

# MV Selendang Ayu

## SAFETY AND HEALTH PLAN FOR Spring/Summer Operations

Unalaska, AK

Rev. 0

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Approved By: *AIM* FOSC Date: 4/21/05

Approved By: *Kusti A. Kannon* SOSC Date: 4/21/05

Approved By: *Howard Stelm* RPIC Date: 4/21/05

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## 1.0 OVERVIEW

### 1.1 The Safety and Health Plan

1.1.1 The MV Selendang Ayu Safety and Health Plan establishes safety and health requirements for all activities associated with spring/summer operations. This Plan was prepared to satisfy the Responsible Party's commitment to provide a safe working environment for response personnel and comply with Occupational Safety and Health Administration regulations. Other OSHA regulations may be applicable to the specific operations being performed.

1.1.2 The Site Safety Officer's responsibilities are to provide for coordination of all safety and health concerns for the entire work site, including:

- Liaison with the Unified Command, Section Chiefs, Zone Managers, Field Supervisors, and Field Unit and Branch Leaders.
- Liaison with safety representatives from other organizations, agencies and contractors.
- Acting as a central collection point for safety data needed for documentation.
- Keeping this Safety and Health Plan current.

### 1.2 Compliance

1.2.1 No person shall enter any work site under the jurisdiction of these rules without complying with this Plan.

1.2.2 Contractors and Subcontractors performing work on site are responsible for the safety and health of their personnel and for preparing safety and health documents applicable to the scopes of work for which they are responsible and for compliance with this Plan by their personnel when on site.

### 1.3 The Hazards Involved

1.3.1 The spring/summer operations phase involves the potential for exposure to many different hazards. The hazards include:

- Weather related issues/Blowing sand/Cold exposure
- Exposure to oil/decontamination solutions
- Potential for contact with human remains and oiled wildlife carcasses
- Helicopter Operations
- Slips, Trips, Falls
- Drowning Potential
- Noise
- Wildlife, Eagles, Insects, Putchki, etc.
- Fire
- Work on or Near Water
- Boat Operations
- Waste Handling
- Heavy Equipment Operations

- Electrical Hazards
- ATV Operations
- Carbon Monoxide
- Falling Objects
- Trap Hazard
- Tsunami, Earthquake
- Unexploded Ordnance
- Heavy Lifting
- Hotsy Operations
- Hoisting Operations, vessels, super sacks, etc.
- Chain Saw Use

#### 1.4 Site Description

1.4.1 The wreck is about ½ mile off the coast of Unalaska Island between Spray Cape and Skan Bay, just south of Makushin Bay. The beach areas range from rocky to marsh.

1.4.2 The surrounding area includes a mix of remote rocky shoreline, limited marsh and some beach and rural areas.

## 2.0 GENERAL SAFETY REQUIREMENTS

### 2.1 Personnel Accountability

2.1.1 The accountability for personnel is the responsibility of all Supervisors and Contractor Management. IF personnel are identified as "unaccounted for", THEN notify the Operations Section Chief and Safety Officer immediately.

2.1.2 Personnel must work within sight of a partner at all times. During all ground based operations which originate from an aircraft, all ground personnel must remain in sight of the aircraft. Only pilots will determine safe landing sites. No exceptions.

2.1.3 Zone Managers, Foremen and Field Supervisors will take a head count prior to securing cleanup operations daily, to ensure that each worker is accounted for.

2.1.4 Zone Managers and Supervisor shall monitor their personnel for signs of fatigue and report such conditions to the Safety Officer.

### 2.2 Personal Protective Equipment (PPE) Requirements

#### NOTE:

The Safety Officer may modify these requirements on a case-by-case basis after re-evaluation of the situation. If the PPE requirements need to be upgraded, an addendum to plan will be issued.

- 2.2.1 Tyvek suits or other types of chemical resistant clothing (yellow rain gear may be substituted for Tyvek.) and boots or other types of chemical resistant footwear (booties) are required, for workers, if oil is present. (Level D protection)
- Exception: Where the potential is minimal for oil to make contact with the workers, the chemical resistant suits may be eliminated. During the evaluation process, chemical resistant clothing is not required, unless conditions warrant it.
- Precaution:** Periodically change protective clothing that has oil on it; immediately change clothing that is ripped or torn or showing evidence of oil penetrating to the skin and wash skin with soap and water.
- 2.2.2 Eye protection is required specifically during any operation that presents the risk of eye injury (e.g. splash injury to the eye when fueling a motor, on-water recovery, wildlife response, weather related issues, burning, etc.). Eye protection will also be used by response personnel during shoreline cleanup when winds exceed 15 knots.
- 2.2.3 A hardhat, safety vest and a personal flotation device (PFD) may be required at the direction of a Zone Manager, Field Supervisor or the Safety Officer. Hardhats are required for all hoisting or overhead operations. Shoreline cleanup workers are not required to wear hardhats, unless there are overhead obstructions, heavy equipment involved, or other reason warranting the use of hardhats.
- 2.2.4 All personnel must wear sturdy work shoes with slip resistant sole (example: Xtra Tuffs, etc.) when required. No sneakers, tennis shoes, sandals, open toe shoes or clogs are allowed.
- 2.2.6 Chemical resistant gloves are required for personnel when the presence of a chemical hazard (example: oil, gasoline, diesel or decontamination solution, etc.) is possible. Other suitable work gloves shall be worn at all times.
- 2.2.7 Hearing protection shall be used in high noise areas. These include: helicopters, vacuum truck work, hazing operations, hotsy work, heavy equipment operations and generally where noise levels require personnel to raise their voices to be heard.
- 2.2.8 All personnel using air assets must wear a mustang suit that properly fits for near shore flights. Dry immersion suits with inflatable vests are required for all off shore flights. Lights and whistles are required for the mustang suits.
- 2.2.9 While operating on decks, personnel must wear a minimum of a float coat/Type 2 flotation device that fits properly. A dry suit/immersion suit will be carried on board for each person. While working in skiffs, personnel will wear a mustang suit that fits properly even transiting to the shoreline. (Dry/immersion suit is not required to be carried on board skiffs, unless determined by the platform master for specific operations, such as remaining on the beach for an extended period of time for SCAT operations.) Lights and whistles are required for mustang suits.

## 2.3 Weather/Environmental Related Hazards

2.3.1 The following weather/environmental related hazards can exist and will require special actions to take appropriate precautions should they occur:

- Hypothermia associated with cold weather exposure.
- Hyperthermia associated with overheating body while working in PPE.
- Frostbite associated with cold atmospheric temperatures, and exposure to the water.
- Severe weather, including high winds, rain, sleet, snow, ice and fog causing difficult working conditions.
- Blowing sand on beaches and surrounding areas.
- Stranding in remote, unpopulated areas if on shorelines and separated from vessels or aircraft.

## 2.4 Communications

2.4.1 There are several means of communicating between the Command Center and field personnel including:

- Face to face (Verbal)
- Cell Phones and Hard wired telephones
- Marine and Aircraft Radios (VHF, HF, SSB)
- Satellite phones
- Hailing Channel on Marine VHF is Channel 16
- Air Ops will use Channel 81 (157.075 Mhz)
- Vessel to Aircraft will use Channel 81 (157.075 Mhz)
- Vessel to Vessel will use Channel 81(157.075 Mhz)
- Air to Air communications will maintain a listening guard on 122.6 Mhz while in the vicinity of Dutch Harbor Airport. When outside the Dutch Harbor Airport, aircraft will maintain a listening guard on 122.9 Mhz while flying outside of the Dutch Harbor traffic pattern.
- NOTAMS have been published advising non-incident aircraft of the incident aircraft using 122.9 Mhz.

2.4.2 Additional forms of communication may be required on an as needed basis for work in certain areas. Types of devices used for signaling other personnel for help include items such as:

- All Hazard Warning System (Unalaska) (Siren)
- Air Horns -long blast, more than five seconds means emergency to follow pre-described safety procedures outlined during initial onboard safety briefing.
- Whistles (i.e.: long blast, more than five seconds means return to vessel)
- General Alarm System Aboard Vessels (Rapid Ringing of a Bell)

## 2.5 Walking and Working Surfaces

- 2.5.1 Due to the probability of slippery surfaces throughout the work sites, all personnel involved in the project shall wear sturdy work shoes/boots with good anti-slippage characteristics. Work crews may substitute clean rubber boots over their work shoes, as required. (See PPE requirements.) Boat crews may substitute clean deck shoes with textured soles kept free of oil on cloth/leather uppers.
- 2.5.2 Loose sand, cliffs, mud and excavations posing a trap hazard shall be designated as areas off limits to all but necessary personnel.

## 2.6 Illumination

- 2.6.1 Fixed or portable lighting shall be maintained for dark areas or work after sunset or before sunrise. Sufficient illumination shall be provided as a minimum to meet the requirements of 29 CFR 1910.120 (m), Table H-120.1, "Minimum Illumination Intensities in Foot-Candles".

## 2.7 Waste Handling

- 2.7.1 Temporary holding/staging areas for drums and containers containing waste materials shall be constructed to contain spills, run-off, or accidental release of materials.
- 2.7.2 Manual lifting and handling of waste shall be kept to a minimum. To the extent possible, mechanical devices designed for that purpose should be used.

## 2.8 Wildlife/Insect/Plant Issues

- 2.8.1 Precaution: Site personnel shall avoid contact with wildlife, unless authorized to do so. Harassing, handling or feeding wildlife or birds is not allowed, unless authorized by USFWS.
- 2.8.2 Insect repellent should be used when needed.
- 2.8.3 Putchki (a spreading plant with tall, jointed stalks with large, flat leaves and white flowers) should be avoided, especially the older plants and those with stems streaked with red. Their sap can cause a skin reaction, known as photo-dermatitis or photo-sensitivity. Exposure to the sap sensitizes the skin to sunlight and results in swelling, blisters and eruptions of affected sites.

## 2.9 Electrical/Fire Hazards

- 2.9.1 All AC power cords shall be physically marked in areas run along the ground to prevent damage.
- 2.9.2 All AC power cords utilized outdoors or in wet locations shall have Ground Fault Circuit Interrupters (GFCI).

2.9.3 For each work zone, a fully charged Class A and B fire extinguisher must be available. A signal horn will also be used to alert personnel.

