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TANK CLOSURE PLAN HEALTH AND SAFETY PLAN MILLINGTON SUPPACT TN
2/24/1995
ENSAFE/ALLEN & HOSHALL

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**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY
NAVAL AIR STATION
MEMPHIS, TENNESSEE**

**TANK CLOSURE PLAN
HEALTH AND SAFETY PLAN**

**CTO-098
Contract Number: N62467-89-D-0318**

Prepared for:

**Department of the Navy
Southern Division
Naval Facilities Engineering Command
North Charleston, South Carolina**

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February 24, 1995

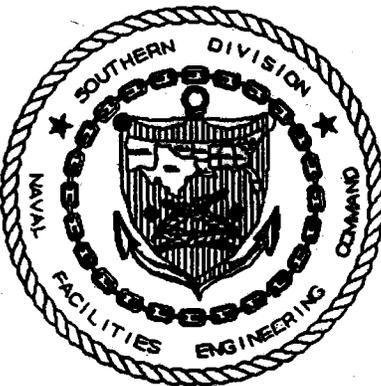


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1.0 Introduction

The following is the EnSafe/Allen & Hoshall (E/A&H) Health and Safety Plan (HASP) for the tank closure activities to be performed at the Naval Air Station — Memphis (NAS Memphis) in Millington, Tennessee. This plan specifies the procedures and protective measures that will be used to ensure the health and safety of those working in and around the proposed sampling sites, as well as those who reside and work in the vicinity of the sites.

The purpose of the study is to determine the nature and extent of specific waste streams at NAS Memphis.

2.0 Applicability

The provisions of this HASP are mandatory for E/A&H personnel, who must read this plan and sign the acceptance form (see Appendix A) before starting site activities. In addition, personnel will adhere to the most current requirements of Title 29 Code of Federal Regulations (CFR) 1910.120, Standards for Hazardous Waste Operations and Emergency Response (HAZWOPER), as specified for workers involved with corrective actions under RCRA.

All non-E/A&H personnel present in E/A&H work areas shall present their own safety plan which, at a minimum, meets the requirements of E/A&H's plan. Subcontractors will be wholly responsible for enforcing the requirements of their plan with their employees and shall provide each employee with the appropriate personal protective equipment (PPE).

This HASP applies to specific planned activities and procedures such as surveying, container sampling, and collecting soil, groundwater, surface water, and sediment samples. Non-routine procedures and tasks involving non-routine hazards are not adequately addressed in this plan. Examples of such procedures are:

- Confined space entry (i.e., tanks, pits, oil/water separators)
- Trenching
- Sampling, handling, or removing unidentified drums.

Should it be necessary to conduct these or other high-risk tasks, specific health and safety procedures must be developed, approved, and implemented before proceeding.

3.0 Site Characterization

3.1 Work Areas

Site control will be established and maintained according to the recommendations in the EPA's *Interim Standard Operating Safety Guides* (Revised September 1982). Three general zones of operation will be established to reduce the potential for contaminant migration and risk of personnel exposure:

- The exclusion zone;
- The contamination reduction zone; and
- The support zone.

The exclusion zone will be located so that the area between the decontamination station and the work area entrances will be included. The contamination reduction zone will include the decontamination station and the support zone will be located beyond the contamination reduction zone. Only authorized personnel with a minimum of 40 hours health and safety training meeting the requirements of OSHA 29 CFR 1910.120 are permitted within the exclusion and contamination reduction zones.

The exclusion zone is considered contaminated and all personnel within the area must use the prescribed level of personal protection. A checkpoint will be established at the periphery of the exclusion zone to regulate the flow of personnel and equipment in and out of the area. The

exclusion zone boundary is the hotline. All personnel crossing the hotline into the exclusion zone must use the buddy system.

The person entering the exclusion zone must be accompanied by a person who is able to:

- Provide his or her partner with assistance.
- Observe his or her partner for signs of chemical or heat/cold exposure.
- Periodically check the integrity of his or her partner's protective clothing.
- Notify the shift supervisor, his representative or others if emergency help is needed.

Additionally, at least one person shall remain outside the exclusion zone and have available at least the same level of PPE as the buddies who are entering the exclusion zone. The person outside the exclusion zone will act as the safety observer and perform the security duties described in the section Work Area Access/Egress of this plan.

The contamination reduction zone serves as a buffer between the exclusion zone and the support zone and is intended to prevent the spread of contaminants from the work areas. All decontamination procedures will be conducted in this area. Personnel will leave the support zone and enter the contamination reduction zone through a controlled access point. They must wear the prescribed PPE. Exiting the contamination reduction zone requires the removal of all contaminants through compliance with established decontamination procedures.

The support zone is the outermost area and is considered a non-contaminated or clean area. The investigation area will have a support area equipped with an appropriate first-aid station.

3.2 Work Area Access/Egress

All personnel entering the site exclusion zone must follow the procedures outlined in this section:

1. Check in with the site supervisor or representative.
2. Provide the site supervisor with the following information:
 - The names of individuals entering the site work area.
 - Destination in the site work area.
 - Activity to be performed at that location.
 - Duration of the planned activity.
3. The site supervisor will inform persons entering the site work area of the location of other activities taking place during the scheduled entry. If the site supervisor determines it is not safe for the scheduled entry, he can reschedule the entry or stop all other activities to perform the specific task.
4. When leaving the site work area, proceed directly to the decontamination station and check out with the operations site supervisor or his representative. All exits from the site work area must be made through the decontamination station.
5. Perform all necessary decontamination before leaving the decontamination station.

3.3 Communications Between Team Members

Communications between team members (including the person responsible for team safety) will be through verbal contact and hand signals. Hand signals will be used to:

- Alert team member of emergency situations;
- Transmit safety information;
- Communicate changes in work schedule; and
- Maintain site control.

3.4 External Communications

Offsite and onsite personnel will communicate through mobile telephones (available at each sampling site) and telephones and a fax machine located in the E/A&H field trailer.

This equipment can be used to:

- Coordinate emergency responses;
- File reports;
- Maintain contact with offsite personnel; and
- Order supplies and materials.

4.0 SITE ACTIVITIES

The activities scheduled for the tank closure plan include the collection of samples from 5 underground storage tanks (USTs), 4 above ground storage tanks (ASTs), 2 oil/water separators, and 7 tank pits. The provisions of this HASP do not address sampling drums of unknown contents. **Under no circumstances will samples be collected from drums containing unknown contents without consultation with the project health and safety officer and the provisions of this HASP have been amended.**

5.0 Hazard Evaluation

5.1 Chemical Hazards

Previous site surveys at NAS Memphis have identified the contents of the various collection vessels. Table 5-1 lists the type of structure, the size, and suspected contents.

Table 5-1 Storage Vessels NAS Memphis, Tennessee		
Collection Vessel Type	Quantity (gallons)	Contents
UST	100,000	Heating Fuel
UST	15,000	Leaded Gasoline
2 USTs	55	Diesel Fuel
UST	55	Water
AST	25,000	Heating Fuel
2 ASTs	10,000	Reported Empty
AST	300	Diesel
2 Oil/Water Separators	3,000	Waste Oils
7 Tank Pits	500	Waste Petroleum Products

Physical and toxicological properties of substances listed by National Institute for Occupational Safety and Health (NIOSH), OSHA, and/or the American Conference of Governmental Industrial Hygienists for the site are presented in Material Safety Data Sheet (MSDS) form in Appendix B. These documents will be reviewed at the start-up meeting before work begins.

