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FINAL HEALTH AND SAFETY PLAN FOR SITE ASSESSMENT UNDERGROUND STORAGE TANK SITES 245, 1343 AND 1388 NS MAYPORT FL

7/1/2001

ELLIS ENVIRONMENTAL GROUP, LC

FINAL

Health and Safety Plan

for

Site Assessment at Underground Storage Tank Sites 245, 1343, and 1388

at

Naval Station Mayport Mayport, FL

Contract No. N62467-01-C-8826

Prepared for
NAVAL FACILITIES ENGINEERING COMMAND
Southern Division

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July 2001

Health and Safety Plan

Acceptance Form

Project: Site Assessment
Site: Underground Storage Tank Sites 245, 1343, and 1388
Contract No.: N62467-01-C-8826
Site Location: Naval Station Mayport, FL

EEG Project Manager: Michael R. Bollinger, PG

I acknowledge that I understand the requirements of this Health and Safety Plan, and I agree to abide by the procedures and limitations specified. I also acknowledge that I have been given an opportunity to have my questions concerning this Health and Safety Plan and its requirements answered prior to performing field activities. Health and safety training and medical surveillance requirements applicable to my field activities at this site are current and will not expire during onsite activities.

EEG Personnel

Signature	Employee No.	Date

Subcontractor Personnel

Signature	Organization	Date

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1.0 Introduction

This Health and Safety Plan (HASP) is adapted form a HASP prepared by Tetra Tech NUS, Inc., and provided to Ellis Environmental Group, LC (EEG) by the U.S. Navy. This HASP has been modified to ensure its compliance with the EEG Corporate Health and Safety Program.

This HASP applies to EEG personnel and its subcontractors engaged in soil and groundwater monitoring at the Naval Station in Mayport, Florida (NS Mayport). Project activities will be conducted at Sites 245, 1343, and 1388. This HASP must be used in conjunction with the EEG Corporate Health and Safety Program. This HASP and the contents of the EEG Corporate Health and Safety Program were developed to comply with the requirements stipulated in 29 CFR 1910.120 (OSHA's Hazardous Waste Operations and Emergency Response Standard).

This information used in this HASP is the latest available regarding known or suspected chemical contaminants and potential physical hazards associated with the proposed work at the site. The HASP will be modified if new information becomes available. All changes to the HASP will be made with the approval of the EEG Health and Safety Director (HSD). Requests for modifications to the HASP will be directed to the HSD, who will determine if the changes are necessary. The HSD will notify the Project Manager (PM), who will notify all affected personnel of changes.

Prior to beginning work, all site personnel, both EEG and Subcontractor, must read this HASP and sign the acceptance page indicating that they understand the contents of this HASP.

1.1 Key Project Personnel and Organization

This section defines responsibility for site safety and health for EEG employees engaged in onsite activities. Personnel assigned to these positions will exercise the primary responsibility for all onsite health and safety. These persons will be the primary point of contact for any questions regarding the safety and health procedures and the selected control measures that are to be implemented for onsite activities.

The HSD is responsible for developing this HASP in accordance with applicable OSHA regulations. Specific responsibilities include:

- Providing information regarding site contaminants and physical hazards associated with the site.
- Establishing air monitoring and decontamination procedures.
- Assigning personal protective equipment based on task and potential hazards.
- Determining emergency response procedures and emergency contacts.
- Stipulating training requirements and reviewing appropriate training and medical surveillance certificates.
- Providing standard work practices to minimize potential injuries and exposures associated with hazardous waste work.
- Modify this HASP, as it becomes necessary.

2.0 Emergency Action Plan

2.1 Introduction

This section has been developed as part of a planning effort to direct and guide field personnel in the event of an emergency. All site activities will be coordinated with the client. In the event of an emergency which cannot be mitigated using onsite resources, personnel will evacuate to a safe place of refuge and the appropriate emergency response agencies will be notified. It has been determined that the majority of potential emergency situations would be better supported by outside emergency responders. Based on this determination, EEG personnel will not provide emergency response support beyond the capabilities of onsite response. Workers who are ill or who have suffered a non-serious injury may be transported by site personnel to nearby medical facilities, provided that such transport does not aggravate or further endanger the welfare of the injured/ill person.

The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time. This Emergency Action Plan conforms to the requirements of 29 CFR 1910.38(a), as allowed in 29 CFR 1910.120(I)(1)(ii).

EEG will, through necessary services, provide the following emergency action measures:

- Initial stage fire fighting support and prevention
- Initial spill control and containment measures and prevention
- Removal of personnel from emergency situations
- Initial medical support for injuries or illnesses requiring basic first-aid
- Site control and security measures as necessary

2.2 Pre-Emergency Planning

Through the initial hazard/risk assessment effort, emergencies resulting from chemical, physical, or fire hazards are considered to be unlikely to be encountered during site activities. Nonetheless, to minimize and eliminate the potential for any emergency situations, pre-emergency planning activities will include the following (which are the responsibility of the SSHO).

- Coordinating with local Emergency Response personnel to ensure that EEG emergency action activities are compatible with existing emergency response procedures. Base Fire Protection and Emergency Services will be notified of scheduled events and activities. This is most imperative in situations where their services may be required.

- Establishing and maintaining information at the project staging area (Support Zone) for easy access in the event of an emergency. This information will include the following:
  - Chemical Inventory (of chemicals used onsite), with Material Safety Data Sheets.
  - Onsite personnel medical records (Medical Data Sheets).
  - A log book identifying personnel onsite each day.
  - Hospital route maps with directions (these should also be placed in each site vehicle).
  - Emergency Notification - phone numbers.

When evacuation to the primary place of refuge is not possible, personnel will proceed to a designated alternate location and remain until further notification from the EEG SSHO. Safe places of refuge will be identified prior to the commencement of site activities by the SSHO and will be conveyed to personnel as part of the pre-activities training session. This information will be reiterated during daily safety meetings. Whenever possible, the safe place of refuge will also serve as the telephone communications point for that area. During an evacuation, personnel will remain at the refuge location until directed otherwise by the SSHO or the on-site Incident Commander of the Emergency Response Team. The SSHO will perform a head count at this location to account for and to confirm the location of all site personnel. Emergency response personnel will be immediately notified of any unaccounted personnel. The SSHO will document, daily, the names of all personnel onsite in the site. This information will be utilized to perform the head count in the event of an emergency.

Evacuation procedures will be discussed during the pre-activities training session, prior to the initiation of project tasks. Evacuation routes from the site and safe places of refuge are dependent upon the location at which work is being performed and the circumstances under which an evacuation is required. Additionally, site location and meteorological conditions (i.e., wind speed and direction) may dictate evacuation routes. As a result, assembly points will be selected and communicated to the workers relative to the site location where work is being performed. In most situations, evacuation should take place in an upwind direction from the site.