### 3.0 SITE CONTROL AND WORK ZONES

- 3.1 All Personnel, workers or not, entering any work zones involved in this incident shall comply with the provisions of this plan.
- 3.2 There is a USCG designated safety zone around the wreck and work areas near Makushin and Skan Bays. The wreck has been posted and is off limits to all personnel, unless specifically authorized by the Unified Command or the Salvage Representative.
- 3.3 Due to the remote locations involved and access limitations, there will be no zone markings. Decontamination areas will be set up and personnel will be advised of the locations.
- 3.4 Personnel shall wash skin with soap and water or at a minimum use hand cleaning towels or waterless hand cleaner, before eating/drinking/smoking.
- 3.5 A site map is located in the Incident Action Plan (IAP).
- 3.6 No personnel are allowed into any caves or bunkers. Keep out of caves and bunkers!
- 3.7 Each work zone should have a designated smoking area with a bucket of water or sand for extinguishing butts. Do not throw cigarettes on the ground.

### 4.0 MEDICAL ISSUES

#### 4.1 Request For Medical Assistance

4.1.1 To request emergency medical response in Unalaska/Dutch Harbor, dial:  
**911**

From rooms in the Grand Aleutian dial **9-911**

Note: An alternate phone number is: **907-581-1233 (Unalaska Fire/EMS)**

To contact the USCG, and for use in the field or transiting to and from the field,  
use: **Marine Channel 16 VHF**

4.1.2 In work zones, call the **Command Center** or use **VHF Channel 16**.

#### 4.2 Hazard Description for the Potential Contaminants

4.2.1 IF the hazards identified with any substances indicate that they may cause dermatitis by skin contact, nausea by inhalation and eye irritation, a Material Safety Data Sheet (MSDS) will be available for each substance. An MSDS is attached for No. 6 Fuel Oil, Diesel, Gasoline and Propane (Attachment A, B, C, D respectfully). They are also posted at the Command Post and at work sites or on boats located near berthing.

4.2.2 Any hazardous chemical(s) that are transferred from a larger container into smaller container for easier handling or application shall be labeled or marked with the following information:

- Identify hazardous chemical
- Appropriate hazard warning
- Name and address of chemical manufacturer

#### 4.3 Medical Treatment for Contact with a Contaminant

4.3.1 IF eye contact is made, THEN flush with water for at least 20 min.

4.3.2 IF ingested, THEN do not induce vomiting; contact a physician.

4.3.3 IF significant quantities of materials are inhaled, which may cause a reaction to the body, or are above the OSHA Permissible Exposure Limits (PEL), THEN move the victim to fresh air. Consult a medical professional if needed.

4.3.4 These are general guidelines to be followed unless otherwise noted on the MSDS.

#### 4.4 Medical Response to an Injured or Ill Victim

4.4.1 In the event that a person becomes injured or ill, the Supervisor will evaluate the situation and determine the need to coordinate transportation back to Dutch Harbor or contact a medical professional or the ambulance service. The Safety Officer will be contacted as soon as possible. If it is determined to be a minor injury or illness, first aid or transportation to the IFHS Clinic will be arranged. Under no circumstances should any injured or ill worker drive him/herself to the Clinic. The IFHS Clinic is located at 33 Lavelle Court, Unalaska. Their phone is: 907-581-1202.

4.4.2 A first aid kit will be available at each work zone, as well as an eyewash station or other suitable means of providing a flushing of the eyes, if needed (bottled water, etc.). The Field Safety Officer(s) will be responsible for the first aid kit and restocking it when appropriate. Professional assistance should be called immediately, if the evaluation determines it necessary. The medical professionals should be made aware of the location, extent of injury/illness, name of caller, and any other pertinent information as may be requested.

#### 4.5 Reports/Documentation of Injured or Ill Persons

4.5.1 The Supervisor shall complete an "Injury/Illness Report Form" (Attachment E) whenever there has been an injury or work related illness. Return the form to the Safety Officer as soon as possible.

4.5.2 IF there has been a response by an ambulance, THEN the ambulance "Run Report" will be attached to the form above for filing purposes, if available.

#### 4.6 Hospital Transport

4.6.1 The clinic personnel will make the determination if the victim will be transported to the hospital based upon their protocol. AK Regional Hospital, in Anchorage, AK is initially where patients are transported. Their phone is: 907-276-1311. If Life Flight (Helicopter) services are needed, they can be contacted at: 1-800-478-9111.

#### 4.7 Medications

4.7.1 All personnel, including contractors and subcontractors, who are taking prescribed medications that could affect work performance, shall advise their supervisor prior to beginning work. Supervisors should advise or consult with the Safety Officer, on the work activities that such personnel may be involved.

### 5.0 **EMERGENCY EVACUATION**

- 5.1 IF fire, smoke, lightning, earthquake, tsunami or other hazard endangers personnel, THEN they are to leave the hazard area immediately. Supervisors shall notify personnel via face-to-face, radio or phone. See Section 2.4 above for details on methods of communicating the emergency evacuation. The supervisors will discuss during their daily safety meeting, evacuation routes and staging areas for each work location to be worked that day.
- 5.2 The staging area, if evacuation is needed (for tsunami) from the Command Center in Unalaska, is the area behind the Marine Safety Detachment on Standard Oil Hill, unless otherwise informed. The staging area for personnel in the Command Center in the event of fire is the parking lot in front of the Grand Aleutian Hotel. A predetermined muster area should be identified by the Field Safety Officer and communicated to the work crews during the morning safety meeting.
- 5.3 The Zone Manager/Operations Section Chief/Branch Supervisor or Safety Officer has the authority for determining work stoppage, due to inclement weather. The Supervisor(s) is responsible for transmission to all personnel, through foremen, of any work stoppage order.
- 5.4 The resumption of work will follow the same protocol as listed in Section 5.3 above.
- 5.5 The signal for returning to larger vessels is a long whistle blast.
- 5.6 Do not attempt to fight fires other than small fires. A small fire is generally thought to be a fire in the early stages of development, which can be readily extinguished with personnel and equipment in the immediate area in a few minutes time. Use the air horn to notify personnel to evacuate the area if the fire cannot be extinguished. When the alarm (horn) or general alarm system is sounded, all personnel are to follow procedures outlined in the initial vessel safety briefing. This safety briefing will address emergency equipment locations, muster locations, to ensure a safe evacuation and accountability.

## **6.0 WORKING NEAR OR OVER WATER**

- 6.1 Proper personal protective equipment (PPE) is required to be worn by personnel whenever they are in an area near or over the water. Type V flotation device is required for all on water operations. A dry suit/immersion suit will be carried on board for each person. All personnel involved in flight operations will wear a mustang type suit with light and whistle, for near shore flights or a dry immersion suit, with inflatable vest, if the flight is offshore. Wearing of PPE may be re-evaluated by the Safety Officer and downgraded if it is determined that PPE is not required or poses an additional hazard for the task being performed.
- 6.2 If night operations are to be conducted on/near water, personnel must also wear garments with reflective tape, and a working USCG approved light and a whistle.

## **7.0 COLD STRESS PREVENTION**

- 7.1 Cold Stress can strike when your body is only a few degrees below its normal temperature of 98.6 degrees F. Preventing cold stress requires appropriate clothing and work practices, as well as the ability to recognize and properly treat its symptoms.
- 7.2 Layering of clothing is important. This allows the individual to adjust (by adding or removing layers) to the temperature, environmental conditions and level of physical activity.
- 7.3 Ensure personnel are properly hydrated (have adequate fluid levels). Beverages should be warm and sweet (such as sport drinks) and drinks that contain caffeine or alcohol should be avoided. Personnel should eat warm food to fuel the body and help prevent fatigue. Alcohol use is strictly prohibited.

Precaution: Do not consume cola, alcohol, coffee, or other fluids that contain caffeine. Caffeine and alcohol act as a diuretic (induces fluid loss) and should not be consumed.

## **8.0 SAFETY MEETINGS/BRIEFING**

- 8.1 Safety Meetings shall be held by the Zone Manager or Field Safety Officer at the beginning of each shift.
- 8.2 As a minimum, the following topics shall be discussed at the safety meetings:
  - 8.2.1 A description of the work to be accomplished.
  - 8.2.2 A discussion of any safety procedure changes
  - 8.2.3 A discussion of any pertinent or timely safety issues that need to be communicated to personnel.
  - 8.2.4 Evacuation and staging areas for each work zone
- 8.3 All vessel operators will conduct a vessel specific safety briefing upon arrival of all personnel not associated with the crew. This safety briefing will address emergency procedures

for a fire, vessel taking on water, man overboard, emergency equipment locations, muster locations for accountability and vessel debarking. Included in this briefing may be procedures for using the marine sanitation devices and smoking and non smoking areas. These meetings should be documented on "Initial Vessel Safety Briefing" form (Attachment F). Copies of this form will be given to the Safety Officer for review and forwarding to the Documentation Unit.

8.4 Safety Meetings shall be documented on the "Daily Site Safety Meeting" form (Attachment G). The supervisor shall submit a copy of this form to the Safety Officer for review and forwarding to the Documentation Unit.

## **9.0 EFFECTIVENESS OF SITE SAFETY AND HEALTH PLAN**

9.1 Inspections shall be conducted by the Safety Officer and/or Field Safety Officers.

9.2 Any deficiencies identified in the Safety Plan will be corrected.

## **10.0 SANITATION AND PERSONAL HYGIENE**

10.1 Potable water, non-potable water, toilets and personal hygiene facilities shall be provided, where appropriate.

10.2 Toilet facilities must be available for workers. A minimum of 2 toilets for each 40 workers are required. Hand washing stations, waterless hand cleaner or other suitable means of cleaning up must be available.

## **11.0 WORKER TRAINING**

11.1 All personnel shall have appropriate level(s) of training for their specific activities.

11.2 All field personnel involved in shoreline cleanup must have 40 hours of Hazwoper training in accordance with 29 CFR 1910.120.

11.3 Hazwoper cards/certificates must be provided to the Safety Officer by the employer prior to the worker going to the field.

## **12.0 HEAVY EQUIPMENT**

12.1 Operators shall watch for any unsafe conditions and correct them before work continues. As soon as possible thereafter, report the unsafe condition(s) encountered and the corrective action(s) taken to supervision. All operators must have the appropriate licenses for the equipment they are operating.

12.2 Hard hats and hearing protection are required by personnel working near heavy equipment.

12.3 All personnel working around heavy equipment shall make sure that eye contact is made with the equipment operator prior to moving into any hazardous zone.

### **13.0 MOTOR VEHICLE/ATV OPERATIONS**

- 13.1 All vehicles shall maintain a safe speed at all times and drivers shall not operate vehicles in a reckless manner. All drivers shall operate inside areas specified by the supervisor. Vehicle operators must obey all local and state traffic regulations.
- 13.2 All operators must have the appropriate driver's license for the vehicle they are driving and the material(s) they may be hauling.
- 13.3 ATV Operators must wear helmets during all ATV operations. Supervisors should ensure that operators of ATVs have sufficient training to operate the vehicle prior to assigning personnel as operators. No excessive speed or horseplay is allowed on ATVs.