Flammable vapors from petroleum products and flammable gases present a hazard of fire or explosion. All lights, test instruments and other electrical equipment must be explosion proof or intrinsically safe if operated in areas previously identified as containing flammable gases. All tools used around the work area must be made of a spark-resistant material. Open flames and smoking are not permitted in any work area. Equipment with internal combustion engines must be equipped with flame and spark arresters.

5.2 Physical Hazards

The physical hazards associated with field activities include slip, trip, and fall hazards. Each sampling area should be kept free of excess equipment or debris which may clutter the work area. When working from the top of tanks, the sampling equipment should be placed in a cooler (or similar container) and pulled to the top of the tank with a rope. Support personnel on the ground shall stand away from the tank while the equipment is being lifted and lowered.

5.3 Site Hazard Abatement Methodology

When conducting operations or survey work on foot, personnel will walk at all times. Running greatly increases the probability of slipping, tripping, and falling. When working at sites that support habitat for poisonous snakes, personnel shall wear protective chaps made of a heavy material designed to prevent snake bites to the legs.

During operations or survey work, all personnel will approach the edges of cliffs, ravines, gullies, and ditches with caution. Personnel will carefully examine the edges before approaching to determine the stability of the soil. If operations require E/A&H personnel to enter a ditch, ravine or gully that is: (1) more than 5 feet deep; **and** (2) less than half as wide as it is deep, the project health and safety officer will be notified and this HASP will be amended to include confined space entry procedures.

5.4 Site Preparation

A site survey will determine if any electric, gas, water, steam, sewer or other service lines may potentially be damaged by site activities. These lines will be shut off, capped, tagged and locked out before work begins. Locations of all electric, gas, water, steam, sewer, and other service lines will be determined and marked by NAS Memphis personnel. If any power, water or other utilities will be disturbed during any activity, these lines will be temporarily relocated and protected.

NAS Memphis personnel will determine if any hazardous chemicals, gases, explosives,

flammable materials, or hazardous substances have been used in any pipes, tanks, or other equipment on the property. When these substances are present, testing and purging will be performed and the hazard eliminated before work in the vicinity of underground utilities is started.

5.5 Eye Hazards

Suitable eye protection equipment will be required in all sampling and decontamination areas. These areas include, but are not limited to:

- All E/A&H work sites;
- All manufacturing, assembly, warehouse and development areas (welding and machine shops, processing and sheet metal shops, electrical and tubing production areas, explosive and functional test areas, and airport operations areas);
- Tool fabrication shops;
- Electrical and electronic test laboratories;
- Maintenance and salvage operations;
- Experimental shops;
- Chemical, fluid, and mechanical testing laboratories;
- Shipping and receiving areas and other warehouse operations; and
- Operation of in-plant transportation equipment (e.g., lift trucks, flat-bed trucks, motor scooters, and bicycles).

Obtaining Eye Protection Equipment

E/A&H employees who do not require corrective lenses are furnished standard, non-prescription safety glasses with side shields at no cost. The E/A&H site supervisor will ensure that safety glasses are available. Safety glasses for visitors can also be obtained from the site manager. All subcontractor personnel are required to supply their employees safety glasses with side shields at all times for work in areas listed above.

E/A&H employees who wear corrective lenses may purchase prescription safety glasses with side shields with the approval of the E/A&H health and safety manager. Note that employees with monocular vision (vision in one eye) are required to wear approved eye protection at all times in areas listed above.

6.0 Employee Protection

Employee protection for this project includes standard safe work practices, PPE, procedures and equipment for extreme weather conditions, work limitations and exposure evaluation.

6.1 Standard Safe Work Practices

Standard safe work and personal hygiene practices that will be followed include those described in this section:

- Eating, drinking, chewing gum or tobacco, smoking or any activity that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any area designated as contaminated, unless authorized by the site health and safety manager.
- Hands and face must be thoroughly washed upon leaving the work area.
- Contact lenses shall not be worn onsite.
- Whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garment is removed.
- Contact with surfaces suspected of being contaminated should be avoided. Whenever possible, employees should not walk through puddles, lechate or discolored surfaces, or lean, sit or place equipment on drums, containers or on soil suspected of being contaminated.
- Medicine and alcohol can exacerbate the effects from exposure to toxic chemicals. Prescribed drugs should not be taken by personnel on cleanup or response operations where the potential for absorption, inhalation, or ingestion of toxic substances exists unless specifically approved by a qualified physician. Consumption of alcoholic beverages or use of illegal drugs will not be allowed before or during operations.

6.2 NAS Memphis Facility General Rules of Conduct

- Liquor, firearms, cameras, narcotics, tape recorders, and other contraband items are not permitted on the premises.
- Any violation of local, state, or federal laws, or conduct which is outside the generally accepted moral standards of the community is prohibited.
- Violation of the Espionage Act, willfully hindering or limiting production or sabotage is not permitted.
- Willfully damaging or destroying property, or removing NAS Memphis or government records is forbidden.
- Misappropriation or unauthorized altering or changing of any NAS Memphis or government records is forbidden.
- Securing NAS Memphis tools in a personal or contractors tool box is forbidden.
- Gambling in any form; selling tickets, articles, taking orders, soliciting subscriptions, taking up collections, etc., is forbidden.
- Doing personal work in a NAS Memphis shop or office, using NAS Memphis property or material for unauthorized purposes, or using NAS Memphis or government telephones for unnecessary or unauthorized local or long distance telephone calls is forbidden.
- Compliance with posted signs and notices is required.
- Adjusting or repairing NAS Memphis machinery without authorization is forbidden.
- Boisterousness and noisy or offensive work habits, abusive language, or any verbal, written, symbolic, or other communicative expression which tends to disrupt production or morale is forbidden.
- Fighting or threatening bodily harm to another is forbidden.
- Defacing any NAS Memphis property is forbidden.
- Wearing shorts of any type and/or offensive logos, pictures, or phrases on clothing is forbidden. Shirts, shoes and pants or slacks or coverall-type garments will be worn at all times on NAS Memphis property.

6.3 Personal Protective Equipment (PPE)

The selection of personal protective equipment is based on information collected from:

- RCRA Permit No. TN2 170 022 600 (HWSA-TN 002) (USEPA Region IV 9/15/86).
- SOUTHNAVFACENGCOM (August 1990) *RCRA Facility Assessment* (August 1990), NAS Memphis, Millington, Tennessee.
- SOUTHNAVFACENGCOM (May 1990), *Draft Final RCRA Facility Investigation Work Plan*. Memphis Naval Air Station, Millington, Tennessee.

All activities at the site will be performed using modified Level D PPE. Level D protection consists of hard hat (if overhead hazards exist); nitrile gloves (do not use latex gloves); eye protection with side-shields; chemical resistant, steel-toed and shank boots; coveralls (optional) with full length sleeves and pants; and disposable outer boots (optional). Level D protection was selected because the site constituents are not expected to reach the action levels prescribed for this site (5 parts per million (ppm)). Sample spillage represents the greatest potential for chemical exposure to individuals working on the site.