2.5 Decontamination Procedures and Emergency Medical Treatment

During any site evacuation, decontamination procedures will be performed only if doing so does not further jeopardize the welfare of site workers. Decontamination will not be performed if the incident warrants immediate evacuation. However, it is unlikely that an evacuation would occur which would require workers to evacuate the site without first performing the necessary decontamination procedures.

EEG personnel will perform removal of personnel from emergency situations and may provide initial medical support for injury/illnesses requiring only first-aid level support. Medical attention above that level will require assistance and support from the designated emergency response agencies. Attachment I provides the procedure to follow when reporting an injury/illness, and the form to be used for this purpose. If the emergency involves personnel exposures to chemicals, follow the steps below. The purpose of this protocol is to provide guidance for the medical management of exposure situations.

In the event of a personnel exposure to a hazardous substance or agent:

- Rescue, when necessary, employing proper equipment and methods.
- Give attention to emergency health problems -- breathing, cardiac function, bleeding, and shock.
- Transfer the victim to the medical facility designated in this HASP by suitable and appropriate conveyance (i.e. ambulance for serious events).
- Obtain as much exposure history as possible (a Potential Exposure report is attached).
- Contact the Health and Safety Director.

2.6 Emergency Contacts

Prior to initiating field activities, all personnel will be thoroughly briefed on the emergency procedures to be followed in the event of an accident. Table 2-1 provides a list of emergency contacts and their associated telephone numbers. This table must be posted where it is readily available to all site personnel. Facility maps should also be posted showing potential evacuation routes and designated meeting areas.

Table 2-1. Emergency Reference Naval Station Mayport, Florida

Agency	Telephone
EMERGENCY	**911**
Fire Department	911 or (904) 270-5333
Base Security	(904) 270-5583 or 5584
Base Medical Clinic (for life threatening emergencies only)	(904) 270-5444
Memorial Health Care Center (for other emergencies)	(904) 858-7500
Base Safety Department	(904) 270-5218
Client Point of Contact: Mr. Jan Bovier	(904) 270-6730
Public Works Trouble Desk (for problems with utilities)	(904) 542-2122
Chemtrec National Response Center	(800) 424-9300 (800) 424-8802
EEG Health and Safety Director	(352) 332-3888

NOTE: When calling base telephone numbers from within the Base (i.e., from an on-base telephone), dial a zero (0) and the last four digits of the telephone number. For example, to contact the Base Medical Clinic, dial 05444.

2.7 Emergency Route to Hospital

The Base Medical Clinic should be used for life-threatening emergencies only. It is located in Building 1363 on Massey Avenue. Memorial Health Care Center will be used for medical care beyond basic first aid treatment. Directions to the Center are:

Exit base, take Mayport Road (A1A) to Atlantic Blvd. Take a right onto Atlantic Blvd. across the Intercoastal Waterway. At the first intersection, take a left onto San Pablo Blvd. The Medical Center is at the intersection of San Pablo Blvd. and Beach Blvd (14444 Beach Blvd.). See Figure 2-2 Route to Hospital Map.

2.8 Emergency Alerting and Response Procedures

EEG personnel will be working in close proximity to each other at NS Mayport. As a result, hand signals, voice commands, and line of site communication will be sufficient to alert site personnel of an emergency. When project tasks are performed simultaneously on different sites, vehicle horns will be used to communicate emergency situations.

If an emergency warranting evacuation occurs, the following procedures are to be initiated.

- Initiate the evacuation via hand signals, voice commands, line of site communication, or vehicle horns. The following signals shall be utilized when communication via vehicle horn is necessary:

HELP	three short blasts	• • •
EVACUATION	three long blasts	– – –

- Report to the designated refuge point.
- Once all non-essential personnel are evacuated, appropriate response procedures will be enacted to control the situation.
- Describe to the SSHO pertinent incident details.

In the event that site personnel cannot mitigate the hazardous situation, the SSHO will enact emergency notification procedures to secure additional assistance in the following manner:

Dial 911 and call other pertinent emergency contacts listed in Table 2-1 and report the incident. Give the emergency operator the location of the emergency, the type of emergency, the number of injured, and a brief description of the incident. Stay on the phone and follow the instructions given by the operator. The operator will then notify and dispatch the proper emergency response agencies.

2.9 PPE and Emergency Equipment

A first-aid kit, eye wash units (or bottles of disposable eyewash solution) and fire extinguishers (strategically placed) will be maintained onsite and shall be immediately available for use in the event of an emergency. This equipment will be located in the field office as well as in each site vehicle. At least one first aid kit supplied with equipment to protect against bloodborne pathogens will also be available on site. Personnel identified within the field crew with bloodborne pathogen and first-aid training will be the only personnel permitted to offer first-aid assistance.

As soon as possible, the client point of contact must be informed of any incident or accident that requires medical attention.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. If an exposure to hazardous materials has occurred, provide hazard information from Table 6-1 to medical service personnel.

4.0 Scope of Work

This section describes the project tasks that will be performed at NS Mayport. Additionally, each task has been evaluated and the associated hazards and recommended control measures are listed in Table 5-1 of this HASP. If new tasks are to be performed at the site, Table 5-1 and this section will be modified accordingly. Specific tasks to be conducted include, but are not necessarily limited to, the following:

- Mobilization and demobilization
- Multi media sampling
  - Groundwater
  - Subsurface soil
- Monitoring Well Installation
  - Direct-push Technology (DPT)
  - Hollow Stem Auger (HSA)
- Decontamination of sampling equipment
- Surveying
- Investigative-Derived Waste (IDW) management

The above listing represents a summarization of the tasks as they apply to the scope and application of this HASP. For more detailed description of the associated tasks refer to the Work Plan (WP). If additional tasks are determined to be necessary, this HASP will be amended and a hazard evaluation of the additional tasks performed.