### **14.0 BOAT OPERATIONS**

- 14.1 For all vessels, a current Certificate of Inspection (COI) must be provided before signing a contract or uninspected vessels (12 pack and under) must undergo a Commercial Fishing Vessel Examination (CFVE). All bareboat charter boats must undergo a CFVE, also. The USCG will inspect all vessels prior to being used. All vessels will be given a permit to operate by the USCG. There will be a minimum of two crew on each vessel. Skiff operators must meet the requirements specified on the Skiff Operator Skills/Experience Checklist (Attachment H) and be qualified by their company based on experience, education and license(s). The operator's resumes/experience will be provided to the Safety Officer.
- 14.2 All personnel must wear mustang suits (with whistle and light) transiting from the skiffs to the shoreline.
- 14.3 All skiffs must have the appropriate safety equipment required by the USCG regulations and the local Marine Safety Detachment (MSD), including flares. Certain types of vessels will require such items as USCG approved fire extinguishers, backfire flame control, powered ventilation, sound signaling devices (different from emergency signals), navigation lights/signals, pollution placards, and marine sanitation devices.
- 14.4 The signal to return to the large vessels is a long whistle blast.
- 14.5 Skiff operators shall contact by radio or other means to receive permission to come along side or tie up to larger vessels. This will help ensure that the larger vessel is not in the process of maneuvering and make available line handlers to receive the skiff at the location desired by the master of the vessel.
- 14.6 A designated refueling location shall be established for the filling of portable fuel tanks. This will ensure there are proper "No Smoking" placards and the appropriate fire extinguisher and spill response equipment is available. All sources of ignition shall be secured while fueling/refueling.
- 14.7 Horseplay, speeding and overloading small boats is prohibited at all times.

- 14.8 Generally, the maximum operable weather conditions for skiffs are < 3 ft. waves, on scene winds less than 15 knots, visibility 1nm, depending on the skiff size. The Field Safety Officers will set a daily parameter depending on skiff size and capability. A Boating Safety Checklist (Attachment I) will be completed daily, prior to any skiff operation by the operator and returned to Field Safety Officer.

## **15.0 AIR OPERATIONS**

- 15.1 All personnel are required to wear a minimum of a mustang suit with flotation (with lights and whistle) while flying for near shore activities. For all offshore operations, personnel are required to wear dry immersion suits, with inflatable vests.
- 15.2 Passengers will receive a safety briefing from the aircraft pilot, including safety features and equipment, their location on the individual aircraft, water landing procedures when appropriate, and emergency information before taking off.
- 15.3 Aircraft will be equipped with an EPIRB and have a flight plan. Attachment J is used to determine operating parameters.
- 15.4 Passengers or ground crewmembers approaching helicopters shall stay in a crouched position, and shall be in clear view of the pilot while approaching or departing the helicopter. Passengers shall maintain a distance of 50 feet from helicopter while rotors are turning.
- 15.5 Loose fitting clothing, hats, hard hats, or other gear which might be caught in rotor downwash must be secured or removed within 100 feet of operating helicopters.
- 15.6 Personnel will operate in line of sight with the helicopter.

## **16.0 CHAIN SAW USE**

- 16.1 All personnel operating chain saws must be selected by a supervisor based on training and experience using the saw. Users must be familiar with the safety features of the saw.
- 16.2 Manufacturer's recommendations must be followed with respect to operation of the saw.
- 16.3 Chain saw operators must never operate the saw if feeling sick or tired. Operating while you are tired or sick may alter your judgment and/or reflexes.
- 16.4 All chain saw operators must check their clothing. Don't operate a chainsaw while wearing loose fitting clothing, jewelry, cuffed pants or anything else that could become entangled in the saw. Long hair must be tied back.
- 16.5 Personnel operating saws must wear proper protective equipment. This includes heavy-duty gloves with a good grip, sturdy work boots with non-slip soles, head, eye and hearing protection, and leg protection such as chainsaw chaps.

## **17.0 DECONTAMINATION**

17.1 All personnel that have been exposed to oil must go through the decontamination process.

17.2 No personnel shall return to the berthing vessel without prior decontamination.

17.3 In the event that decks or living quarters of vessels become contaminated, it is the responsibility of the vessel master to have the personnel clean the surfaces to prevent further contamination.

## **18.0 REFUELING**

18.1 A designated refueling station shall be established for the refueling of skiffs with inboard tanks. This will ensure that the proper "No Smoking" placards and the appropriate fire fighting and spill response equipment are available.

18.2 Refueling capabilities for helicopters will be available aboard a barge. It is not anticipated that refueling of helicopters (in the field) will be necessary, however, the proper placards, fire fighting and spill response equipment will be available.

## **19.0 CONTROLLED BURNING**

19.1 In the event that burning is used as a cleanup method, personnel must comply with procedures outline in the permit and have available a portable extinguisher capable of extinguishing a Class A fire.

19.2 All burning must be done under the direction of a Zone Manager or Supervisor.

## **20.0 STAGING AREA/VESSEL LOADING**

20.1 Loads will be lifted with spotter dockside and aboard vessel. Control lines will be used to reduce the object from swinging or rotating. Communication and visual contact will be maintained as loading operations are underway. Signals between the crane operator, ground crew and boat load master shall be worked out in advance.

20.2 Forklift drivers will have the appropriate training and certification. Special attention shall be given when backing and the operator must pay careful attention to other dockside activities.

20.3 Personnel involved in these operations will wear: Gloves, hard hats (near cranes, etc.), steel toed boots, PFDs (if on deck) and reflective vests.

## **21.0 BLOOD BORNE PATHOGEN CONTROL**

21.1 The potential for exposure exists when encountering human remains. Universal precaution is the standard for treating all potentially infectious material. All body parts including blood, tissue and material should be handled in accordance with the Recovery Plan for missing crew members (memo dated 13 DEC 04).

- 21.2 A minimum of surgical gloves should be worn when handling/transferring body material into a body bag or appropriate biohazard bag.
- 21.3 In the event that this material may contaminate decks or surfaces of operational assets, a sanitizing solution of ½ cup of bleach to one gallon of water is appropriate for this purpose.
- 21.4 Body bags have been provided from the local authorities and are available during flight operations. They are stored in the hangar in the interim.

## **22.0 CULTURAL RESOURCES**

- 22.1 If you encounter any cultural resources and you are not in the presence of an archeologist, leave the material in place and stop work in the immediate vicinity.
- 22.2 The location should be marked on a map or sketch and a GPS location should be obtained, if possible.
- 22.3 A digital photo(s) should be taken, if possible.
- 22.4 The Federal On Scene Coordinator's (FOOSC) Historic Properties Specialist or the RP's Archeologist should be notified as soon as possible.

Attachment E  
Injury/Illness Report

Date of Report \_\_\_\_\_ Originator of Report \_\_\_\_\_

Person Involved \_\_\_\_\_ DOB \_\_\_\_\_

Social Security Number \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Phone number \_\_\_\_\_

Person to be notified \_\_\_\_\_

Relationship \_\_\_\_\_

Company Name \_\_\_\_\_

Supervisor's Name \_\_\_\_\_

Nature of Injury/illness \_\_\_\_\_

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Action(s) taken \_\_\_\_\_

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Status of Individual \_\_\_\_\_

Please provide any documentation with this report. This includes a report from the worker, his/her supervisor, and treatment if any.

This form is to be maintained and filed with the safety information data.





Attachment H

Skiff Operator Skills/Experience Checklist

Qualifications of skiff operators are intended to assure that personnel who operate a small boat have met minimum criteria relating to knowledge and skill. A "Skills Checklist" will be needed for each small boat operator. This checklist will be provided to the safety Officer by the employer of the small boat operators. The checklist will be used as documentation that the operator has demonstrated each skill identified. Resumes for all small boat operators will also be required to be provided to the Safety Officer.

Name of Small Boat Operator \_\_\_\_\_

Date \_\_\_\_\_ Employer \_\_\_\_\_

Resume provided \_\_\_Y\_\_\_ N

Skill/Knowledge	Meets requirement (Y/N)	Employer Signature Verifying Meets Requirements
Vessel Integrity		
Safety Equipment		
Can bring vessel to full speed		
Can describe importance of maintaining proper lookout		
Has conducted tight radius turns without causing prop cavitation		
Can describe signs of prop cavitation		
High speed avoidance techniques including turns and emergency astern		
Can maneuver boat through 360 degrees within 2 boat lengths by using back and fill turns		
Can maneuver boat astern around obstacles		
Can maneuver boat though anchorages		
Has used various lines-fore, aft, breast, stern and bow- in getting away from and alongside a dock		
Has docked and undocked in winds and current situations		
Has moored in a boat slip		
Can drop anchor, set anchor depending on bottom conditions		
Can describe effect of scope, bottom type, and environmental conditions on anchor watch radius		
Can raise anchor and describe how to free fouled anchors		
Can maneuver and hold station w/in 1 boat length of a fixed object: buoy, piling		
Can maneuver and take an adrift object alongside and aboard the		

vessel (PFD, float)		
Deploy and retrieve SCUBA divers, if applicable		
Can come alongside an underway vessel		
Is able to land and launch boat from low energy coasts		
Is able to launch and land boats in high energy coasts (surf zone or beach landings)		
Can tow a vessel alongside or astern		
Can deploy/retrieve gear or heavy apparatus		
Has demonstrated safe speed and navigational techniques in various situations (reduced visibility, heavy weather, or large traffic avoidance)		
Can describe actions to be taken prior to encountering heavy weather conditions		
Can identify signs of impending weather		
ID hazards of navigation		

Attachment I  
**Boating Safety Checklist**

This is to be completed daily, prior to any skiff operations. Return this form to Safety Officer

Boat Name or Number \_\_\_\_\_

Boat Capacities (Max weight in lbs.) \_\_\_\_\_ Max. Allowed Persons \_\_\_\_\_

Operator's Name \_\_\_\_\_

Mustang/Exposure Suits (Circle one or both)

Necessary	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Available	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Being Worn	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Fire Extinguisher in Boat

Yearly Inspection date \_\_\_\_\_ Yes  No

Monthly Inspection Date \_\_\_\_\_ Yes  No

Audio Distress Signal in Boat

Air Horn	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Whistle	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Navigational Lights in working Condition

Portable	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Permanent	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Visual Distress Signals	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Portable Fuel Tank Damage	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input type="checkbox"/>
Fuel System Damage	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input type="checkbox"/>
Fuel in Bilges	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Anchors, Chain & Line	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Dewatering device in Boat	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Hull or transom Damage	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Loose/Bare electrical connections	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Oars present and in good condition	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

Unsafe Conditions/Hazards discussed with crew prior to departure:

Overloading boat with equipment/people (check max. capacity plate)

Operating in rough seas/weather that may capsize boat

Losing visual contact with shore or support vessel

No standing in small boats

Approaching storms

Wakes of other boats and creating wakes (capsizing)

Fuel spilled and refueling creating a fire hazard

Operator's signature \_\_\_\_\_ Date \_\_\_\_\_

Attachment J

FLIGHT RISK ASSESSMENT

WEATHER		EQUIPMENT/OPERATIONS	
Visibility, < 4 miles offshore	+2	Within 30 minutes of civil twilight	+2
Visibility $\leq$ 1 mile onshore	+2	< 100 hours in type	+2
Wind gust > 15 kts	+1	> 6 hours flight time	+1
Wind > 30 kts	+2	> 14 days on duty	+1
Precipitation	+1	> 12 hour duty day	+1
Ceiling, 500 ft	+1	< 1 year with Air Logistics	+1
Temperature < -20F	+1	X-C leg < 30 minutes of fuel upon landing	+1
Temperature > + 90F	+1	Class B external load operations	+4
Operations above 6000' PA	+2	Within 100 lbs. of minimum allowable weight	+1
Anticipated white out/flat light conditions	+3		

RISK FACTOR	TOTAL	ACTION
Weather	$\geq +5$	Call Operations if possible
Weather + Equipment/Opns	$\geq +8$	Call Operations if possible
Precautionary Landing Weather		Call Operations if possible
Weather + Equipment/Opns	$> +10$	Operations approval required
Glacier Operations		Operations approval required
Night Single Pilot Operations after EECT to 1 hr. prior to BCMT		Operations approval required
Precautionary Landing, cause not identified or fixed		Operations call required

Air Logistics of Alaska 907-452-1197

Minimums

500 ft. ceiling 1 mi visibility over land

500 ft. ceiling 3 mi visibility over water

**Attachment A**

**U. S. OIL & REFINING CO.  
M A T E R I A L S A F E T Y D A T A S H E E T**

**IFO-380** MSDS No. 422380  
Revised 8/10/98

U. S. OIL & REFINING CO. EMERGENCY ASSISTANCE:  
3001 Marshall Ave. COMPANY: (253) 383-1651  
Tacoma, WA 98421 CHEMTREC: (800) 424-9300

**IMPORTANT:** Read this MSDS before handling or disposing of this product.  
Pass this information on to employees, customers and product users.

-----  
**1. GENERAL**

-----  
**Trade Name:** IFO-380  
**Other Names:** FUEL OIL  
**Chemical Family:** HYDROCARBON  
**Generic Name:** FUEL OIL  
**DOT Hazard Class:** COMBUSTIBLE LIQUID  
**Proper Shipping Name:** FUEL OIL  
**DOT UN ID No.:** UN 1993  
**NFPA Hazard Rating:** HEALTH: 2  
FIRE: 2  
REACTIVITY: 0  
SPECIAL:

-----  
**2. PRODUCT COMPONENTS**

-----  
**Component CAS Number Percent**  
RESIDUAL FUEL OIL CONSISTS OF 68476-33-5 100 (AP) VARIABLE  
MIXTURES OF STRAIGHT RUN AND RESIDUAL FRACTIONS. THIS PRODUCT IS LIKELY TO  
CONTAIN TRACE AMOUNTS OF HYDROGEN SULFIDE (A TOXIC GAS).

COMPONENTS INCLUDE:

1. PETROLEUM RESIDUUM 68558-00-4 0-80 (AP)
2. PETROLEUM DISTILLATES 68476-34-6 20-100 (AP)
3. HYDROGEN SULFIDE 77831-06-4 TRACE

-----  
**3. OCCUPATIONAL EXPOSURE LIMITS**

-----  
**Substance Value Time/Type Date Source**  
OIL MIST, MINERAL 5 MG/M3 8 Hr PEL 1989 OSHA  
(SEE SECTION 11) 10 MG/M3 15 Min STEL 1983 ACGIH  
HYDROGEN SULFIDE 10 PPM 8 Hr PEL 1989 OSHA  
15 PPM 15 Min STEL 1989 OSHA

-----  
**4. HEALTH INFORMATION**

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**Summary:** SKIN CONTACT WITH HOT OIL MAY CAUSE SEVERE THERMAL BURNS.

## **Routes of Exposure Signs and Symptoms**

**Inhalation** NO SIGNIFICANT SIGNS OR SYMPTOMS INDICATIVE OF ANY ADVERSE HEALTH EFFECTS ARE EXPECTED TO OCCUR UPON SHORT-TERM EXPOSURES.

**Eye Contact** EYE IRRITATION MAY RESULT FROM CONTACT WITH LIQUID, MISTS, AND/OR VAPORS.

**Skin Contact** SKIN IRRITATION MAY OCCUR UPON PROLONGED OR REPEATED SKIN CONTACT.

**Ingestion** NAUSEA, VOMITING, DIARRHEA, AND RESTLESSNESS

### **Overexposure**

**Effects:** THIS PRODUCT MAY CONTAIN AROMATIC OILS. ALTHOUGH THERE IS NO SPECIFIC EVIDENCE THAT THIS MATERIAL IS CARCINOGENIC TO HUMANS, EXPERIMENTS HAVE SHOWN THAT SIMILAR MATERIALS CONTAINING POLYCYCLIC AROMATIC HYDROCARBONS HAVE CAUSED SKIN CANCER ON TEST ANIMALS.

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## **5. FIRE AND EXPLOSION**

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**Flash Point (Method):** GT 150 °F (PMCC) SEE BELOW

**Autoignition Temperature (Method):** AP 500°F (ESTIMATE)

**Flammable Limits (% Vol. in air) LOWER:** AP 0.6 **at Normal Atmospheric Temperature** UPPER: AP 7.5 **and Pressure**

### **Unusual Fire and Explosion Hazards:**

MODERATELY COMBUSTIBLE! WHEN HEATED ABOVE THE FLASH POINT, THIS MATERIAL WILL RELEASE FLAMMABLE VAPORS WHICH IF EXPOSED TO A SOURCE OF IGNITION CAN BURN OR BE EXPLOSIVE IN CONFINED SPACES. MISTS OR SPRAYS MAY BE FLAMMABLE AT TEMPERATURES BELOW THE NORMAL FLASH POINT. KEEP AWAY FROM HEAT AND OPEN FLAME.

### **Extinguishing Media:**

DRY CHEMICAL, HALON, AND CARBON DIOXIDE, FOAM AND WATER FOG ARE EFFECTIVE, BUT MAY CAUSE FROTHING.

### **Special Firefighting Procedures:**

FOR FIRES INVOLVING THIS MATERIAL, DO NOT ENTER ANY ENCLOSED FIRE SPACE WITHOUT PROPER PROTECTIVE EQUIPMENT, INCLUDING SELF-CONTAINED BREATHING APPARATUS. COOL TANKS AND CONTAINERS EXPOSED TO FIRE WITH WATER. IMPROPER USE OF WATER AND EXTINGUISHING MEDIA CONTAINING WATER MAY CAUSE FROTHING WHICH CAN SPREAD THE FIRE OVER A LARGER AREA.

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## **6. EMPLOYEE PROTECTION**

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**Respiratory:** NONE IS NEEDED UNDER NORMAL CONDITIONS WITH ADEQUATE VENTILATION. IF EXPOSURE EXCEEDS THE CONTROL LIMITS, RESPIRATORY PROTECTIVE EQUIPMENT WHICH MEETS 29 CFR 1910.134 AND IS NIOSH/MSHA APPROVED MUST BE WORN.

**Ventilation:** USE ADEQUATE VENTILATION TO KEEP OIL MISTS/VAPORS BELOW THE OCCUPATIONAL EXPOSURE LIMITS. SPECIAL VENTILATION MAY BE REQUIRED FOR HANDLING CONDITIONS AT ELEVATED TEMPERATURES.

**Eye:** EYE PROTECTION (CHEMICAL-TYPE GOGGLES AND/OR FACE SHIELD) SHOULD BE WORN WHENEVER THERE IS A LIKELIHOOD OF SPLASHING OR SPRAYING LIQUID. CONTACT LENSES SHOULD NOT BE WORN. EYE WASH WATER SHOULD BE PROVIDED.

**Skin:** WHEN SKIN CONTACT IS POSSIBLE, AND ESPECIALLY WHEN HANDLING HOT MATERIAL, PROTECTIVE CLOTHING SUCH AS GLOVES, IMPERVIOUS APRON, LONG-SLEEVES, BOOTS, AND FACE PROTECTION MUST BE WORN.

**Other:** USE GOOD PERSONAL HYGIENE PRACTICES. IN CASE OF SKIN CONTACT, WASH WITH MILD SOAP AND WATER OR A WATERLESS HAND CLEANER. IMMEDIATELY REMOVE SOILED CLOTHING AND WASH THOROUGHLY BEFORE REUSE. DISCARD OIL-SOAKED LEATHER GOODS.

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## 7. EMERGENCY AND FIRST AID

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**Inhalation:** IMMEDIATELY REMOVE FROM CONTAMINATED AREA TO FRESH AIR. FOR RESPIRATORY DISTRESS, GIVE OXYGEN OR ADMINISTER CPR (CARDIOPULMONARY RESUSCITATION), IF NECESSARY. OBTAIN PROMPT MEDICAL ATTENTION.

**Eye Contact:** FLUSH WITH CLEAN LOW-PRESSURE WATER FOR AT LEAST 15 MINUTES. IF IRRITATION PERSISTS, OBTAIN MEDICAL ATTENTION.

**Skin Contact:** REMOVE CONTAMINATED CLOTHING. WASH AFFECTED AREA THOROUGHLY WITH SOAP AND WATER. IF IRRITATION PERSISTS, SEEK MEDICAL ATTENTION. WASH CLOTHING THOROUGHLY BEFORE REUSE, BUT DISCARD CONTAMINATED LEATHER GOODS. HOT LIQUID MAY CAUSE BURNS; FLUSH WITH COOL LOW-PRESSURE WATER AND GET MEDICAL TREATMENT.

**Ingestion:** DO NOT INDUCE VOMITING, SINCE ASPIRATION INTO THE LUNGS WILL CAUSE CHEMICAL PNEUMONIA. MUST OBTAIN MEDICAL ATTENTION PROMPTLY.