Air monitoring for volatile organic compounds (VOCs) will be performed continuously during all sampling operations using a photoionization detector (PID). The instrument will be continuous reading and intrinsically safe. An upgrade to Level C will be initiated if VOC concentrations in the breathing zone exceed 5 ppm.

6.4 General Measures

A primary goal of E/A&H is the prevention of all occupationally related injuries and illnesses. The following practices are presented as general precautionary measures for reducing the risks associated with hazardous waste and spill operations. Failure to adhere to the measures will result in disciplinary action.

6.4.1 Personal Protection

1. Be familiar with and knowledgeable about standard operating safety procedures.
2. Be familiar with, knowledgeable about, and adhere to instructions in site safety plan.
3. Identify and arrange for emergency medical assistance. The location, telephone number and transportation capabilities of the nearest emergency medical facilities should be known. For particularly hazardous operations, onsite medical facility should be alerted.
4. Consider fatigue, heat stress, cold exposure and other environmental factors influencing efficiency of personnel.
5. Wear only NIOSH-approved or designated respiratory protective devices and protective clothing.

6.4.2 Operations

1. In emergencies and routine operations in respirators, oral and/or semaphore safety protocols must be established by the team consistent with the site safety plan.
2. E/A&H personnel going onsite must be thoroughly briefed on the practices, emergency procedures and communication methods.
3. Initial entry team entrance and exit routes must be planned and emergency escape routes delineated.
4. Unfamiliar operations must be rehearsed before implementation.
5. Personnel onsite use the buddy system. Buddies prearrange hand signals or other means of

emergency signals for communication in case of lack of radios or radio failure. At a minimum, use of Self-Contained Breathing Apparatus (SCBA) and fully-encapsulating suits require a third person, suitably equipped, as a safety person backup. Communications between these three members must be maintained at all times.

6. Visual contact is maintained between pairs onsite with the team members remaining in close proximity in order to assist each other in case of emergencies.
7. The number of personnel and equipment in the contaminated area must be minimized consistent with site operations.
8. Appropriate work areas for support, contamination reduction and exclusion must be established.
9. Appropriate decontamination procedures for leaving the site must be established.

6.4.3 Selection of Personal Protective Equipment

It is important that personal protective equipment be appropriate to protect against the potential or known hazards at each cleanup or investigation site. Protective equipment will be selected and based upon the types, concentrations, and routes of personal exposure that may be encountered. In situations where the types of materials and possibilities of contact are unknown or the hazards are not clearly identifiable, a more subjective determination must be made of the personal protective equipment required, based on past experiences and sound safety practices.

The appropriate level of protection will be determined before the initial entry based on the best available information. The level of protection will be included in the site specific safety plan. Subsequent information, (i.e., sampling results and site observations), may necessitate changes in the original level selected which will be added to specific site safety plans as changes.

The levels of personal protection were determined by the USEPA and are to be used in selecting equipment for onsite activities. The levels are designated as Level A, B, C, and D.

Protective Clothing and Accessories

In this section, personal protective clothing is considered to be any article offering skin and/or body protection.

Personal protective clothing includes:

- Fully-encapsulating suits.
- Non-encapsulating suits.
- Aprons, legging, and sleeve protectors.
- Gloves.
- Fire fighters' protective clothing.
- Proximity, or approach, garments.
- Blast and fragmentation suits
- Cooling garments.
- Radiation-protective suits.

Each type of protective clothing has a specific purpose; many, but not all, are designed to protect against chemical exposure. Table 6-2 describes various types of protective clothing available, details the type of protection they offer, and lists the factors to consider in their selection and use. This table also describes a number of accessories that might be used in conjunction with a PPE ensemble.

PPE accessories include:

- Knife.
- Flashlight or lantern.

- Personal dosimeters.
- Two-way radio.
- Safety belts and lines.

6.5 Safety Equipment

All site personnel must be adequately protected from potential health and safety hazards. Therefore, a sufficient and diverse inventory of all safety equipment necessary to meet anticipated hazards will be available to all employees. Personnel and site visitors must be instructed in the proper use of this equipment before entry to the work area is permitted. A list of all safety equipment available at the site will be maintained and incorporated into the specific site safety plan. The list will include first aid, fire fighting, communications, respiratory protection, protective clothing (suits, gloves, boots, hard hats, goggles, etc.) and monitoring equipment.

6.6 Decontamination

As a part of the system to prevent or reduce the physical transfer of contaminants by people or equipment from onsite areas, provisions must be made for decontaminating anything exiting the exclusion and contamination reduction zones. The extent of the decontamination procedures for personnel is highly site-specific and depends upon a number of factors: type of contaminants, amounts of contamination, level of protection, work activities, and reason for leaving the site. The USEPA has developed decontamination procedures for various levels of protection which can be consulted when formulating site specific decontamination protocols. These procedures are found in *Hazardous Waste Site Activities* (EnSafe Reference 0100-072).

All equipment leaving the exclusion zone should be decontaminated to prevent the offsite migration of hazardous contaminants. In addition, all equipment used at the site should be decontaminated upon completion of the project. In limiting the potential environmental exposures, the following procedures should be used. All contaminated surfaces will be rinsed

with the proper decontamination solution. The selection of these solutions will be made by the Site Safety Officer. In addition, all decontamination activities will be supervised by the site safety officer. All waste water generated will be collected, tested, and disposed of as hazardous waste if necessary. Table 6-3 lists some typical decontamination solutions.

6.7 Procedures and Equipment for Extreme Weather Conditions

Field activities for this site take place at different times of the year. Therefore, both heat and cold stress will be concerns for the health and safety personnel. Adverse weather conditions are important considerations in planning and conducting site operations. Extremes in hot and cold weather can cause physical discomfort, loss of efficiency and personal injury.

Table 6-3 Types of Hazards, Solutions, and Preparations		
Type of Hazard	Solution and Description	Preparation
Inorganic acids, metal processing wastes.	DECON SOLUTION A A solution containing 5 percent sodium carbonate (Na_2CO_3) 5 percent trisodium phosphate (Na_3PO_4).	Add 4 pounds of sodium carbonate (soda lime) and 4 pounds of trisodium phosphate to 10 gallons of water. Stir until evenly mixed.
Heavy metals	DECON SOLUTION A	Same as above.
Pesticides, fungicides, chlorinated phenols, dioxins, and PCBs	DECON SOLUTION B A solution containing 10 percent calcium hypochlorite ($\text{Ca}(\text{OCl})_2$)	Add 8 pounds of calcium hypochlorite to 10 gallons of water. Stir with wooden or plastic stirrer until evenly mixed.
Cyanidies, ammonia	DECON SOLUTION B	Same as above.
Solvents and organic compounds such as trichloroethylene, chloroform, and toluene	DECON SOLUTION A as described above or: DECON SOLUTION C A solution containing 5 percent trisodium phosphate (Na_3PO_4). This solution can also be used as a general purpose rinse.	Same as for A above. Add 8 pounds of trisodium phosphate to 10 gallons of water. Stir until evenly mixed.

Other solutions include:

DECON SOLUTION D A dilute solution of hydrochloric acid (HCl).

DECON SOLUTION E A dilute solution of phosphate free analytical quality detergent.