Table 5-1a. Tasks, Hazards, and Associated Control Measures Summary (page 1 of 6)

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment	Decontamination Procedures
Soil boring activities using direct-push technologies (DPT) and Monitoring well installation using hollow stem auger techniques (HSA)	***Chemical hazards:*** 1) Air/particulate/water borne contaminants primarily consisting of VOCs as BETX and SVOC as PAHs. Further information on these contaminants and other potential contaminants is presented in Table 6-1. 2) Transfer of contamination into clean areas or onto persons. ***Physical hazards:*** 3) Heavy equipment hazards (pinch/compression points, rotating equipment, hydraulic lines, etc.) 4) Noise 5) Energized systems 6) Lifting (muscle strains and pulls) 7) Slip, trips, and falls 8) Vehicular and foot traffic ***Natural hazards:*** 9) Insect/animal bites and stings 10) Ambient temperature extremes (heat stress) 11) Inclement weather	1) Use real-time monitoring instrumentation, action levels, and identified PPE to control exposures to potentially contaminated media (e.g. air, water, soils, etc.). Generation of dusts should be minimized to the greatest extent possible. If airborne dusts are observed, area wetting methods will be used. If area wetting methods are not feasible, termination of activities will be used to minimize exposure to excessive airborne dusts. 2) Decontaminate all equipment and supplies between boreholes and prior to leaving the site. 3) All equipment to be used will be – Inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600,.601,.602), and manufacturers design. – Operated by qualified operators, and knowledgeable ground crew. – Used within establish safe zones and with clearly demarcated routes of approach. – All personnel not directly supporting the drilling operation will remain at least 30 feet from the point of operation. – Drilling, drill masts or other projecting devices shall be at least 20 feet from overhead power sources and a minimum of 3 feet from underground utilities unless the exact location of the underground utility is known. – Hand signals will be established prior to the commencement of drilling. – The driller and helper can simultaneously handle moving augers or flights only when there is a standby person to activate the emergency stop device. – The driller must be at the controls while tools are rotating unless all personnel are clear of the rotating equipment. – A long handled shovel or equivalent shall be used to clear away drill cuttings from the hole and rotating equipment. Hands or feet shall not be used for this purpose. – A remote sampling device must be used to sample drill cuttings near rotating tools. The driller shall shutdown operations if the sampler is near the tools. – Only manufacturer approved equipment may be used in conjunction with equipment repair procedures (i.e. pins for auger flights etc.). – Only climb a drill mast when equipment is stopped and secure. – Use ANSI approved fall protection (i.e., belts, lanyards) or portable ladders which meet OSHA's requirements when climbing drill masts. – Work areas will be kept clear of clutter. – Secure all loose articles to avoid possible entanglement. – All equipment shall be equipped with movement warning systems. – All personnel working in high equipment traffic areas are required to wear reflective vests for high visibility. – All personnel will be instructed in the location and operations of the emergency shut off device(s). This device will be tested initially (and then periodically) to insure its operational status. – Areas will be inspected prior to the movement of drill rigs and support vehicles to eliminate any physical hazards. This will be the responsibility of the SSHO. – Drill rigs and support vehicles will be moved no closer than 3 feet to floor openings, pits, etc. 4) Hearing protection will be used during all subsurface activities. 5) All utility clearances shall be obtained prior to subsurface activities. Prior to any subsurface investigations, the locations of all underground utilities will be identified and marked. Obtain written permit clearance prior to all subsurface investigations 6) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. 7) Preview work locations for unstable/uneven terrain. 8) Traffic and equipment considerations are to include the following: – Establish safe zones of approach (i.e. Boom + 3 feet). – Secure all loose articles to avoid possible entanglement. – All equipment shall be equipped with movement warning systems. 9) Avoid nesting areas, use commercially available insect repellents. Report potential hazards to the SSHO 10) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. 11) Suspend or terminate operations until directed otherwise by SSHO	A Photoionization Detector (PID) w/ 9.24 eV UV lamp source or higher, or a Flame Ionization Detector (FID), will be used as follows: Source monitoring will be conducted at regular intervals as determined by the SSHO. Volatile organic vapor concentrations will be measured using a PID or FID. Work shall be stopped and all workers evacuated from the area if any sustained breathing zone readings above established background levels are measured. Workers shall remain in an unaffected area until readings subside or until further determinations are made by the SSHO. Note: Prior to beginning operations establish background levels with the PID or FID. This can be accomplished by taking readings in the breathing zone before any intrusive work begins. Document the findings.	All subsurface operations are to be initiated in Level D protection. Level D protection constitutes the following minimum protection – Standard field attire (Sleeved shirt; long pants) Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential exists for soiling work attire. – Nitrile gloves or leather gloves with nitrile inner gloves – Steel toe safety shoes – Safety glasses – Hardhat – Reflective vest for high traffic areas – Hearing protection for high noise areas, as directed by the SSHO.	**Personnel Decontamination** will consist of a soap/water wash and rinse for reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of: – Equipment drop – Soap/water wash and rinse of reusable PPE (e.g., outer boots and gloves), as applicable – Removal of reusable outer PPE (rubber boots, gloves, etc.) – Soap/water wash and rinse of PVC splash suit, as applicable – Sequential removal and disposal of non-reusable PPE items in the following order (Tyvek/PVC coveralls, inner gloves – Wash hands and face and leave exclusion zone.

Table 5-1c. Tasks, Hazards, and Associated Control Measures Summary (page 3 of 6)

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment	Decontamination Procedures
Mobilization/ Demobilization	***Physical hazards:*** 1) Lifting (muscle strains and pulls) 2) Pinches and compressions 3) Slip, trips, and falls 4) Heavy equipment hazards (rotating equipment, hydraulic lines, etc.) *5)* Vehicular and foot traffic ***Natural hazards:*** 6) Insect/animal bites and stings 7) Ambient temperature extremes (heat stress) *8)* Inclement weather	1) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. 2) Use pinch bars or other equipment to keep hands from the machine point of operation. 3) Preview work locations for unstable/uneven terrain. 4) All equipment will be: – Inspected in accordance with OSHA, and manufacturer's design. – Operated by qualified operators, and knowledgeable ground crew. 5) Traffic and equipment considerations are to include the following: – Establish safe zones of approach (i.e. Boom + 3 feet). – Secure all loose articles to avoid possible entanglement. – All equipment shall be equipped with movement warning systems. 6) Avoid nesting areas, use commercially available insect repellents. Report potential hazards to the SSHO. 7) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. 8) Suspend or terminate operations until directed otherwise by SSHO.	Not required	Level D - (Minimum Requirements) – Standard field attire (Sleeved shirt; long pants) – Steel toe safety shoes – Safety glasses – Hardhat (when overhead hazards exists, or identified as a operation requirement) – Reflective vest for high traffic areas – Hearing protection for high noise areas, or as directed on an operation by operation scenario.	Not required

Table 5-1e. Tasks, Hazards, and Associated Control Measures Summary (page 5 of 6)