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## 8. SPILL AND DISPOSAL

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### **Actions if Material is Spilled or Leaked:**

CONTAIN SPILL. REMOVE ALL IGNITION SOURCES AND SAFELY STOP FLOW OF SPILL. SPILL MAY CREATE SLIPPING HAZARDS. IN URBAN AREAS CLEAN UP ASAP; IN NATURAL ENVIRONMENTS, SEEK ADVICE FROM ECOLOGISTS. EVACUATE ALL NONESSENTIAL PERSONNEL. USE PROPER PROTECTIVE EQUIPMENT. PADS/ABSORBENT MATERIAL CAN BE USED. THIS MATERIAL WILL FLOAT ON WATER AND RESULTING RUNOFF MAY CREATE A FIRE HAZARD. NOTIFY THE NATIONAL RESPONSE CENTER (800/424-8802) AND COMPLY WITH ALL LAWS. THE SPILLED MATERIAL AND ANY WATER OR SOIL WHICH IT HAS CONTACTED MAY BE HAZARDOUS TO ANIMAL/AQUATIC LIFE.

### **Waste Disposal Methods:**

MAXIMIZE PRODUCT RECOVERY FOR REUSE PRIOR TO DISPOSAL. CONDITIONS OF USE MAY CAUSE THIS MATERIAL TO BECOME A "HAZARDOUS WASTE" AS DEFINED BY STATE OR FEDERAL LAWS. USE APPROVED TREATMENT, TRANSPORTERS, AND DISPOSAL SITES IN COMPLIANCE WITH ALL APPLICABLE LAWS. IF SPILL IS INTRODUCED INTO A WASTEWATER SYSTEM, THE CHEMICAL AND BIOLOGICAL OXYGEN DEMAND WILL LIKELY INCREASE. POTENTIAL DISPOSAL METHODS INCLUDE LAND FARMING, INCINERATION AND LAND DISPOSAL, IF PERMITTED.

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## 9. PHYSICAL AND CHEMICAL DATA

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**Specific Gravity (H<sub>2</sub>O = 1 @ 39.2°F):** AP 0.96 to 1.0

**Hazardous Polymerization:** NOT EXPECTED TO OCCUR

**Evaporation Rate (Ratio of Time):** N/AP

**Vapor Pressure:** (REID-PSIA AT 100°F) LT 0.1

**Viscosity Units, Temp. (Method):** 320 TO 380 CST AT 122°F

**Dry Point:** N/AP

**Volatile Characteristics:** SLIGHT

**Other Physical and Chemical Properties:** BLENDED TO MEET REGULATORY AND CUSTOMER REQUIREMENTS INCLUDING VISCOSITY, POUR, SULFUR, AND HEAVY METALS.

**Appearance and Odor:** BROWN TO BLACK COLORED VISCOUS LIQUID; SLIGHTLY CRACKED OR BURNT TO ASPHALTIC ODOR.

**Conditions to Avoid:** HEAT, AND OPEN FLAME

**Materials to Avoid:** STRONG ACIDS, ALKALIES, AND STRONG OXIDIZERS.

**Hazardous Decomposition Products:** BURNING OR EXCESSIVE HEATING MAY PRODUCE CARBON MONOXIDE AND OTHER HARMFUL GASES AND VAPORS INCLUDING OXIDES AND/OR OTHER COMPOUNDS OF SULFUR AND NITROGEN.

-----  
**10. SARA TITLE III**  
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**Extremely Hazardous Substances for Emergency Response and Planning:**

**Component CAS Number Percent TPQ (lbs) RQ (lbs) NONE**

**Toxic Chemicals for Emission Reporting**

**Component CAS Number Percent (Typical) NONE**

**EPA Hazard Classification:**

**Acute Health Hazard:**

**Chronic Health Hazard:**

**Fire Hazard: X**

**Pressure Hazard:**

**Reactive Hazard:**

**Not Applicable:**  
-----

**11. ADDITIONAL PRECAUTIONS**  
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**Handling & Storage:**

PARTS AND EQUIPMENT USING OR CONTAINING THIS MATERIAL MUST BE STEAMCLEANED PRIOR TO ALL MAINTENANCE PROCEDURES. ALL MATERIAL SAMPLING SHOULD BE CONDUCTED IN A MANNER WHICH AVOIDS VAPOR INHALATION OR SKIN CONTACT. SPECIAL CARE AND LABELING MUST BE PROVIDED DURING TRANSPORTATION/HANDLING OF LABORATORY SAMPLES. USE GOOD PERSONAL HYGIENE PRACTICES. WASH HANDS WITH PLENTY OF SOAP AND WATER BEFORE EATING, DRINKING, SMOKING OR USE OF TOILET FACILITIES. DO NOT USE SOLVENTS (GASOLINE, KEROSENE, ETC.) OR ABRASIVE SKIN CLEANERS. OIL-SOAKED CLOTHING MUST BE PROMPTLY REMOVED AND LAUNDERED BEFORE REUSE. DISCARD CONTAMINATED LEATHER GOODS.

**General Comments:**

SPECIFIC EXPOSURE STANDARDS/CONTROL LIMITS FOR THIS MATERIAL HAVE NOT BEEN AGREED UPON; THEREFORE, ACGIH TLV GUIDELINES (SEE SECTION 3) ARE SUGGESTED FOR INTERIM USE UNTIL SPECIFIC STANDARDS/CONTROL LIMITS ARE ADOPTED. SOME OF THE INFORMATION PRESENT AND CONCLUSIONS DRAWN HEREIN ARE FROM SOURCES OTHER THAN DIRECT TEST DATA ON THE MIXTURE ITSELF.

-----**NOTE**-----

Qualifications

**EQ** = Equal **AP** = Approximately **N/AV** = Not Available

**LT** = Less Than **UK** = Unknown **N/AP** = Not Applicable

**GT** = Greater than **TR** = Trace **N/DA** = No Data Available

CITGO Petroleum Corporation  
P.O. Box 3758  
Tulsa, OK 74102-3758

# CITGO Diesel Fuel, All Grades

## Material Safety Data Sheet

MSDS No. AG1DF Revision Date

03/20/2003

### Emergency Overview

Physical State Liquid.  
Color Clear to light amber. Odor Characteristic, kerosene-like.

**WARNING!**

Combustible liquid; vapor may cause flash fire.  
Harmful or fatal if swallowed - can enter lungs and cause damage.  
Mist or vapor can irritate the respiratory tract.  
Liquid contact can cause eye or skin irritation.  
May be harmful if inhaled or absorbed through the skin.  
Overexposure can cause central nervous system (CNS) depression and/or other target organ effects.  
Diesel engine exhaust can cause upper respiratory tract irritation and reversible pulmonary effects.  
Spills may create a slipping hazard.

### Hazard Rankings

HMIS NFPA

Reactivity 0 0

\* = Chronic Health Hazard

### SECTION 1: IDENTIFICATION

#### Protective Equipment

Minimum Recommended  
See Section 8 for Details



Trade Name	CITGO No. 1 Diesel Fuel, All Grades	Technical Contact	(918) 495-5940 or (918) 495-5933
Product Number	Various	Medical Emergency	(918) 495-4700
CAS Number	8008-20-6	CHEMTREC Emergency (United States Only)	(800) 424-9300
Product Family	Fuels.		
Synonyms			

### SECTION 2: COMPOSITION

This product may be composed, in whole or in part, of any of the following refinery streams:

Kerosene [CAS No.: 8008-20-6]  
Hydrodesulfurized Kerosine (Petroleum) [CAS No.: 64742-81-0]  
Hydrodesulfurized Middle Distillate (petroleum) [CAS No.: 64742-80-9]  
Straight-run Middle Distillate (Petroleum) [CAS No.: 64741-44-2]  
Hydrodesulfurized Light Catalytic Cracked Distillate (Petroleum) [CAS No.: 68333-25-5]  
Light Catalytic Cracked Distillate (Petroleum) [CAS No.: 64741-59-9]

This product contains the following chemical components:

Component Name(s)	CAS Registry No.	Concentration (%)
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## CITGO No. 1 Diesel Fuel, All Grades

1) Nonane, all isomers	Mixture	20 - 30
2) Ethylmethylbenzenes (Ethyltoluenes)	25550-14-5	1 - 3
3) Naphthalene	91-20-3	0 - 3
4) Trimethylbenzenes, all isomers	25551-13-7	0 - 2
5) Biphenyl (Diphenyl)	92-52-4	0 - 2
6) Ethylbenzene	100-41-4	0 - 1
7) Xylene, all isomers	1330-20-7	0 - 1
8) 1, 2, 4 Trimethylbenzene	95-63-6	0 - 1
9) Cumene	98-82-8	0 - 1

### SECTION 3: HAZARDS IDENTIFICATION

Also see Emergency Overview and Hazard Ratings on the top of Page 1 of this MSDS.

**Major Route(s) of Entry** Skin contact. Eye contact. Inhalation. **Signs and Symptoms of**

#### Acute Exposure

<b>Inhalation</b>	Breathing mist or vapors concentrations well above occupational exposure levels can irritate the mucous membranes of the nose, throat, bronchi, and lungs, and may cause transient central nervous system (CNS) depression. CNS symptoms include headache, dizziness, nausea, intoxication, blurred vision, slurred speech, flushed face, confusion, weakness, fatigue, loss of consciousness, convulsions, coma, and death, depending on the concentration and/or duration of exposure.
<b>Eye Contact</b>	This product can cause eye irritation with short-term contact with liquid, mists or vapor. Symptoms include stinging, watering, redness, and swelling. In severe cases, permanent eye damage can result.
<b>Skin Contact</b>	Animal test results on similar materials suggest that this product can cause moderate to severe skin irritation. Short-term contact symptoms include redness, itching, and burning of the skin. Also, certain components of this material may be absorbed through the skin and produce CNS depression effects (see "Inhalation" above). If the skin is damaged, absorption increases. Prolonged and/or repeated contact may cause severe dermatitis and/or more serious skin disorders. Chronic symptoms may include drying, swelling, scaling, blistering, cracking, and/or severe tissue damage.
<b>Ingestion</b>	If swallowed, this material may irritate the mucous membranes of the mouth, throat, and esophagus. It can be readily absorbed by the stomach and intestinal tract. Symptoms include a burning sensation of the mouth and esophagus, nausea, vomiting, dizziness, staggering gait, drowsiness, loss of consciousness, and delirium, as well as additional central nervous system (CNS) effects (see "Inhalation" above).  Due to its light viscosity, there is a danger of aspiration into the lungs during vomiting. Aspiration of a small amount of liquid can cause severe pulmonary edema and lipid or chemical pneumonia which can result in death. Progressive CNS depression, respiratory insufficiency, and ventricular fibrillation may also result in death.

**Chronic Health Effects Summary** Secondary effects of ingestion and subsequent aspiration into the lungs may cause pneumatocele (lung cavity) formation and chronic lung dysfunction.