6.9 Work Limitations

All site activities will be conducted during daylight hours only. All personnel scheduled for these activities will have completed initial health and safety training and actual field training as specified in 29 CFR 1910.120. All supervisors must complete an additional eight hours of training in site management. All personnel must complete an eight-hour refresher training course on an annual basis in order to continue working at this site.

6.10 Exposure Evaluation

All personnel scheduled for site activities will have a baseline physical examination which includes the examination of the neurologic, cardiopulmonary, musculoskeletal and dermatological systems, pulmonary function testing, multi-chemistry panel and urinalysis and be declared fit for duty. An exposure history form will be completed for each worker participating in site activities. An examination and updated occupational history will be repeated on an annual basis and upon termination of employment as required by 29 CFR 1910.120(f). The content of the annual or termination examination will be the same as the baseline physical. A qualified physician will review the results of the annual examination and exposure data and request further tests or issue medical clearances as appropriate.

After any job-related injury or illness, there will be a medical examination to determine fitness for duty or for the need for any job restrictions. The site health and safety manager will review the results with the examining physician before releasing the employee for work. A similar examination will be performed if an employee has missed at least three days of work due to a non-job related injury or illness requiring medical attention. Medical records shall be maintained by the employer or the physician for at least 30 years following the termination of employment.

The symptoms of exposure to site contaminants are presented in Appendix B — MSDS.

7.0 Monitoring Requirements

Air monitoring for volatile organic compounds (VOCs) will be accomplished using a photoionization detector (PID) during all sampling activities. The instrument will be the continuous-reading type equipped with alarms. The instrument will be calibrated before site activities begin each day and at the end of each day's activities. Before calibration at the end of the day, each instrument will be checked for surface contamination. The instrument will be decontaminated if needed.

A log of all air monitoring activities will be maintained. This log will indicate the date and time of the readings, the location, the activity that is performed in the area where the readings were taken, the concentrations observed on the instruments, the types of instruments used, and the signature of the person taking the readings. Copies of all log sheets will be made available to any site employee upon request.

In addition to calibrating the instruments as outlined above, all real-time direct reading survey instruments will be maintained in accordance with the manufacturers' recommendations.

Gases on the site may saturate the sensors so that calibrating the unit will not be possible. If sensors become saturated, the instrument will be immediately tagged OUT OF SERVICE. Instruments which fail a field calibration check must be sent to the manufacturer for repair as soon as the problem is noticed.

8.0 Decontamination

A decontamination area will be established at each sampling area and will include an area for sampling equipment and personnel decontamination.

Personnel Decontamination

The decontamination procedures, based on Level D protection, will consist of:

- Brushing heavily soiled boots and rinsing gloves and boots with soap and water.
- Removing gloves and depositing them in a plastic lined container.
- Washing and rinsing safety suit.
- Removing safety suit and boots. Safety suits are to be deposited in a plastic-lined container.

Decontamination procedures will be conducted at the lunch break and at the end of each work day. If the field activity zone is left at other times during the work day, contaminated clothing will be left at the decontamination station on plastic sheeting to be reworn on returning.

If higher or lower levels of protection are needed, adjustments will be made to these procedures and an amendment will be made to this HASP.

Closure of the Personnel Decontamination Station

All disposable clothing and plastic sheeting used during site activities will be double-bagged and disposed in a refuse container. Decontamination and rinse solutions will be collected, tested and disposed of as hazardous waste if necessary. Reusable clothing will be dried and prepared for future use. All washtubs, buckets, etc. will be washed and dried at the end of each workday.

9.0 Authorized Personnel

Personnel anticipated to be onsite at various times during site activities include:

- | | |
|---------------------------------|------------------|
| • E/A&H Task Order Manager | Mr. John Stedman |
| • E/A&H Health & Safety Officer | Mr. Doug Petty |
| • E/A&H Representatives | Ms. May Heflin |
| | Mr. Keith Curtis |
| | Mr. Jimmy Terrin |
| • SOUTHDIV Engineer-In-Charge | Mr. Randy Wilson |

9.1 The responsibilities of the Site Manager are as follows:

The site manager will direct the site investigation and operation. The site manager is responsible for the following:

- Names of personnel and alternates responsible for site safety and health.
- Safety, health and other hazards present on the site.
- Use of personnel protection equipment and assuring that the equipment is available.
- Work practices which can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance requirements including recognition of symptoms and signs which might indicate over-exposure to hazards.
- Site control measures, decontamination procedures, site Standard Operating Procedures (SOP) and the contingency plan and responses to emergencies including the necessary PPE.

Assuring that all employees have received at least 40 hours of health and safety instruction off the site, and actual field experience under the direct supervision of a trained experienced supervisor. Workers who may be exposed to unique or special hazards will receive additional training.

Monitoring the performance of personnel to ensure that mandatory health and safety procedures are being performed and correcting any performances that do not comply with the HASP.

Ensuring that all field personnel employed on the site are covered by a medical surveillance program as required by 29 CFR 1910.120(f):

- Consulting with the Site Health and Safety Officer and/or other personnel.
- Preparing and submitting project reports, including progress, accident, incident, contractual, etc.
- Monitoring personnel decontamination to ensure that all personnel are complying with

the established decontamination procedures.

9.2 The responsibilities of the Site Health and Safety Officer are as follows:

- Assure that a copy of the HASP is maintained onsite during all field activities.
- Advise the Task Order and Site Manager on all health and safety related matters involved at the site.
- Direct it and ensure that the safety program is being correctly followed in the field, including the proper use of personal protective and site monitoring equipment.
- Ensure that the field personnel observe the appropriate work zones and decontamination procedures.
- Report any safety violations to the site manager.
- Conduct or schedule safety briefings during field activities.

Initially, the Site Health and Safety Officer will be a person trained in safety and industrial hygiene. After the project begins and the Site Safety Officer has had time to evaluate actual hazardous site conditions, he/she may determine that a member of the project team may assume the duties of Site Health and Safety Officer.

The person responsible for daily health and safety will be trained to use the air monitoring equipment, interpret the data collected with the instruments. They will also be familiar with symptoms of heat stress and cold exposure, the location and use of safety equipment onsite, and this HASP. The following criteria outline when the site Health and Safety Officer will be replaced: (1) termination of employment, (2) sickness, (3) end of shift, (4) injury, or (5) death. It should be noted that under revised site work schedules only one shift will be working. As a result, the Site Health and Safety Officer will be responsible for the day shift. Should circumstances arise that require work during other periods, an alternate Site Health and Safety Officer will be designated.

9.3 Responsibilities of onsite field personnel are as follows:

- All personnel going on the site must be thoroughly briefed on anticipated hazards and trained on equipment to be worn, safety procedures to be followed, and emergency procedures and communications.
- Required respiratory protective devices and clothing must be worn by all personnel going into areas designated for protective equipment.
- Personnel must be fit-tested before use of respirators.
- No facial hair which intrudes on the sealing surface of the respirator is allowed on personnel when respiratory protection is required.
- Personnel on the site must use the buddy system when wearing respiratory protective equipment. As a minimum, a third person suitably equipped as a safety backup, is required during all entries.
- Visual and/or radio contact must be maintained between pairs and the site safety personnel. Field personnel should remain close together to assist each other during emergencies.
- All field personnel should alert themselves to potentially dangerous situations which they should avoid, e.g., presence of strong and irritating or nauseating odors. .
- Personnel must practice unfamiliar operations before implementation in the field.
- Field personnel will be familiar with the physical characteristics of the site:
 - wind direction relative to contamination zones
 - accessibility to other workers, equipment and vehicles
 - communications
 - operation zones
 - site access
 - nearest water sources
- The number of personnel and equipment in the contaminated area must be kept to a minimum, consistent with effective site operations.