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment	Decontamination Procedures
Surveying	***Physical hazards:*** 1) Lifting (muscle strains and pulls) 2) Slip, trips, and falls 3) Vehicular (highway and foot) traffic ***Natural hazards:*** 4) Inclement weather *5)* Insects/animal bites and stings	1) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. 2) Preview work locations for unstable/uneven terrain. Maintain a minimum of two feet from floor openings. 3) Surveying activities conducted in high traffic areas will require the use of reflective vests and warning signs to inform motorists of the work activity to proceed with caution. 4) Suspend or terminate operations until directed otherwise by SSHO *5)* Avoid nesting areas, use commercially available insect repellents. Report potential hazards to the SSHO.	Not required Excessive chemical contaminant concentrations impacting field crews during this task is not anticipated.	Level D - (Minimum Requirements) – Standard field attire (Long-sleeved shirt; long pants) – Safety shoes (steel toe/shank) – *Tuck shirt into pants and pants into socks where ticks or other insects are a concern.* – *Reflective vest for high traffic areas* – *Hearing protection for high noise areas, or as directed on an operation by operation scenario.* Note: The Safe Work Permit(s) for this task (see Attachment IV) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.	Not required

6.0 Hazard Assessment

The following section provides information regarding the chemical, physical, and natural hazards anticipated to be present during the activities to be conducted. Table 6-1 provides information related to chemical constituents that have been identified by analysis or are suspected to be present at the site based on historical data. Specifically, toxicological information, exposure limits, symptoms of exposure, physical properties, and air monitoring and sampling data are discussed in the table.

6.1 Chemical Hazards

The potential health hazards associated with include inhalation, ingestion, and dermal contact of various contaminants that may be present in groundwater. The following has been identified as the primary class of these contaminants, including the specific compound(s) of interest:

6.1.1 Site 245

A contamination assessment was conducted at the site in 1997. Laboratory analysis of soils collected from 4 to 6 feet below ground surface (bgs) showed FL-PRO concentrations above the regulatory limit of 2500 parts per million (ppm). Lab analysis of groundwater collected from well MW-4 showed benzene concentrations above the MCL of 1 part per billion (ppb) and naphthalene concentrations above the F.A.C. standard of 20 ppb.

6.1.2 Site 1343

A contamination assessment was conducted at the site in 1997. Laboratory analysis of soils collected from 4 to 6 feet bgs showed FL-PRO concentrations below the regulatory limit of 2500 ppm. Lab analysis of groundwater collected form well MW-1 showed PAHs below regulatory limits.

6.1.3 Site 1388

A contamination assessment was conducted at the site in 1997. Laboratory analysis of soils collected from 1 to 6 feet bgs showed FL-PRO concentrations above the regulatory limit of 2500 ppm. Lab analysis of groundwater collected form wells MW-1 and MW-4 showed PAHs below regulatory limits.

6.1.4 Chemical Properties

Table 6-1 provides information on the substances likely to be present at the site to be investigated. Included is information on the toxicological, chemical, and physical properties of these substances. It is anticipated that the greatest potential for exposure to site contaminants is during intrusive activities (e.g., monitoring well installation, sampling). Exposure to these compounds is most likely to occur through ingestion and inhalation of contaminated water, or hand-to-mouth contact during intrusive activities. For this reason, PPE and basic hygiene practices (washing face and hands before leaving site) will be extremely important. Inhalation

personnel who are allergic to stinging insects such as bees, wasps, and hornets must be particularly careful since severe illness and death may result from allergic reactions. As with any medical condition or allergy, information regarding the condition must be provided to the SSHO.

There are various areas throughout the U.S. where Lyme Disease is endemic. Fortunately, Florida is not one of these areas. Nonetheless, personnel should be aware of the hazards of tick bites and Lyme Disease. The longer a disease carrying tick remains attached to the body, the greater the potential for contracting the disease. Wearing long sleeved shirts and long pants (tucked into boots). As well as performing frequent body checks will prevent long term attachment. Site first aid kits should be equipped with medical forceps and rubbing alcohol to assist in tick removal.

An Office of Natural Resources or similar entity on Base should be contacted for further direction on the hazards and precautions of naturally occurring wildlife and insects.

6.3.3 Inclement Weather

Project tasks under this Scope of Work will be performed outdoors and near water. As a result, inclement weather may be encountered. In the event that adverse weather conditions arise (electrical storms, hurricanes, etc.), the SSHO will be responsible for temporarily suspending or terminating activities until hazardous conditions no longer exist.

Table 6-1b. Chemical Hazards (page 2 of 7)

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
General PAHs / Coal Tar Pitch Volatiles / Creosote / cresol (Fluoranthene, pyrene, benzo(a) anthracene, benzo(a) pyrene, benzo(f)fluoranthene, benzo(k)fluoranthene), etc.)	(CAS Numbers vary depending on specific compound)	PID: I.P. of 8.97 eV, relative response ratio unknown. FID: Response factor unknown but given the substances flammability, detection by FID can be anticipated.	Refer to NIOSH methods for each specfic compound for appropriate air sampilng protocols. Many PAHs can be sampled using NIOSH Method 5506 or 5515 - Teflon filter with support ring - High pressure liquid chromatography with UV detector. For cresol (a major constituent of creosote) by silica gel or xad-7 sorbent tube; Acetone desorption and analysis by gas chromatography - flame ionization detector or high-pressure liquid chromatography. (NIOSH Method #2001, or OSHA Method #32)	**General PAHs**: Most PAHs have no established exposure limits. Other Coal Tar Pitch Volatiles / PAHs such as chrysene and benzo(a)pyrene have an exposure limit of 0.2 mg/m^3 (OSHA and ACGIH). 0.1 mg/m^3 - (NIOSH) **Creosote / Cresol:** OSHA; ACGIH: 5 ppm NIOSH: 2.3 ppm IDLH: 80 mg/m^3	Adequate - use a full-face air-purifying respirator with organic vapor / dust/mist cartridge up to 250 ppm. Cresol has an Odor Threshold of 0.00005-0.0079 ppm. **Recommended gloves:** Viton >96.00 hrs; butyl rubber >90.00 hrs; neoprene >4.50 hrs	Properties of various PAHs/Coal Tar Pitch Volatiles vary depending upon the specific compound. *For Creosote/Cresol:* **Boiling Pt:** 376-397°F; 191-203°C **Melting Pt:** 52-96°F; 10.9-35.5°C **Solubility:** Insoluble **Flash Pt:** 178°F; 81°C **LEL/LFL:** Not available **UEL/UFL:** Not available **Vapor Density:** 3.72 **Vapor Pressure:** 1 mmHg @ 100-127°F; 38-53°C **Specific Gravity:** 1.030-1.038 **Incompatibilities:** Nitric acid, oleum, chlorosulfonic acid, oxidizers **Appearance and Odor:** Yellowish or colorless, flammable, oily liquid (often brownish because of impurities or oxidation)	Regulated based on effects on respiratory tract and skin irritation Other effects may include eye irritiation and central nervous system, distrubances. Acute exposures may result in difficulty breathing, respiratory failure and skin and eye irritation and burns. Chronic exposure may damage the liver, kidneys, lungs and skin and cause photosensitivity. IARC, NTP, NIOSH, ACGIH, and the EPA list some PAHs such as benzo(a)pyrene as a potential carcinogen (ARC 2A, NTP-2, ACGIH TLV-A2, NIOSH-X, EPA-B2).