This product contains petroleum middle distillates similar to those shown to produce skin tumors on laboratory rodents following repeated application. All tumors appeared during the latter portion of the typical 2-year lifespan of the animals. Certain studies have shown that washing the animal's exposed skin with soap and water between treatments greatly reduces the potential tumorigenic effects. These effects are unlikely to occur if good personal hygiene is practiced.

This material and/or its components have been associated with developmental and/or reproductive toxicity, genotoxicity, immunotoxicity, and carcinogenicity. Refer to Section 11 of this MSDS for additional health-related information.

**Conditions Aggravated Exposure** Medical conditions aggravated by exposure to this material may include skin disorders, chronic respiratory diseases, neurological conditions, liver or kidney dysfunction.

**Target Organs** This material may cause damage to the following organs: kidneys, liver, upper respiratory tract, skin, eyes, central nervous system (CNS).

**Carcinogenic Potential** This material contains ethylbenzene and naphthalene at concentrations at or above 0.1 %. Ethylbenzene is considered possibly carcinogenic to humans by IARC. (See Section 11.) NTP has determined that exposure to diesel exhaust particulates, a complex mixture of combustion products of diesel fuel, is reasonably anticipated to be a human carcinogen.



## CITGO No. 1 Diesel Fuel, All Grades

**Special Properties** Combustible Liquid! This material releases vapors when heated above ambient temperatures. Vapors can cause a flash fire. Vapors can travel to a source of ignition and flashback. A vapor and air mixture can create an explosion hazard in confined spaces such as sewers. Use only with adequate ventilation. If container is not properly cooled, it can rupture in the heat of a fire.

**Extinguishing Media** SMALL FIRE: Use dry chemicals, carbon dioxide, foam, water fog, or inert gas (nitrogen). LARGE FIRE: Use foam, water fog, or water spray. Water fog and spray are effective in cooling containers and adjacent structures. However, water can cause frothing and/or may not extinguish the fire. Water can be used to cool the external walls of vessels to prevent excessive pressure, autoignition or explosion. DO NOT use a solid stream of water directly on the fire as the water may spread the fire to a larger area.

**Protection of Fire Fighters** Firefighters must use full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Evacuate area and fight the fire from a maximum distance or use unmanned hose holders or monitor nozzles. Cover pooling liquid with foam. Containers can build pressure if exposed to radiant heat; cool adjacent containers with flooding quantities of water until well after the fire is out. Withdraw immediately from the area if there is a rising sound from a venting safety device or discoloration of vessels, tanks, or pipelines. Be aware that burning liquid will float on water. Notify appropriate authorities if liquid enter sewers or waterways.

### SECTION 6: ACCIDENTAL RELEASE MEASURES

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**Ta**  
ke proper precautions to ensure your own health and safety before attempting spill control or clean-up. For more specific information, refer to the Emergency Overview on Page 1, Exposure Controls and Personal Protection in Section 8 and Disposal Considerations in Section 13 of this MSDS.

Combustible Liquid! Release can result in a fire hazard. Evacuate all non-essential personnel from release area. Establish a regulated zone with site control and security. Eliminate all ignition sources. Stop the leak if it can be done without risk. A vapor-suppressing foam may be used to reduce vapors. Properly bond or ground all equipment used when handling this material. Avoid skin contact. Do not walk through spilled material. Verify that responders are properly trained and wearing appropriate personnel protective equipment. Dike far ahead of a liquid spill. Do not allow released material to enter waterways, sewers, basements, or confined areas. This material will float on water. Absorb or cover with dry earth, sand or other non-combustible material. Use clean, non-sparking tools to collect absorbed material. Place spent sorbent materials, free liquids and other clean-up debris into proper waste containers for appropriate disposal. Certain releases must be reported to the National Response Center (800/424-8802) and state or regulatory authorities. Comply with all laws and regulations.

### SECTION 7: HANDLING AND STORAGE Combustible Liquid!

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A static electrical charge can accumulate when this material is flowing through pipes, nozzles or filters and when it is agitated. A static spark discharge can ignite accumulated vapors particularly during dry weather conditions. Always bond receiving containers to the fill pipe before and during loading. Always keep nozzle in contact with the container throughout the loading process. Do not fill any portable container in or on a vehicle. Special precautions, such as reduced loading rates and increased monitoring, must be observed during "switch loading" operations (i.e., loading this material in tanks or shipping compartments that previously containing gasoline or similar low flash point products).

Fire hazard increases as product temperature approaches its flash point. Use non-sparking tools. Keep container closed and drum bungs in place. Remove spillage immediately from walking areas. Do not handle or store near heat, sparks or other potential ignition sources. Do not handle or store with oxidizing agents. Avoid breathing mist or vapor. Never siphon by mouth. Do not taste or swallow. Avoid contact with eyes, skin and clothing. Use gloves constructed of impervious materials and protective clothing if direct contact is anticipated. Provide ventilation to maintain exposure potential below applicable exposure levels. Avoid water contamination. Wash thoroughly after handling. Prevent contact with food or tobacco products.

Cutting or welding of empty containers can ignite residues with explosive force. Do not pressurize or expose empty containers to flames, sparks or heat. Observe all label warnings and precautions. Consult appropriate federal, state and local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers and/or waste residues of this product. Return empty drums to a qualified reconditioner. When performing repairs and maintenance on contaminated equipment, keep unnecessary persons from hazard area. Eliminate heat, flame and other potential ignition

## CITGO No. 1 Diesel Fuel, All Grades

sources. Drain and purge equipment, as necessary, to remove material residues. Remove contaminated clothing. Wash exposed skin thoroughly with soap and water after handling.

### Storage

Store in a cool, dry, well-ventilated place. Keep containers tightly closed. Do not store this product near heat, flame or other potential ignition sources. Do not store with oxidizers. Do not store this product in unlabeled containers. Do not puncture or incinerate containers. Consult appropriate federal, state and local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers or waste residues of this product. Ground all equipment containing this material. All electrical equipment in areas where this material is stored or handled must meet all applicable requirements of the NFPA's National Electrical Code (NEC). Store and transport in accordance with all applicable laws.

## SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

### Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor or mists below the applicable workplace exposure limits indicated below. All electrical equipment should comply with the National Electric Code. An emergency eye wash station and safety shower should be located near the work-station.

### Personal Protective Equipment

Personal protective equipment should be selected based upon the conditions under which this material is used. A hazard assessment of the work area for PPE requirements should be conducted by a qualified professional pursuant to OSHA regulations. The following pictograms represent the minimum requirements for personal protective equipment. For certain operations, additional PPE may be required.



### Eye Protection

Safety glasses equipped with side shields are recommended as minimum protection in industrial settings. Chemical goggles should be worn during transfer operations or when there is a likelihood of misting, splashing, or spraying of this material. Suitable eye wash water should be readily available.

### Hand Protection

Avoid skin contact. Use gloves (e.g., disposable PVC, neoprene, nitrile, vinyl, or PVC/NBR). Wash hands with plenty of mild soap and water before eating, drinking, smoking, use of toilet facilities or leaving work. DO NOT use gasoline, kerosene, solvents or harsh abrasives as skin cleaners.

### Body Protection

Avoid skin contact. Wear long-sleeved fire-retardant garments (e.g., Nomex®) while working with flammable and combustible liquids. Additional chemical-resistant protective gear may be required if splashing or spraying conditions exist. This may include an apron, boots and additional facial protection. If product comes in contact with clothing, immediately remove soaked clothing and shower. Promptly remove and discarded contaminated leather goods.

### Respiratory Protection

Airborne concentration will determine the level of respiratory protection required. Respiratory protection is normally not required unless the product is heated or misted. For known or anticipated vapor or mist concentrations above the occupational exposure guidelines (see below), use a NIOSH-approved organic vapor respirator equipped with a dust/mist prefilter if adequate protection is provided. For unknown vapor concentrations or concentrations exceeding respirator protection factors, use a positive-pressure, pressure-demand, self-contained breathing apparatus (SCBA). Due to fire and explosion hazards, do not enter atmospheres containing concentrations greater than 20% of the lower flammable limit under any circumstances. Protection factors vary depending upon the type of respirator used. Respirators should be used in accordance with OSHA requirements (29 CFR 1910.134).

**General Comments** Warning! Use of this material in spaces without adequate ventilation may result in generation of hazardous levels of combustion products and/or inadequate oxygen levels for breathing. Odor is an inadequate warning for hazardous conditions.

### Occupational Exposure Guidelines

#### Substance

#### Applicable Workplace Exposure Levels

## CITGO No. 1 Diesel Fuel, All Grades

1) Diesel Fuel	<b>ACGIH TLV (United States).</b> TWA: 100 mg/m <sup>3</sup>
2) Kerosene	<b>NIOSH</b> TWA: 100 mg/m <sup>3</sup>
3) Nonane, all isomers	<b>ACGIH (United States).</b> TWA: 200 ppm <b>ACGIH (United States).</b>
4) Trimethylbenzenes, all isomers	TWA: 25 ppm
5) Naphthalene	<b>ACGIH (United States). Skin</b> TWA: 10 ppm STEL: 15 ppm <b>OSHA (United States).</b>
6) Biphenyl (Diphenyl)	TWA: 10 ppm <b>ACGIH (United States)</b> TWA: 0.2 ppm <b>OSHA (United States)</b> TWA: 0.2 ppm

### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES (TYPICAL)

<b>Physical State</b> amber. ke.	Liquid. <b>Odor</b>	<b>Color</b> Clear to light <b>Characteristic,</b> kerosene-	<b>Vapor Density</b>	4 (Air = 1)
<b>Specific Gravity</b>	0.82 (Water = 1)	<b>pH</b> Not Applicable.	<b>Melting/Freezing Point</b>	Not available.
<b>Boiling Range</b>	AP 150° C (AP 302° F)		<b>Viscosity (cSt @ 40°C)</b>	AP 3
<b>Vapor Pressure</b>	<0.3 kPa (<2 mmHg) (at 20°C)		<b>Volatile Characteristics</b>	AP 825 g/l VOC (W/V)
<b>Solubility in Water</b>	Very slightly soluble in cold water.			

**Additional Properties** Density = AP 6.8 lbs/gal.; Viscosity (ASTM D2161) = 30 - 40 SUS @ 100° F

### SECTION 10: STABILITY AND REACTIVITY

<b>Chemical Stability</b>	Stable.	<b>Hazardous Polymerization</b> Not expected to occur.
<b>Conditions to Avoid</b>	Keep away from heat, flame and other potential ignition sources. Keep away from strong oxidizing conditions and agents.	
<b>Materials Incompatibility</b>	Strong acids, alkalies, and oxidizers such as liquid chlorine, other halogens, hydrogen peroxide and oxygen.	
<b>Hazardous Decomposition Products</b>	No additional hazardous decomposition products were identified other than the combustion products identified in Section 5 of this MSDS.	