- Procedures for leaving a contaminated area must be planned and implemented before going onsite according to the HASP.
- All visitors to the job site must comply with the HASP procedures. PPE may be modified for visitors depending on the situation. Modifications must be approved by the site Health and Safety Officer.

10.0 Emergency Information

All hazardous waste site activities present a potential risk to onsite personnel. During routine operations, risk can be kept to a minimum by establishing good work practices, staying alert and using PPE. Unpredictable events such as physical injury, chemical exposure or fire may occur and must be anticipated.

If any situation occurs that requires outside services, E/A&H personnel will contact NAS Memphis. NAS Memphis has a viable EMERGENCY/DISASTER PLAN and the means to respond to fires, explosions, toxic/hazardous material releases, public safety emergencies, severe weather conditions, and bomb threats.

10.1 Site Resources

A telephone for emergency use will be located at each work site. Cellular phones will be available for work sites without a phone. First aid equipment, including an eye wash facility, will be available at each sampling location. Restrooms and water will be located at the field trailer.

10.2 Pre-Emergency Planning

During the site briefings that are to be held daily and at special periodic meetings, all employees will be trained in and reminded of the provisions of the emergency response plan, communications systems, and evacuation routes. This plan will be reviewed and revised if necessary, on a regular basis by the E/A&H Health and Safety Officer to ensure that the plan

is adequate and consistent with prevailing site conditions.

10.3 Personnel Roles and Lines of Authority

The Site Manager has primary responsibility for responding to and assisting NAS Memphis personnel in correcting emergency situations. This includes taking appropriate measures to ensure the safety of site personnel and the public.

10.4 Location of the Nearest Hospital Capable of Treating Chemical Exposures

Methodist North Hospital
3960 Covington Pike
Memphis, Tennessee

Emergency Room Telephone Number - (901) 372-5211

Directions to Methodist North Hospital from NAS Memphis South Gate:

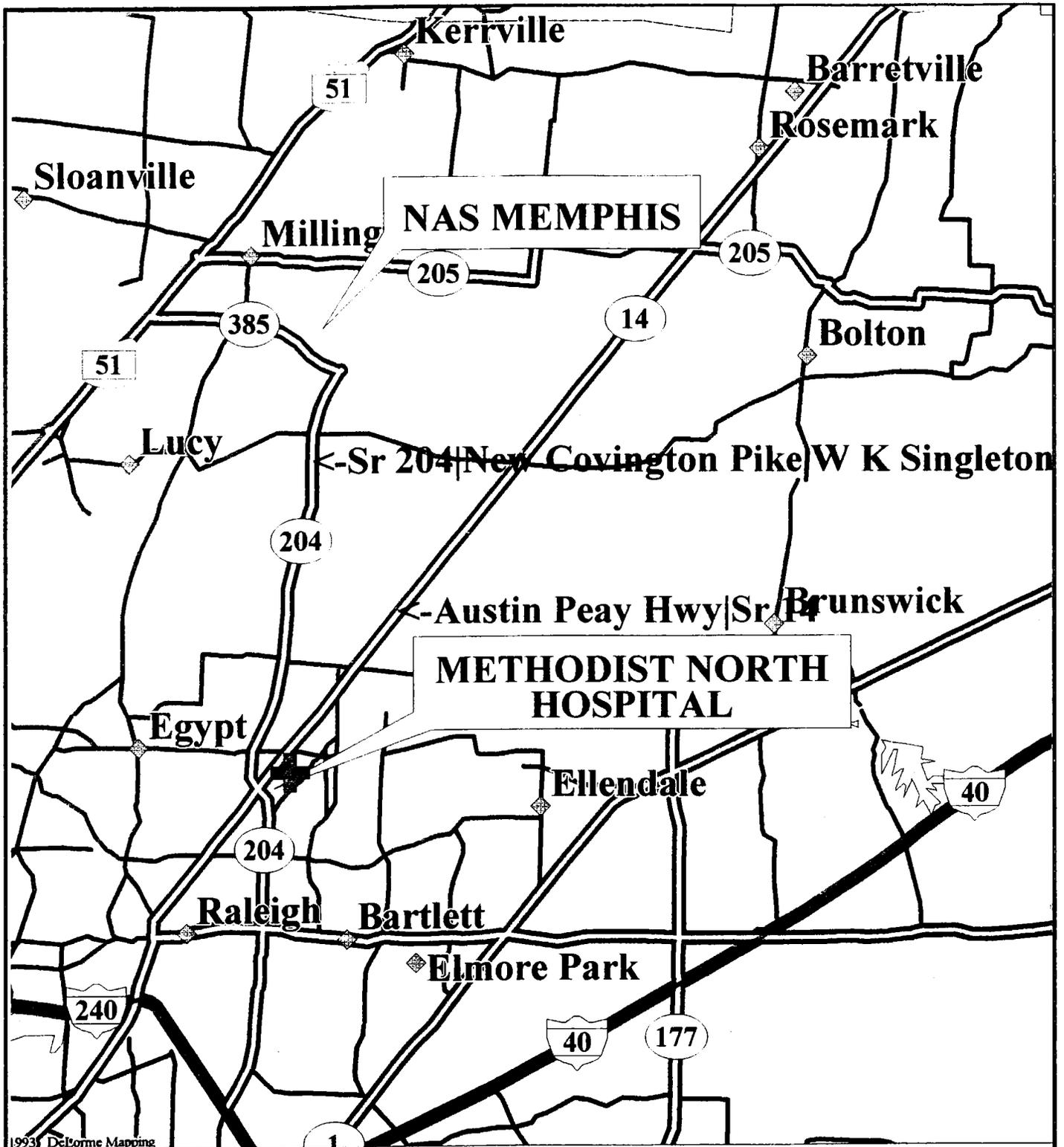
- 1) Figure 10-1, Medical Emergency Care Map.
- 2) Exit site through South Gate (Singleton Parkway).
- 3) Continue on Singleton Parkway through the stop signs.
- 4) Singleton Parkway and Covington Pike will intersect at a red light (about 5 miles).
- 5) 700 feet past this light on the left, you will see the entrance to the emergency room.

10.5 Emergency Contact/Notification System

Table 10-1 provides names and telephone numbers for emergency contact personnel. In the event of a medical emergency, personnel will take direction from the site health and safety officer and notify the appropriate emergency organization. **In the event of a fire or spill, the site manager will notify NAS Memphis (873-5500/5509).** The appropriate local, state, and

federal agencies will be notified by NAS Memphis.