Table 6-1d. Chemical Hazards (page 4 of 7)

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Benzene	71-43-2	PID: I.P 9.24 eV, 100% response with PID and 10.2 eV lamp. FID: 150% relative response ratio with FID.	Air sample using 2 mil Tedlar sample bags or charcoal tube with carbon disulfide desorption. Sampling and analytical protocol in accordance with NIOSH Method # 3700 or #1500 and OSHA 07.	OSHA: 1 ppm 5 ppm (STEL) *See 29 CFR 1910.1028* ACGIH: 10 ppm NIOSH: 0.1 ppm IDLH: 500 ppm	Inadequate - Odor threshold 1.4-120 ppm. The use of half-face air-purifying respirators with organic vapor cartridge up to 10 ppm is acceptable despite the inadequate warning properties, providing cartridges are changed at the beginning of each shift. **Recommended gloves:** Butyl/neoprene blend - >8.00 hrs; Silver shield as a liner - >8.00 hrs; Viton - >8.00 hrs	**Boiling Pt:** 176°F; 80°C **Melting Pt:** 42°F; 5.5°C **Solubility:** 0.07% **Flash Pt:** 12°F; -11°C **LEL/LFL:** 1.2% **UEL/UFL:** 7.8% **Vapor Density:** 2.77 **Vapor Pressure:** 75 mmHg **Specific Gravity:** 0.88 **Incompatibilities:** Strong oxidizers, fluorides, perchlorates, and acids **Appearance and Odor:** Colorless to a light yellow liquid with an aromatic odor	Overexposure may result in irritation to the eyes, nose, throat, and respiratory system. CNS effects include giddiness, lightheadedness, headaches, staggered gait, fatigue, and lassitude and depression. Additional effects may include nausea, difficulty breathing, and intoxification. Long duration exposures may result in respiratory collapse. May cause damage to the blood forming organs and may cause a form of cancer called leukemia. The ACGIH, IARC, and OSHA list benzene as a carcinogen.

Table 6-1f. Chemical Hazards (page 6 of 7)

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Toluene	108-88-3	PID: I.P 8.82 eV, High response with PID and 10.2 eV lamp. FID: 110% response with FID.	Air sample using charcoal tube; carbon disulfide desorption. Sampling and analytical protocol shall proceed in accordance with OSHA Method #07, or NIOSH Method #1500.	OSHA: 200 ppm 300 ppm (Ceiling) ACGIH: 50 ppm (skin) NIOSH: 100 ppm 150 ppm STEL IDLH: 500 ppm	Adequate - Odor threshold 1.6 ppm is considered good. Can use air-purifying respirator with organic vapor cartridge up to 1,000 ppm. **Recommended gloves:** Teflon >15.00 hrs; Viton >16.00 hrs; silver shield >6,00 hrs; supported nitrile (Useable time limit 0.5 hr, complete submersion for the nitrile selection); PV alcohol >25.00 hrs	**Boiling Pt:** 232°F; 111°C **Melting Pt:** -139°F; -95°C **Solubility:** 0.05% (61°F;16°C) **Flash Pt:** 40°F; 4°C **LEL/LFL:** 1.2% **UEL/UFL:** 7.1% **Vapor Density:** 3.14 **Vapor Pressure:** 20 mmHg @ 65°F; 18°C **Specific Gravity:** 0.87 **Incompatibilities:** Strong oxidizers **Appearance and odor:** Colorless liquid with a sweet pungent aromatic odor.	Overexposure to this substance may result in mild to moderate irritation at all points of contact, and CNS changes including euphoria, confusion, nervousness, and possibly paresthesia characterized by an abnormal burning sensation, pricking, or numbness. At 200-500 ppm exposure has resulted in headaches, nausea, eye irritation, loss of appetite, bad taste, impair coordination, fatigue, and weariness. Chronically, toluene overexposure may result in dermatitis, liver, and kidney damage.

7.0 Air Monitoring

Direct reading instruments will be used at the site to detect and evaluate the presence of site contaminants and other potentially hazardous conditions. As a result, specific air monitoring measures and requirements are established in Table 5-1 pertaining to the specific hazards and tasks of an identified operation.

7.1 Instruments and Use

Instruments will be used primarily to monitor source points and worker breathing zone areas, while observing instrument action levels. Action levels are discussed in Table 5-1 as they may apply to a specific task or location.

7.1.1 Photoionization Detector or Flame Ionization Detector

In order to accurately monitor for any substances which may present an exposure potential to site personnel, a Photoionization Detector (PID) using a lamp energy of 9.24 eV or higher will be used. This instrument will be used to monitor potential source areas and to screen the breathing zones of employees during site activities. The PID has been selected because it is capable of detecting the organic vapors of concern (NOTE: A Flame Ionization Detector [FID] may be used as an alternative to the PID).

Prior to the commencement of any field activities, the background levels of the site must be determined and noted. Daily background readings will be taken away from any areas of potential contamination. These readings, any influencing conditions (i.e., weather, temperature, humidity) and site location must be documented in the logbook or other site documentation.

7.1.2 Hazard Monitoring Frequency

Table 5-1 presents the frequencies that hazard monitoring will be performed as well as the action levels which will initiate the use of elevated levels of protection. The SSHO may decide to increases these frequencies based on instrument responses and site observations. The frequency at which monitoring is performed will not be reduced without the prior consent of the HSD.

7.2 Instrument Maintenance and Calibration

Operational checks and field calibration will be performed on all instruments each day prior to their use. Field calibration will be performed on instruments according to manufacturer's recommendations (for example, the PID must be field calibrated daily and an additional field calibration must be performed at the end of each day to determine any significant instrument drift). These operational checks and calibration efforts will be performed in accordance with the manufacturer's recommendations. All calibration efforts must be documented.

This required information includes the following:

- Date calibration was performed
- Individual calibrating the instrument
- Instrument name, model, and serial number

8.0 Training and Medical Surveillance Requirements

8.1 Introductory, Refresher, and Supervisory Training

This section is included to specify health and safety training and medical surveillance requirements for both EEG and subcontractor personnel participating in site activities.

8.1.1 Requirements for EEG Personnel

All EEG personnel must complete 40 hours of introductory hazardous waste site training prior to performing work at the NS Mayport facility. Additionally, EEG personnel who have had introductory training more than 12 months prior to site work must have completed 8 hours of refresher training in the past 12 months before being cleared for site work. In addition, 8-hour supervisory training in accordance with 29 CFR 1910.120 (e)(4) will be required for site supervisory personnel.