### SECTION 11: TOXICOLOGICAL INFORMATION

For other health-related information, refer to the Emergency Overview on Page 1 and the Hazards Identification in Section 3 of this MSDS.

#### Toxicity Data

**Middle distillates, petroleum:**

The products represented by this MSDS contain a mixture of petroleum hydrocarbons commonly referred to as "middle distillates." Laboratory data have associated some middle distillates with skin cancer when the material is applied repeatedly over the lifetime of the test animal. Middle distillates similar to the products represented by this MSDS have been associated with liver and kidney damage in subchronic (90-day) inhalation studies of male rats. The relevance of these findings to human health is unclear.

**Naphthalene:**

ORAL (LD50): Acute: 1800 mg/kg [Rat]. 533 mg/kg [Mouse]. 1200 mg/kg [Guinea pig].

## CITGO No. 1 Diesel Fuel, All Grades

DERMAL (LD50): Acute: 969 mg/kg [Mouse].  
INHALATION (LC50): Acute: >340 mg/m<sup>3</sup> 1 hour(s) [Rat].

Naphthalene is a potential irritant to eyes, skin and lungs. Ingestion of naphthalene has been associated with severe red blood cell and liver damage leading to death. Following prolonged or repeated exposures, naphthalene has been shown to cause cataracts, optical neuritis, hemolytic and aplastic anemia, jaundice and possibly neurotoxicity. In animal studies, naphthalene caused fetal effects and decreased spleen weights in pregnant female mice. In an NTP sponsored study, naphthalene produced a dose related increase in tumors at the 30 and 60 ppm exposure level in both male and female rats. Higher incidences of respiratory epithelial adenomas, olfactory epithelial neuroblastomas and non-neoplastic lesions of the nose were observed as compared to controls. Cytogenic studies with Chinese hamster ovary cells have demonstrated sister chromatid exchanges and chromosomal aberrations. The relevance of these studies to human health is unclear.

### Trimethylbenzenes, all isomers:

The TClO for humans is 10 ppm, with somnolence and respiratory tract irritation noted. In inhalation studies with rats, four of ten animals died after exposures of 2400 ppm for 24 hours. An oral dose of 5 mL/kg resulted in death in one of ten rats. Minimum lethal intraperitoneal doses were 1.5 to 2.0 mL/kg in rats and 1.13 to 12 mL/kg in guinea pigs. Levels of total hydrocarbon vapors present in the breathing atmosphere of these workers ranged from 10 to 60 ppm. Mesitylene (1, 3, 5 Trimethylbenzene) inhalation at concentrations of 1.5, 3.0, and 6.0 mg/L for six hours was associated with dose-related changes in white blood cell counts in rats. No significant effects on the complete blood count were noted with six hours per day exposure for five weeks, but elevations of alkaline phosphatase and SGOT were observed. Central nervous system depression and ataxia were noted in rats exposed to 5,100 to 9,180 ppm for two hours.

### Biphenyl (Diphenyl):

INHALATION, TClO, Acute: 4,400 ug/m<sup>3</sup> for 4 hours [Human] - Flaccid paralysis of peripheral nerves without anesthesia and nausea or vomiting.  
ORAL, LD50, Acute: >2,600 mg/kg [Cat screening level].  
ORAL, LD50, Acute: 2,400 mg/kg [Rat and Rabbit].  
ORAL, LD50, Acute: 1,900 mg/kg [Mouse] - Somnolence, hypermotility and diarrhea.  
DERMAL, LD50, Acute: >5,010 mg/kg [Rabbit screening level].

### Ethylbenzene:

ORAL (LD<sub>50</sub>): Acute: 3,500 mg/kg [Rat].  
DERMAL (LD<sub>50</sub>): Acute: 17,800 uL/kg [Rabbit].  
INTRAPERITONEAL (LD<sub>50</sub>): Acute: 2,624 mg/kg [Rat].  
NTP completed a 2-year inhalation bioassay of ethylbenzene in rodents. The study was conducted in rats and mice at exposure concentrations of 0, 75, 200 and 750 ppm. No significant effects were observed at the 75 and 200 ppm levels. However, compared to chamber controls, the severity of nephropathy was increased in rats at the 750 ppm level; and male rats had higher incidences of renal tubule carcinomas. Step section analyses of the kidneys found a significant increase hyperplasia and renal tubule adenomas in both male and female rats. Also at this 750 ppm level, male mice had a higher incidence of alveolar/bronchiolar adenomas and carcinomas and female mice had increased hepatocellular adenomas and carcinomas when compared to chamber controls. Also, hyperplasia was observed in the thyroid gland of both sexes of mice and in the pituitary gland of female mice. The relevance of these findings to human health is unclear. However, based upon this data, the IARC has designated ethylbenzene as possibly carcinogenic to humans (Group 2B).

### Diesel exhaust particulate:

Lung tumor and lymphomas were identified in rats and mice exposed to unfiltered diesel fuel exhaust in chronic inhalation studies. Further, epidemiological studies have identified increase incidences of lung cancer in US railroad workers and bladder cancer in bus and truck drivers possibly associated with exposure to diesel engine exhaust. NTP has determined that exposure to diesel exhaust particulates, a complex mixture of combustion products of diesel fuel, is reasonably anticipated to be a human carcinogen. In addition, NIOSH has identified complete diesel exhaust as a potential carcinogen.

## CITGO No. 1 Diesel Fuel, All Grades

### SECTION 12: ECOLOGICAL INFORMATION

**Ecotoxicity**                      **Freshwater Toxicity:**  
Concentration: 2400 ppm Exposure: 48 hrs. Species: Juven. Am. Shad (*Squalius cephalus*) Effect: TLM  
Concentration: >127 ppm Exposure: 96 hrs. Species: Bluegill (*Lepomis macrochirus*) Effect: LC50

**Saltwater Toxicity**  
Concentration: 10 ppm Exposure: 96 hrs. Species: Menhaden (*Brevoortia patronus*) Effect: LC50  
Concentration: 10 ppm Exposure: 96 hrs. Species: Grass Shrimp Effect: LC50

**Environmental Fate**            If spilled, this material will normally evaporate. Hydrocarbon components may contribute to atmospheric smog. If released to the subsoils, petroleum middle distillate fuels will strongly adsorb to soils. Groundwater should be considered as an exposure pathway. Liquid and vapor can migrate through the subsurface and preferential pathways (such as utility line backfill) to downgradient receptors.

Middle distillates are potentially toxic to freshwater and saltwater ecosystems. Distillate fuels will normally float on water. In stagnant or slow-flowing waterways, a hydrocarbon layer can cover a large surface area. As a result, this oil layer can limit or eliminate natural atmospheric oxygen transport into the water. With time, if not removed, oxygen depletion in the waterway can cause a fish kill or create an anaerobic environment. Also, this coating action can also kill plankton, algae, and water birds.

### SECTION 13: DISPOSAL CONSIDERATIONS

Hazard characteristic and regulatory waste stream classification can change with product use. Accordingly, it is the responsibility of the user to determine the proper storage, transportation, treatment and/or disposal methodologies for spent materials and residues at the time of disposition.

Maximize material recovery for reuse or recycling. If spilled material is introduced into a wastewater treatment system, chemical and biological oxygen demand (COD and BOD) will likely increase. Vapor emissions from a bio-oxidation process contaminated with this material might be a potential health hazard.

Recovered non-usable material may be regulated by US EPA as a hazardous waste due to its ignitibility (D001). In addition, conditions of use may cause this material to become a hazardous waste, as defined by Federal or State regulations. It is the responsibility of the user to determine if the material is a hazardous waste at the time of disposal. Transportation, treatment, storage, and disposal of waste material must be conducted in accordance with RCRA regulations (see 40 CFR Parts 260 through 271). State and/or local regulations might be even more restrictive. Contact the RCRA/Superfund Hotline at (800) 424-9346 or your regional US EPA office for guidance concerning case specific disposal issues.

### SECTION 14: TRANSPORT INFORMATION

The shipping description below may not represent requirements for all modes of transportation, shipping methods or locations outside of the United States.

**US DOT Status**                      A U.S. Department of Transportation (DOT) regulated material. The following U. S. DOT hazardous materials shipping description applies to bulk packaged material that is transported by highway or rail.

Alternate shipping descriptions may be required for product transported by marine vessel, air or other method and for non-bulk packaged material.

**Proper Shipping Name**            Diesel Fuel, No. 1, Combustible liquid, NA1993, PG III

**Hazard Class**                      DOT Class: Combustible liquid with a flash                      **Packing Group(s)**                      III  
point greater than 37.8°C (100°F).                      **UN/NA ID**                      NA 1993 or UN 1202

**Reportable Quantity**            A Reportable Quantity (RQ) has not been established for this material.

**Placards**

**CITGO No. 1 Diesel Fuel, All Grades**



**Emergency Response Guide**

**HAZMAT STCC No.**

**MARPOL III Status**

per 49 CFR 171.8.

Not a DOT "Marine Pollutant"