Table 10-1 Emergency Contact List		
Contact	Person or Agency Name	Telephone Number
NAS Memphis	Mrs. Tonya Barker	(901) 873-5209
Law Enforcement	NAS Memphis Security	9-911
Fire Department	NAS Memphis Security	9-911
Southern Poison Control Center		(901) 528-6048
CHEMTREC		(800) 424-9300
EnSafe/Allen & Hoshall Site Manager	Mr. Keith Curtis	(901) 372-7962
EnSafe/Allen & Hoshall Task Order Manager	Mr. John Stedman	(901) 372-7962
Primary Hospital Emergency	Naval Hospital, Millington Navy Road Millington, Tennessee 38054-5000	(901) 873-5801/5802



HEALTH & SAFETY PLAN
 NAS MEMPHIS
 MILLINGTON, TN

DIRECTIONS TO THE HOSPITAL

DWG DATE: 10/04/94

DWG NAME: BOARD

10.6 Emergency Medical Treatment Procedures

Any person who becomes ill or injured in the exclusion zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed (i.e., completely disrobing the victim and dressing him or her in clean coveralls or wrapping in a blanket). First aid should be administered while waiting on an ambulance or paramedics. **All injuries and illnesses must immediately be reported to the site manager, and NAS Memphis security department (9-911).**

Any person being transported to a clinic or hospital for treatment should take with them information on the chemical(s) they have been exposed to at the site or should be accompanied by a person who can provide this information. MSDSs for each chemical constituent will be available at the site in Appendix B of this HASP.

Any vehicle used to transport contaminated personnel will need to be decontaminated as necessary.

10.7 Fire or Explosion

In the event of a fire or explosion, immediately notify NAS Memphis security department (9-911). When the fire commander arrives, the Site Manager will advise the fire commander of the location, nature, and identification of the hazardous materials onsite.

If it is safe to do so, site personnel may:

- Use fire fighting equipment available onsite to control or extinguish the fire;
- Remove or isolate flammable or other hazardous materials which may contribute to the fire.

If it is not safe to take the above actions, the work area must be evacuated.

10.8 Spills or Leaks

In the event of a spill or leak, site personnel will:

- Inform the Site Manager immediately;
- Locate the source of the spillage and stop the flow if it can be done safely;
- If required, summon NAS Memphis HAZMAT Team, (9-911).

APPENDIX A
HEALTH AND SAFETY PLAN ACCEPTANCE FORM

PLAN ACCEPTANCE FORM

PROJECT HEALTH AND SAFETY PLAN

INSTRUCTIONS: This form is to be completed by each person working on the project site and returned to: EnSafe/Allen & Hoshall, Memphis, Tennessee.

Job No: CTO — 098

Contract No: N62467-89-D-0318

Project: Tank Closure Plan — NAS Memphis

I have read and understand the contents of the above plan and agree to perform my work in accordance with it.

Signed

Print Name

Company

Date

APPENDIX B

MATERIAL SAFETY DATA SHEETS

CHEMTOX DATA

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----- IDENTIFIERS -----

CHEMTOX RECORD 1370 LAST UPDATE OF THIS RECORD: 06/03/93
 NAME: GASOLINE
 SYNONYMS: PETROL; BENZIN (GERMAN)
 CAS: 8006-61-9 RTECS: LX3300000
 FORMULA: W99 MOL WT:
 WLN:
 CHEMICAL CLASS: Aromatic hydrocarbon; Paraffin

See other identifiers listed below under Regulations.

----- PROPERTIES -----

PHYSICAL DESCRIPTION: liquid; gasoline with lead may contain colored dyes,
 usually red, blue, green, or purple. (nydh)

BOILING POINT: 311.15-473.15 K 38-200 C 100.4-392 F
 MELTING POINT: NA
 FLASH POINT: <227.5 K <-45.65 C <-50.2 F
 AUTO IGNITION: 553 K 279.8 C 535.8 F
 VAPOR PRESSURE:
 UEL: 7.4 %
 LEL: 1.4 %
 IONIZATION POTENTIAL (eV): 6.19
 VAPOR DENSITY: 3.0 (air=1)
 SPECIFIC GRAVITY: 0.75
 DENSITY: 0.75 g/cc or 6.975 lb/gal
 WATER SOLUBILITY: INSOL
 INCOMPATIBILITIES: strong ox

REACTIVITY WITH WATER: No data on water reactivity
 REACTIVITY WITH COMMON MATERIALS: WITH OXIDIZING MATERIALS Source: SAX
 STABILITY DURING TRANSPORT: No Data
 NEUTRALIZING AGENTS: No data
 POLYMERIZATION POSSIBILITIES: No data

TOXIC FIRE GASES: None reported other than possible
 unburned vapors

ODOR DETECTED AT (ppm): Unknown
 ODOR DESCRIPTION: No data
 100 % ODOR DETECTION: No data

----- REGULATIONS -----

DOT hazard class: 3 FLAMMABLE LIQUID
 DOT guide: 27
 Identification number: UN1203
 DOT shipping name: Gasoline
 Packing group: II

Label(s) required: FLAMMABLE LIQUID
Special provisions: B33,T8
Packaging exceptions: 173.150
Non bulk packaging: 173.202
Bulk packaging: 173.242
Quantity limitations-
Passenger air/rail: 5 L
Cargo aircraft only: 60 L
Vessel stowage: E
Other stowage provisions:

STCC NUMBER: 4908178, 4908177

CLEAN WATER ACT Sect.307:No
CLEAN WATER ACT Sect.311:No
CLEAN AIR ACT: Not listed
EPA WASTE NUMBER: D001
CERCLA REF: Not listed
RQ DESIGNATION: Not listed
SARA TPQ VALUE: Not listed
SARA Sect. 312
categories:

Acute toxicity: Irritant
Acute toxicity: adverse effect to target organs.
Chronic toxicity: adverse effect to target organ
after long period of exposure.
Fire hazard: combustible.
Chronic toxicity: carcinogen

UNITED STATES POSTAL SERVICE MAILABILITY:
Not given

NFPA CODES:

HEALTH HAZARD (BLUE): (1) Slightly hazardous to health. As a precaution
wear self-contained breathing apparatus.
FLAMMABILITY (RED) : (3) This material can be ignited under almost all
temperature conditions.
REACTIVITY (YELLOW): (0) Stable even under fire conditions.
SPECIAL : Unspecified

----- SUMMARY OF REGULATORY LISTS THIS SUBSTANCE APPEARS ON -----

ACGIH TLV list "Threshold Limit Values for 1992-1993"
Canadian Domestic Substances List
Canadian Ingredient Disclosure List. 20/01/88 Canada Gazette part II, Vol 122.
DOT Hazardous Materials Table. 49 CFR 172.101
EPA TSCA Chemical Inventory List 1990
EPA TSCA Chemical Inventory List 1992
EPA TSCA Test Submission (TSCATS) Database - September 1989

GASOLINE [8006-61-9]

Massachusetts Substance List.

New Jersey Right To Know Substance List. (December 1987)

OSHA Air Contaminant (Table Z-1-A). 54 FR 4332, Jan. 19, 1989 and revised.