Documentation of EEG introductory, supervisory, and refresher training as well as site-specific training will be maintained at the project. Copies of certificates or other official documentation will be used to fulfill this requirement.

8.1.2 Requirements for Subcontractors

All EEG subcontractor personnel must have completed introductory hazardous waste site training or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120 (e). Additionally, personnel who have had the introductory training more than 12 months ago, are required to have 8 hours of refresher training meeting the requirements of 29 CFR 1910.120 (e)(8) prior to performing field work at the NS Mayport facility, if required. EEG subcontractors must certify that each employee has had such training by sending EEG a letter, on company letterhead, containing the information in the example letter provided as in Figure 8-1 and by providing copies of certificates for all subcontractor personnel participating in site activities.

8.2 Site-Specific Training

EEG will provide site-specific training to all EEG employees and subcontractor personnel who will perform work on this project. Site-specific training will also be provided to all personnel (DoD, EPA, etc.) who may enter the site to perform functions that may or may not be directly related to site operations.

Site-Specific training will include:

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present on site
- Use of personal protective equipment
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- Contents of the Health and Safety Plan
- Emergency response procedures (evacuation and assembly points)
- Incident response procedures
- Review of the contents of relevant Material Safety Data Sheets

Site-specific documentation will be established through the use of Figure 8-2. All site personnel and visitors must sign this document upon receiving site-specific training.

8.3 Medical Surveillance

8.3.1 Medical Surveillance Requirements for EEG Personnel

All EEG personnel participating in project field activities will have had a physical examination meeting the requirements of EEG's medical surveillance program and will be medically qualified to perform hazardous waste site work. EEG personnel who may be required to wear a respirator on-site will be medically certified as to their ability to wear one.

Documentation for medical clearances will be maintained in the EEG Gainesville office and made available, as necessary.

8.3.2 Medical Surveillance Requirements for Subcontractors

Subcontractors are required to obtain a certificate of their ability to perform hazardous waste site work and to wear respiratory protection. The "Subcontractor Medical Approval Form" provided in Figure 8-3 shall be used to satisfy this requirement, providing it is properly completed and signed by a licensed physician.

Subcontractors who have a company medical surveillance program meeting the requirements of paragraph (f) of OSHA 29 CFR 1910.120 can substitute "Subcontractor Medical Approval Form" (See Figure 8-3) with a letter, on company letterhead, containing all of the information in the example letter presented in Figure 8-4 of this HASP.

8.4 Subcontractor Exceptions

Subcontractors who will not enter the Exclusion Zone during intrusive operations, and whose activities involve no potential for exposure to site contaminants, will not be required to meet the requirements for training/medical surveillance other than those stated for site-specific training (See Section 8.2).

Figure 8-3b. Subcontractor Medical Approval Form (page 2 of 2)

1. Results of the medical examination and tests (excluding finding or diagnoses unrelated to occupational exposure):

   _____
   _____
   _____

2. Any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health:

   _____
   _____
   _____

3. Recommended limitations upon the employee's assigned work:

   _____
   _____
   _____

I have informed this participant of the results of this medical examination and any medical conditions which require further examination of treatment.

Based on the information provided to me, and in view of the activities and hazard potentials involved at the NS Mayport work site, this participant

( ) may
( ) may not

perform his/her assigned task.

Physician's Signature _____

Address _____

Phone Number _____

NOTE: Copies of test results are maintained and available at:

_____
Address

9.0 Spill Containment Program

9.1 Scope and Application

It is anticipated that bulk quantities of potentially hazardous materials (greater than 55-gallons) will not be handled during the site activities. It is possible, however, that as the job progresses disposable PPE and other non-reusable items may be generated. As needed, 55-gallon drums will be used to contain unwanted items generated during sampling activities. The drum(s) will be labeled with the site name and address, the type of contents, and the date the container was filled as well as an identified contact person. As warranted, samples will be collected and analyzed to characterize the material and determine appropriate disposal measures. Once characterized the drum(s) will be removed from the staging area and disposed of in accordance with Federal, State and local regulations. Given the likely solid nature of drum contents, a comprehensive Spill Containment Program is not necessary. The following discussion is provided as contingency information only.

9.2 Potential Spill Areas

Should drums contain liquid wastes, potential spill areas will be monitored in an ongoing attempt to prevent and control further potential contamination of the environment. Areas designated for handling, loading, and unloading of potentially contaminated waters and debris present limited potential for leaks or spills.

9.2.1 Site Drums and Containers

All drums/containers used for containing liquids will be sealed, labeled, and staged within a centralized area awaiting shipment or disposal.

9.3 Leak and Spill Detection

To establish an early detection of potential spills or leaks, periodic inspections by the SSHO will be conducted during working hours to visually determine that containers are not leaking. If a leak is detected, the first approach will be to transfer the container contents using a hand pump into a new container. Other provisions for the transfer of container contents will be made and appropriate emergency contacts will be notified, if necessary. In most instances, leaks will be collected and contained using absorbents such as Oil-dry, vermiculite, and/or sand, which may be stored at the staging area in a conspicuously marked drum. This material too, will be containerized for disposal pending analyses. All inspections will be documented in the logbook.

9.4 Personnel Training and Spill Prevention

All personnel will be instructed on the procedures for spill prevention, containment, and collection of hazardous materials in the site-specific training. The SSHO will serve as the Spill Response Coordinator for this operation should the need arise.

10.0 Site Control

This section outlines the means by which EEG will delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the spread of contaminants into previously unaffected areas of the site. It is recognized that, given the planned scope of work, the application of a three-zone approach is considered conservative. Nonetheless, this approach will be used and includes an Exclusion Zone, a Contamination Reduction Zone, and a Support Zone. It is also anticipated that this control measure will be used to control access to site work areas. Use of such controls will restrict the general public, minimize the potential for the spread of contaminants, and protect individuals who are not cleared to enter work areas.

10.1 Exclusion Zone

The Exclusion Zone will be considered the area of active operations plus an established safety zone, depending on the task. The following represent the Exclusion Zone boundaries for the following identified tasks:

- Monitoring Well Installation – The boundary perimeter will be established by determining the height of the mast, plus five feet. Therefore, if it is a 35-foot mast plus 5 feet equals a 40-foot boundary surrounding the point of operation.
- Well Development – 10 feet surrounding the well head and discharge point.
- Groundwater sampling – 10 feet surrounding the well head.
- Subsurface soils – 5 feet surrounding the sample collection point.
- Decontamination (heavy equipment – steam/pressure washers) – 35 feet surrounding the point of operation.

