Richard P. DiFiore</u>	<u>B & B</u>	<u>Environmental Oversight/Safety Coordinator</u>
4.	<u>Others</u> - to be provided		