RCRA Hazardous Waste

----- TOXICITY DATA -----

SHORT TERM TOXICITY: INHALATION: nose and throat irritation have been reported after exposure to 900 ppm for 1 hour. drowsiness, dizziness, nausea and numbness may occur at 1,000 ppm after 15 minutes exposure. in animal studies, death occurred after 30,000 ppm for five minutes. SKIN: may cause itching and burning of the skin and after a longer exposure, redness and blistering. Eyes: moderate irritation of the eye has been reported after one hour exposure to 500 ppm. mild irritation has been reported after an 8 hour exposure to 140 ppm. INGESTION: gasoline causes a burning sensation in the mouth, throat and stomach. vomiting, diarrhea, drowsiness and intoxication may follow. as little as 3 to 4 ounces may be fatal. inhalation of liquid gasoline into the lungs following ingestion or vomiting may result in an accumulation of fluid in the lungs, rapid breathing or death. (NYDH)

LONG TERM TOXICITY: continuous 8 hour exposure to 200 ppm has resulted in eye irritation only. long term exposure may produce fatigue, muscle weakness, nausea, vomiting and abdominal pain. hexane, a component of gasoline, can produce nerve damage resulting in tremors, numbness of hands and feet and loss of muscle control. benzene, also a gasoline component, has been linked to blood disorders in man, including leukemia. lead additives can produce nausea, cramps, loss of appetite, sleep problems, headaches and agitation. (NYDH)

TARGET ORGANS: CNS, skin, eyes, liver

SYMPTOMS: INGESTION CAUSES INEBRIATION, VOMITING, VERTIGO, FEVER, DROWSINESS, CONFUSION, CYANOSIS; ASPIRATION CAUSES BRONCHITIS OR PNEUMONIA. INHALATION CAUSES INTENSE BURNING IN THROAT AND LUNGS; POSSIBLY BRONCHOPNEUMONIA. Source: MI10

CONC IDLH: None given

NIOSH REL: Potential occupational carcinogen

ACGIH TLV: TLV = 300ppm(890 mg/M3)

ACGIH STEL: STEL = 500 ppm(1480 mg/M3)

OSHA PEL: Final Rule Limits:
TWA = 300 ppm (900 mg/M3)
STEL = 500 ppm(1500 mg/M3)

MAK INFORMATION: Not listed

CARCINOGEN?: Y STATUS: See below

CARCINOGEN LISTS:

IARC: Carcinogen defined by IARC
to be possibly carcinogenic to
humans, but having (usually) no
human evidence.

MAK: Not listed

NIOSH: Not listed

NTP: Not listed

ACGIH: Not listed

OSHA: Not listed

HUMAN TOXICITY DATA: (Source: NIOSH RTECS)

ihl-man TCLo:900 ppm/1H JIHTAB 25,225,43
SENSE ORGANS
Eye
Conjunctive irritation
BEHAVIORAL
Hallucinations, distorted perceptions
LUNGS, THORAX, OR RESPIRATION
Cough

LD50 value: No LD50 in RTECS 1992

OTHER SPECIES TOXICITY DATA: (Source: NIOSH RTECS 1992)

ihl-rat LC50:300 gm/m3/5M
ihl-mus LC50:300 gm/m3/5M
ihl-gpg LC50:300 gm/m3/5M
ihl-mam LCLo:30000 ppm/5M

IRRITATION DATA: (Source: NIOSH RTECS 1992)

Reproductive toxicity (1992 RTECS):

This chemical has no known mammalian reproductive toxicity.

REPRODUCTIVE TOXICITY DATA (1992 RTECS)

California Prop 65: Not listed

----- PROTECTION AND FIRST AID -----

PROTECTION SUGGESTED

FROM THE CHRIS MANUAL:

FIRST AID SOURCE: DOT Emergency Response Guide 1990.
Move victim to fresh air and call emergency medical care; if not breathing, give artificial respiration; if breathing is difficult, give oxygen. In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Wash skin with soap and water. Remove and isolate contaminated clothing and shoes at the site.

----- INITIAL INCIDENT RESPONSE -----

US Department of Transportation Guide to Hazardous Materials Transport Information - Publication DOT 5800.5 (1990).

DOT SHIPPING NAME: Gasoline

DOT ID NUMBER: UN1203

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GUIDE 27

POTENTIAL HAZARDS

*FIRE OR EXPLOSION

Flammable/combustible material; may be ignited by heat, sparks or flames. Vapors may travel to a source of ignition and flash back. Container may explode in heat of fire. Vapor explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard. Material may be transported hot.

*HEALTH HAZARDS

May be poisonous if inhaled or absorbed through skin. Vapors may cause dizziness or suffocation. Contact may irritate or burn skin and eyes. Fire may produce irritating or poisonous gases. Runoff from fire control or dilution water may cause pollution.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide limited protection. *Isolate for 1/2 mile in all directions if tank, rail car or tank truck is involved in fire. CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, CALL CHEMTREC AT 1-800-424-9300. If water pollution occurs, notify the appropriate authorities.

*FIRE

Small Fires: Dry chemical, CO₂, water spray or regular foam.
Large Fires: Water spray, fog or regular foam.
Move container from fire area if you can do it without risk. Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks. For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety device or any

discoloration of tank due to fire.

***SPILL OR LEAK**

Shut off ignition sources; no flares, smoking or flames in hazard area. Stop leak if you can do it without risk. Water spray may reduce vapor; but it may not prevent ignition in closed spaces.

Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal.

Large Spills: Dike far ahead of liquid spill for later disposal.

***FIRST AID**

Move victim to fresh air and call emergency medical care; if not breathing, give artificial respiration; if breathing is difficult, give oxygen. In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Wash skin with soap and water. Remove and isolate contaminated clothing and shoes at the site.

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Identification number: UN1993
DOT shipping name: FLAMMABLE LIQUIDS, N.O.S. (DIESEL FUEL)
Packing group: III
Label(s) required: FLAMMABL LIQUID
Special provisions: B1, B52, T7, T30
Packaging exceptions: 173.150
Non bulk packaging: 173.203
Bulk packaging: 173.242
Quantity limitations-
Passenger air/rail: 60 L
Cargo aircraft only: 220 L
Vessel stowage: A
Other stowage provisions:

STCC NUMBER: 4915113

CLEAN WATER ACT Sect.307:No
CLEAN WATER ACT Sect.311:No
CLEAN AIR ACT: Not listed
EPA WASTE NUMBER: D001
CERCLA REF:
RQ DESIGNATION: Not listed
SARA TPQ VALUE: Not listed
SARA Sect. 312
categories:

Acute toxicity: Irritant
Fire hazard: combustible.
Chronic toxicity: carcinogen

UNITED STATES POSTAL SERVICE MAILABILITY:
Not given

NFPA CODES:

HEALTH HAZARD (BLUE): (1) Slightly hazardous to health. As a precaution
wear self-contained breathing apparatus.
FLAMMABILITY (RED) : (2) This material must be moderately heated before
ignition will occur.
REACTIVITY (YELLOW): (0) Stable even under fire conditions.
SPECIAL : Unspecified

----- SUMMARY OF REGULATORY LISTS THIS SUBSTANCE APPEARS ON -----

DIESEL FUEL [68512-90-3]
DOT Hazardous Materials Table. 49 CFR 172.101
EPA TSCA Chemical Inventory List 1989
EPA TSCA Test Submission (TSCATS) Database - April 1990
RCRA Hazardous Waste

----- TOXICITY DATA -----

SHORT TERM TOXICITY: Unknown

LONG TERM TOXICITY: unknown

TARGET ORGANS: eyes, skin

SYMPTOMS: Inhalation of mist or high concentrations of vapor can produce dizziness, headache, nausea, and possibly irritation of the eyes, nose and throat. Source:

CONC IDLH: None given

NIOSH REL: Not given

ACGIH TLV: Not listed

ACGIH STEL: Not listed

OSHA PEL: Not in Table Z-1-A

MAK INFORMATION: ppm

CARCINOGEN?: N STATUS: See below

CARCINOGEN LISTS:

IARC: Not listed
MAK: Not listed
NIOSH: Not listed
NTP: Not listed
ACGIH: Not listed
OSHA: Not listed

LD50 value: orl-rat LD50:9 gm/ kg

OTHER SPECIES TOXICITY DATA: (Source: NIOSH RTECS 1992)

orl-rat LD50:9 gm/kg

IRRITATION DATA: (Source: NIOSH RTECS 1992)

Reproductive toxicity (1992 RTECS):

This chemical has no known mammalian reproductive toxicity.