Where appropriate and necessary to direct facility personnel, the exclusion zone will be delineated using barrier tape, cones and/or drive poles, and postings.

10.2 Contamination Reduction Zone

The Contamination Reduction Zone (CRZ) will be a buffer area between the Exclusion Zone and any area of the site where contamination is not suspected. Personnel and sampling equipment decontamination will take place in this area. This area will also serve as a focal point in supporting Exclusion Zone activities.

10.3 Support Zone

The Support Zone for this project will include a staging area where site vehicles will be parked, equipment will be unloaded, and where food and drink containers will be maintained. In all cases, the Support Zones will be established at areas of the site where exposure to site contaminants would not be expected during normal working conditions or foreseeable emergencies.

show potential points of contact with the public, roadways, and other significant characteristics that may impact site operations and safety. Site maps will be posted to illustrate up-to-date collection of contaminants and adjustment of zones and access points.

10.7 Buddy System

Personnel engaged in onsite activities will practice the "buddy system" to ensure the safety during this operation.

10.8 Material Safety Data Sheet (MSDS) Requirements

EEG personnel will provide MSDSs for all chemicals brought on site. The contents of these documents will be reviewed by the SSHO with the user(s) of the chemical substances prior to any actual use or application of the substances on site. A chemical inventory of all chemicals used on site will be developed. The MSDSs will then be maintained in a central location and will be available for review.

10.9 Communication

EEG personnel will be working in close proximity to each other at NS Mayport. As a result and since two way radio communication will not be available, hand signals, voice commands, and line of site will provide sufficient means of communication. When project tasks are performed simultaneously on different sites, vehicle horns will be used to communicate emergency situations per Section 2.8 of this HASP.

External communication will be accomplished by using provided telephones at the site. External communication will primarily be used for the purpose of resource and emergency response communications.

12.0 Materials and Documentation

The SSHO shall ensure the following materials/documents are taken to the project site and used when/as required.

- A complete copy of this HASP
- Tailgate Safety Briefing forms
- Material Safety Data Sheets for all chemicals brought on site, including decon solutions, fuels, lime, sample preservatives, calibration gases, etc.
- A full-size OSHA Job Safety and Health Poster (posted in the site trailers)
- Emergency Reference Information (Section 2.0, extra copy for posting)

12.1 Materials to be Posted or Maintained at the Site

The following documentation is to be posted or maintained at the site for quick reference purposes. In situations where posting these documents is not feasible, (such as no office trailer), these documents should be separated and immediately accessible.

- **Chemical Inventory Listing (posted)** – This list represents all chemicals brought on-site, including decontamination solutions, sample preservations, fuel, etc. This list should be posted in a central area.

- **Material Safety Data Sheets (MSDS) (maintained)** – The MSDSs for chemicals brought on site are presented in Appendix A.

- **The OSHA Job Safety & Health Protection Poster (posted)** – this poster, as directed by 29 CFR 1903.2 (a)(1), should be conspicuously posted in places where notices to employees are normally posted. Each FOL shall ensure that this poster is not defaces, altered, or covered by other material.

- **Site Clearance (maintained)** – This list is found within the training section of the HASP (See Figure 8-2). This list identifies all site personnel, dates of training (including site-specific training), and medical surveillance. The lists indicates not only clearance but also status. If personnel do not meet these requirements, they do not enter the site while site personnel are engaged in activities.

- **Emergency Phone Numbers** and Directions to the Hospital(s) (posted) – This list of numbers and directions will be maintained at all phone communications points and in each site vehicle.

- **Personnel Monitoring (maintained)** – All results generated through personnel sampling (levels of airborne toxins, noise levels, etc.) will be posted to inform individuals of the results of that effort.

- **Placards and Labels (maintained)** – Where chemical inventories have been separated because of quantities and incompatibilities, these areas will be conspicuously marked using DOT placards and acceptable (Hazard Communication 29 CFR 1910.1200(f)) labels.

APPENDIX A

MSDSs for Chemicals Brought On Site

Ingestion: YES
Carcinogenicity Inds - NTP: NO
IARC: NO
OSHA: NO
Effects of Exposure: EYE: IRRITAT/STINGING/TEARING/REDNESS/SWELLING. SKIN: IRRITAT/DRYING/REDNESS/BURNING/CRACKING/SKIN BURNS. INGEST: MAY BE HARMFUL. INHAL: MAY BE HARMFUL. CHRONIC: GI IRRITATION (NAUSEA/VOMIT/DIARRHEA). IRRITATION, CNS DEPRESSION (DIZZY/DROWS Y/WEAKNESS/FATIGUE/NAUSEA/HEADACHE/UNCONSCIOUS). *
Signs And Symptions Of Overexposure: * LOW BLOOD PRESSURE. MILD LIVER EFFECTS/HEART RATE & RESPIRATORY EFFECTS/LOSS OF COORDINATION/CONFUSION/PULMONARY EDEM/KIDNEY DAMAGE/COMA. MAY BE HARMFUL TO HUMAN FETUS.
First Aid: EYE: FLUSH W/WATER FOR 15 MIN, LIFT LIDS. GET MED AID. SKIN: REMOVE CONTAM CLOTHES, WASH W/SOAP & WATER. GET MED AID. WASH CLOTHES BEFORE REUSE. INGEST: IF UNCONSCIOUS, PLACE PERSON ON LEFT SIDE W/HEAD DOWN. IF CONSCIOUS, INDUCE VOMIT W/SYR UP OF IPECAC OR STICK FINGER DOWN THROAT. GET MED AID. INHAL: GET FRESH AIR, GET MED AID. KEEP WARM/QUIET. GIVE OXYGEN/ARTIFICIAL RESPIRATION IF NEEDED.

Handling and Disposal

Spill Release Procedures: SMALL SPILL: ABSORB W/INERT ABSORBENT. LARGE SPILL: REMOVE IGNITS. STOP SPILL. PREVENT ENTERING BODIES OF WATER. PUMP/TRANSFER/VACUUM TO CONTAINERS FOR RECOVERY. ABSORB UNRECOVERABLE PRODUCT. TRANSFER CONTAM MATL TO CONTAINERS FOR DISPOSAL. DIKE. **
Waste Disposal Methods: IN ACCORDANCE W/FEDERAL, STATE & LOAL REGULATIONS.
Handling And Storage Precautions: CNTNRS ARE HAZARDOUS WHEN EMPTY. OBSERVE ALL HAZARD DATA. GROUND/BOND 5 GL OR LARGER CNTNRS WHEN TRANSFERRING. SUDDEN RELEASE OF HOT ORGANIC ***
Other Precautions: **SHOVEL MATERIAL INTO CONTAINERS. CLOSE CONTAINERTIGHTLY & DISPOSE OF PROPERLY. *** CHEMICAL VAPORS/MIST FROM PROCESS EQPTAT HIGH TEMPS MAY RESULT IN IGNITION W/OUT OBVIOUS IGNIT SOURCES.