REPRODUCTIVE TOXICITY DATA (1992 RTECS)

California Prop 65: Not listed

----- PROTECTION AND FIRST AID -----

PROTECTION SUGGESTED
FROM THE CHRIS MANUAL:

wear protective gloves and clothing. eye protection such as safety glasses recommended.

FIRST AID SOURCE: DOT Emergency Response Guide 1990.

Move victim to fresh air and call emergency medical care; if not breathing, give artificial respiration; if breathing is difficult, give oxygen. In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Wash skin with soap and water. Remove and isolate contaminated clothing and shoes at the site.

----- INITIAL INCIDENT RESPONSE -----

FIRE EXTINGUISHMENT: DRY CHEMICAL, CARBON DIOXIDE, HALOGENATED AGENTS, FOAM. Note: CHRIS91

US Department of Transportation Guide to Hazardous Materials Transport Information - Publication DOT 5800.5 (1990).

DOT SHIPPING NAME: FLAMMABLE LIQUIDS, N.O.S. (DIESEL FUEL)
DOT ID NUMBER: UN1993

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GUIDE 27

POTENTIAL HAZARDS

*FIRE OR EXPLOSION

Flammable/combustible material; may be ignited by heat, sparks or flames. Vapors may travel to a source of ignition and flash back. Container may explode in heat of fire. Vapor explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard. Material may be transported hot.

*HEALTH HAZARDS

May be poisonous if inhaled or absorbed through skin. Vapors may cause dizziness or suffocation. Contact may irritate or burn skin and eyes. Fire may produce irritating or poisonous gases. Runoff from fire control or dilution water may cause pollution.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide limited protection. *Isolate for 1/2 mile in all directions if tank, rail car or tank truck is involved in fire. CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, CALL CHEMTREC AT 1-800-424-9300. If water pollution occurs, notify the appropriate authorities.

*FIRE

Small Fires: Dry chemical, CO2, water spray or regular foam.
Large Fires: Water spray, fog or regular foam.
Move container from fire area if you can do it without risk. Apply

cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks. For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire.

***SPILL OR LEAK**

Shut off ignition sources; no flares, smoking or flames in hazard area. Stop leak if you can do it without risk. Water spray may reduce vapor; but it may not prevent ignition in closed spaces.

Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal.

Large Spills: Dike far ahead of liquid spill for later disposal.

***FIRST AID**

Move victim to fresh air and call emergency medical care; if not breathing, give artificial respiration; if breathing is difficult, give oxygen. In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Wash skin with soap and water. Remove and isolate contaminated clothing and shoes at the site.

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Packaging exceptions: 173.150
Non bulk packaging: 173.203
Bulk packaging: 173.241
Quantity limitations-
Passenger air/rail: 60 L
Cargo aircraft only: 220 L
Vessel stowage: A
Other stowage provisions:

STCC NUMBER: 4915113, 4915112

CLEAN WATER ACT Sect.307:No
CLEAN WATER ACT Sect.311:No
CLEAN AIR ACT: Not listed
EPA WASTE NUMBER: D001
CERCLA REF: Not listed
RQ DESIGNATION: Not listed
SARA TPQ VALUE: Not listed
SARA Sect. 312
categories:

Fire hazard: combustible.
Fire hazard: flammable.

UNITED STATES POSTAL SERVICE MAILABILITY:
Not given

----- SUMMARY OF REGULATORY LISTS THIS SUBSTANCE APPEARS ON -----

DOT Hazardous Materials Table. 49 CFR 172.101
FUEL OIL [NA]
RCRA Hazardous Waste

----- TOXICITY DATA -----

SHORT TERM TOXICITY: Unknown

LONG TERM TOXICITY: unknown

TARGET ORGANS:

SYMPTOMS: Source:

CONC IDLH: Nonegiven

NIOSH REL: Not given

ACGIH TLV: Not listed

ACGIH STEL: Not listed

OSHA PEL: Not in Table Z-1-A

MAK INFORMATION: Not listed

CARCINOGEN?: N STATUS: See below

CARCINOGEN LISTS:

IARC: Not listed
MAK: Not listed
NIOSH: Not listed
NTP: Not listed
ACGIH: Not listed
OSHA: Not listed

LD50 value: No LD50 in RTECS 1992

IRRITATION DATA: (Source: NIOSH RTECS 1992)

Reproductive toxicity (1992 RTECS):

This chemical has no known mammalian reproductive toxicity.

REPRODUCTIVE TOXICITY DATA (1992 RTECS)

California Prop 65: Not listed

----- PROTECTION AND FIRST AID -----

PROTECTION SUGGESTED
FROM THE CHRIS MANUAL:

FIRST AID SOURCE: DOT Emergency Response Guide 1990.

Move victim to fresh air and call emergency medical care; if not breathing, give artificial respiration; if breathing is difficult, give oxygen. In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Wash skin with soap and water. Remove and isolate contaminated clothing and shoes at the site.

----- INITIAL INCIDENT RESPONSE -----

US Department of Transportation Guide to Hazardous Materials Transport Information - Publication DOT 5800.5 (1990).

DOT SHIPPING NAME: FUEL OIL (NO. 1, 2, 4, 5, OR 6)

DOT ID NUMBER: NA1993

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GUIDE 27

POTENTIAL HAZARDS

***FIRE OR EXPLOSION**

Flammable/combustible material; may be ignited by heat, sparks or flames. Vapors may travel to a source of ignition and flash back.

Container may explode in heat of fire.

Vapor explosion hazard indoors, outdoors or in sewers.

Runoff to sewer may create fire or explosion hazard.

Material may be transported hot.

***HEALTH HAZARDS**

May be poisonous if inhaled or absorbed through skin.

Vapors may cause dizziness or suffocation.

Contact may irritate or burn skin and eyes.

Fire may produce irritating or poisonous gases.

Runoff from fire control or dilution water may cause pollution.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide limited protection. *Isolate for 1/2 mile in all directions if tank, rail car or tank truck is involved in fire. CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, CALL CHEMTREC AT 1-800-424-9300. If water pollution occurs, notify the appropriate authorities.

***FIRE**

Small Fires: Dry chemical, CO₂, water spray or regular foam.

Large Fires: Water spray, fog or regular foam.

Move container from fire area if you can do it without risk. Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks. For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire.

***SPILL OR LEAK**

Shut off ignition sources; no flares, smoking or flames in hazard area. Stop leak if you can do it without risk. Water spray may reduce vapor; but it may not prevent ignition in closed spaces.

Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal.

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