Fire and Explosion Hazard Information

Flash Point Text: 53.0F,11.7C
Autoignition Temp Text: 750.0F
Lower Limits: 2.0
Extinguishing Media: ALCOHOL FOAM, CARBON DIOXIDE, DRY CHEMICAL.
Fire Fighting Procedures: USE WATER TO KEEP CONTAINERS COOL. USE SCBA W/FULL FACE PIECE IN POSITIVE PRESSURE DEMAND MODE W/TURNOUT GEAR AND CHEMICAL RESISTANT PERSONAL PROTECTIVE EQUIP.
Unusual Fire/Explosion Hazard: VAPORS ARE HEAVIER THAN AIR, TRAVEL TO IGNITION SOURCES AND FLASHBACK. PRODUCT MAY IGNITE EXPLOSIVELY.

Control Measures

Respiratory Protection: USE AIR SUPPLIED RESPIRATOR. IF ANY COMPONENT IS EXCEEDED. OTHER NEGATIVE PRESSURE TYPE RESPIRATOR.
Ventilation: MECHANICAL (GENERAL/LOAL EXHAUST).
Protective Gloves: RECOMMENDED.
Eye Protection: CHEMICAL SPLASH GOGGLES/SAFETY GLASSES.
Other Protective Equipment: IMPERVIOUS CLOTHING & BOOTS.

Physical/Chemical Properties

Special Provision: T1
Packaging Exception: 150
Non Bulk Pack: 202
Bulk Pack: 242
Max Qty Pass: 5 L
Max Qty Cargo: 60 L
Vessel Stow Req: B

Detail IMO Information

IMO PSN Code: ITA
IMO Proper Shipping Name: ISOPROPANOL
IMDG Page Number: 3244
UN Number: 1219
UN Hazard Class: 3.2
IMO Packaging Group: II
Subsidiary Risk Label: -
EMS Number: 3-06
MED First Aid Guide NUM: 305

Detail IATA Information

IATA PSN Code: ONH
IATA UN ID Num: 1219
IATA Proper Shipping Name: ISOPROPANOL
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
UN Packing Group: II
Packing Note Passenger: 305
Max Quant Pass: 5L
Max Quant Cargo: 60L
Packaging Note Cargo: 307

Detail AFI Information

AFI PSN Code: ONH
AFI Proper Shipping Name: ISOPROPANOL
AFI Hazard Class: 3
AFI UN ID NUM: UN1219
AFI Packing Group: II
Special Provisions: P5
Back Pack Reference: A7.3

HAZCOM Label

Product ID: ISOPROPYNOL 99%
Cage: 34897
Company Name: ASHLAND CHEMICAL CO.
PO Box: 2219
City: COLUMBUS OH
Zipcode: 43216-2219
Health Emergency Phone: 800-274-5263
Label Required IND: Y
Date Of Label Review: 10/12/1999
Status Code: A
Origination Code: G
Hazard And Precautions: EYE: IRRITAT/STINGING/TEARING/REDNESS/SWELLING. SKIN:

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

Mallinckrodt CHEMICALS | J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

NITRIC ACID, 50-70%

MSDS Number: N3660 --- ***Effective Date: 07/13/00***

1. Product Identification

Synonyms: Aqua Fortis; Azotic Acid; Nitric Acid 50%; Nitric Acid 65%; nitric acid 69-70%
CAS No.: 7697-37-2
Molecular Weight: 63.01
Chemical Formula: HNO3
Product Codes:
J.T. Baker: 411D, 412D, 5371, 5555, 5801, 5826, 5876, 9597, 9598, 9600, 9601, 9602, 9603, 9604, 9606, 9607, 9616, 9617
Mallinckrodt: 1409, 2703, 2704, 412D, 6623, H988, H993, H998, V069, V077, V336, V561, V633, V650

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Nitric Acid	7697-37-2	50 - 70%	Yes
Water	7732-18-5	30 - 50%	No

3. Hazards Identification

4. First Aid Measures

Immediate first aid treatment reduces the health effects of this substance.
Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Ingestion:
DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:
Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Can react with metals to release flammable hydrogen gas.
Explosion:
Reacts explosively with combustible organic or readily oxidizable materials such as: alcohols, turpentine, charcoal, organic refuse, metal powder, hydrogen sulfide, etc. Reacts with most metals to release hydrogen gas which can form explosive mixtures with air.
Fire Extinguishing Media:
Water spray may be used to keep fire exposed containers cool. Do not get water inside container.
Special Information:
Increases the flammability of combustible, organic and readily oxidizable materials. In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

oxidizable materials, such as activated charcoal. Canister-type respirators using sorbents are ineffective.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

9. Physical and Chemical Properties

Appearance:

Colorless to yellowish liquid.

Odor:

Suffocating, acrid.

Solubility:

Infinitely soluble.

Specific Gravity:

1.41

pH:

1.0 (0.1M solution)

% Volatiles by volume @ 21C (70F):

100 (as water and acid)

Boiling Point:

122C (252F)

Melting Point:

-42C (-44F)

Vapor Density (Air=1):

2-3

Vapor Pressure (mm Hg):

48 @ 20C (68F)

Evaporation Rate (BuAc=1):

No information found.

---

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Containers may burst when heated.

Hazardous Decomposition Products:

When heated to decomposition, emits toxic nitrogen oxides fumes and hydrogen nitrate. Will react with water or steam to produce heat and toxic and corrosive fumes.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: NITRIC ACID (WITH NOT MORE THAN 70% NITRIC ACID)
Hazard Class: 8
UN/NA: UN2031
Packing Group: II
Information reported for product/size: 150LB

International (Water, I.M.O.)

Proper Shipping Name: NITRIC ACID (WITH NOT MORE THAN 70% NITRIC ACID)
Hazard Class: 8
UN/NA: UN2031
Packing Group: II
Information reported for product/size: 150LB

International (Air, I.C.A.O.)

Proper Shipping Name: NITRIC ACID (WITH NOT MORE THAN 70% NITRIC ACID)
Hazard Class: 8
UN/NA: UN2031
Packing Group: II
Information reported for product/size: 150LB

---

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\--------

Ingredient	TSCA	EC	Japan	Australia
Nitric Acid (7697-37-2)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\--------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Nitric Acid (7697-37-2)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\--------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313----- List	Chemical Catg

Product Use:
Laboratory Reagent.
Revision Information:
MSDS Section(s) changed since last revision of document include: 1.
Disclaimer:
****

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