**SECTION 15: REGULATORY INFORMATION**

<b>SARA 302/304</b>	<p><b>TSCA Inventory</b> This product and/or its components are listed on the Toxic Substances Control Act (TSCA) inventory.</p>
<b>SARA 311/312</b>	<p>The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to Subparts 302 and 304 to submit emergency planning and notification information based on Threshold Planning Quantities (TPQs) and Reportable Quantities (RQs) for "Extremely Hazardous Substances" listed in 40 CFR 302.4 and 40 CFR 355. No components were identified.</p> <p>The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to this subpart to submit aggregate information on chemicals by "Hazard Category" as defined in 40 CFR 370.2. This material would be classified under the following hazard categories:</p>
<b>SARA 313</b>	<p align="center">Fire, Acute (Immediate) Health Hazard, Chronic (Delayed) Health Hazard</p> <p>This product contains the following components in concentrations above de minimis levels that are listed as toxic chemicals in 40 CFR Part 372 pursuant to the requirements of Section 313 of SARA:</p> <p>Naphthalene [CAS No.: 91-20-3] Concentration: 0 - 2%</p> <p>1, 2, 4 Trimethylbenzene [CAS No.: 95-63-6] Concentration: 0 - 1%</p>
<b>CERCLA</b>	<p>The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center concerning release of quantities of "hazardous substances" equal to or greater than the reportable quantities (RQ's) listed in 40 CFR 302.4. As defined by CERCLA, the term "hazardous substance" does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically designated in 40 CFR 302.4. Chemical substances present in this product or refinery stream that may be subject to this statute are:</p> <p>Naphthalene [CAS No.: 91-20-3] RQ = 100 lbs. (45.36 kg) Concentration: 0 - 3%</p> <p>Ethylbenzene [CAS No.: 100-41-4] RQ = 1000 lbs. (453.6 kg) Concentration: 0.5%</p> <p>Xylene, all isomers [CAS No.: 1330-20-7] RQ = 100 lbs. (45.36 kg) Concentration: 0.5%</p> <p>Cumene [CAS No.: 98-82-8] RQ = 5000 lbs. (2268 kg) Concentration: 0.5%</p> <p>Benzene [CAS No.: 71-43-2] RQ = 10 lbs. (4.536 kg) Concentration: &lt;0.05%</p>
<b>CWA</b>	<p>This material is classified as an oil under Section 311 of the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA). Discharges or spills which produce a visible sheen on waters of the United States, their adjoining shorelines, or into conduits leading to surface waters must be reported to the EPA's National Response Center at (800) 424-8802.</p>
<b>California Proposition 65</b>	<p>This material may contain the following components which are known to the State of California to cause cancer, birth defects or other reproductive harm, and may be subject to the requirements of California Proposition 65 (CA Health &amp; Safety Code Section 25249.5):</p> <p>Naphthalene: 0 - 3%</p> <p>Toluene: &lt;0.05%</p> <p>Benzene: &lt;0.05%</p>
<b>New Jersey Right-to-Know Label</b>	<p>Diesel exhaust particulate</p> <p>Diesel Fuel</p>
<b>Additional Regulatory Remarks</b>	<p>Federal Hazardous Substances Act, related statutes, and Consumer Product Safety Commission regulations, as defined by 16 CFR 1500.14(b)(3) and 1500.83(a)(13): This product contains "Petroleum Distillates" which may require special labeling if distributed in a manner intended or packaged in a form suitable for use in the household or by children. Precautionary label dialogue should display the following:  <b>DANGER: Contains Petroleum Distillates! Harmful or fatal if swallowed! Call Physician Immediately. KEEP OUT OF REACH OF CHILDREN!</b></p>

Printed on 03/20/2003.

\_\_\_\_\_ AP: Approximately    EQ: Equal    >: Greater Than    <: Less Than    NA: Not  
Applicable    ND: No Data    NE: Not Established

ACGIH: American Conference of Governmental Industrial Hygienists AIHA: American Industrial Hygiene Association

IARC: International Agency for Research on Cancer

NTP: National Toxicology Program

NIOSH: National Institute of Occupational Safety and Health  
Health Administration

OSHA: Occupational Safety and

NPCA: National Paint and Coating Manufacturers Association  
Information System

HMIS: Hazardous Materials

NFPA: National Fire Protection Association

EPA: US

Environmental Protection Agency **DISCLAIMER OF LIABILITY**

**THE INFORMATION IN THIS MSDS WAS OBTAINED FROM SOURCES WHICH WE BELIEVE ARE RELIABLE. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESSED OR IMPLIED REGARDING ITS CORRECTNESS. SOME INFORMATION PRESENTED AND CONCLUSIONS DRAWN HEREIN ARE FROM SOURCES OTHER THAN DIRECT TEST DATA ON THE SUBSTANCE ITSELF. THIS MSDS WAS PREPARED AND IS TO BE USED ONLY FOR THIS PRODUCT. IF THE PRODUCT IS USED AS A COMPONENT IN ANOTHER PRODUCT, THIS MSDS INFORMATION MAY NOT BE APPLICABLE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION OR PRODUCTS FOR THEIR PARTICULAR PURPOSE.**

**THE CONDITIONS OR METHODS OF HANDLING, STORAGE, USE, AND DISPOSAL OF THE PRODUCT ARE BEYOND OUR CONTROL AND MAY BE BEYOND OUR KNOWLEDGE. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT. END OF MSDS**

**ExxonMobil**

**Material Safety Data Sheets**

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33126-00 MOBIL REGULAR UNLEADED GASOLINE  
MATERIAL SAFETY DATA BULLETIN  
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-----  
1. PRODUCT AND COMPANY IDENTIFICATION  
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PRODUCT NAME: MOBIL REGULAR UNLEADED GASOLINE  
SUPPLIER: EXXONMOBIL CORPORATION  
3225 GALLOWS RD.  
FAIRFAX, VA 22037

24 - Hour Health and Safety Emergency (call collect): 609-737-4411

24 - Hour Transportation Emergency:  
CHEMTREC: 800-424-9300 202-483-7616  
LUBES AND FUELS: 281-834-3296

Product and Technical Information:  
Lubricants and Specialties: 800-662-4525 800-443-9966  
Fuels Products: 800-947-9147  
MSDS Fax on Demand: 713-613-3661  
MSDS Internet Website: <http://www.exxon.com>, <http://www.mobil.com>

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2. COMPOSITION/INFORMATION ON INGREDIENTS  
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CHEMICAL NAMES AND SYNONYMS: HYDROCARBONS AND ADDITIVES

-----  
GLOBALLY REPORTABLE MSDS INGREDIENTS:

Substance Name Approx. Wt%

-----  
GASOLINE (8006-61-9) 100

COMPONENT(S) OF PRODUCT INGREDIENTS INCLUDE:

METHYL-TERT-BUTYL ETHER 15  
(1634-04-4)

ETHANOL (64-17-5) 11

XYLENE (1330-20-7) 10  
ISOPENTANE (78-78-4) 9  
TRIMETHYL BENZENE 8  
(25551-13-7)  
TOLUENE (108-88-3) 5  
BUTANE (106-97-8) 4  
2-METHYLPENTANE (107-83-5) 4  
PENTANE (109-66-0) 4  
3-METHYLPENTANE (96-14-0) 2  
BENZENE (71-43-2) 2  
2,3-DIMETHYLBUTANE (79-29-8) 2  
N-HEXANE (110-54-3) 2  
ETHYL BENZENE (100-41-4) 2  
3- METHYLHEXANE (589-34-4) 2  
2- METHYLHEXANE (591-76-4) 1  
METHYLCYCLOHEXANE (108-87-2) 1

NOTE: The concentration of the components shown above may vary substantially. In certain countries benzene content may be limited to lower levels (eg. US reformulated gasoline). Oxygenates such as tertiary-amyl-methyl ether, ethanol, di-isopropyl ether, and ethyl-tertiary-butyl ether may be present (eg. concentration to provide a minimum oxygen content of 1.5 Wt% in the US). Because of volatility considerations, gasoline vapor may have concentrations of components very different from those of liquid gasoline. The major components of gasoline vapor are: butane, isobutane, pentane and isopentane. The reportable component percentages, shown in the Regulatory Information section, are based on API's evaluation of a typical gasoline mixture.

See Section 8 for exposure limits (if applicable).

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### 3. HAZARDS IDENTIFICATION

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This product is considered hazardous according to regulatory guidelines (See Section 15).

EMERGENCY OVERVIEW: Clear (May Be Dyed) Liquid. EXTREMELY FLAMMABLE,

HIGH HAZARD. Liquid can release considerable vapor at temperatures below ambient which readily form flammable mixtures. Vapors settle to ground level and may reach, via drains and other underground passages, ignition sources remote from the point of escape. Product can accumulate a static charge which may cause a fire or explosion. DOT ERG No. : 128

POTENTIAL HEALTH EFFECTS: Skin irritation. May cause eye and respiratory irritation, headache, dizziness, nausea, loss of consciousness, and in cases of extreme exposure, possibly death. Low viscosity material-if swallowed may enter the lungs and cause lung damage. Overexposure to benzene may result in cancer, blood disorders and damage to the bone marrow. Long-term exposure to gasoline vapor has caused kidney and liver cancer in laboratory animals. Case reports of chronic gasoline abuse (such as sniffing) and chronic misuse as a solvent or as a cleaning agent have shown a range of nervous system effects, sudden deaths from heart attacks, blood effects and leukemia. These effects are not expected to occur at exposure levels encountered in the distribution and use of gasoline as a motor fuel.

POTENTIAL ENVIRONMENTAL EFFECTS: Toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

For further health effects/toxicological data, see Section 11.

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#### 4. FIRST AID MEASURES

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EYE CONTACT: Flush thoroughly with water. If irritation occurs, call a physician.

SKIN CONTACT: Wash contact areas with soap and water. Immediately remove contaminated clothing, including shoes. (See Section 16 - Injection Injury)

INHALATION: Remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with mechanical device or use mouth-to-mouth resuscitation.

INGESTION: Seek immediate medical attention. Do not induce vomiting.

NOTE TO PHYSICIANS: Material if ingested may be aspirated into the lungs and can cause chemical pneumonitis. PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE: Skin contact may aggravate an existing dermatitis. Benzene- Individuals with liver disease may be more susceptible to toxic effects. Hexane- Individuals with neurological disease should avoid exposure.

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#### 5. FIRE-FIGHTING MEASURES

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EXTINGUISHING MEDIA: Carbon Dioxide, Foam, Dry Chemical, Water Fog. SPECIAL FIRE FIGHTING PROCEDURES: Evacuate area. For large spills, fire fighting foam is the preferred agent and should be applied in sufficient quantities to blanket the product surface. Water may be ineffective, but water should be used to keep fire-exposed containers cool. Water spray may be used to flush spill away

from exposures, but good judgment should be practiced to prevent spreading of the product into sewers, streams or drinking water supplies. If a leak or spill has not ignited, apply a foam blanket to suppress the release of vapors. If foam is not available, a water spray curtain can be used to disperse vapors and to protect personnel attempting to stop the leak.

SPECIAL PROTECTIVE EQUIPMENT: For fires in enclosed areas, fire fighters must use self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTREMELY FLAMMABLE, HIGH HAZARD. Liquid can release considerable vapor at temperatures below ambient which readily form flammable mixtures. Vapors settle to ground level and may reach, via drains and other underground passages, ignition sources remote from the point of escape. Product can accumulate a static charge which may cause a fire or explosion.

COMBUSTION PRODUCTS: Fumes, smoke, carbon monoxide, sulfur oxides, aldehydes and other decomposition products, in the case of incomplete combustion.

Flash Point C(F): < -40(-40) (ASTM D-56).

Flammable Limits (approx.% vol.in air) - LEL: 1.4%, UEL: 7.6%

NFPA HAZARD ID: Health: 1, Flammability: 3, Reactivity: 0

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## 6. ACCIDENTAL RELEASE MEASURES

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NOTIFICATION PROCEDURES: Report spills/releases as required to appropriate authorities. U.S. Coast Guard and EPA regulations require immediate reporting of spills/releases that could reach any waterway including intermittent dry creeks. Report spill/release to Coast Guard National Response Center toll free number (800)424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300.

### PROCEDURES IF MATERIAL IS RELEASED OR SPILLED:

LAND SPILL: Eliminate sources of ignition. Warn occupants in downwind areas of fire and explosion hazard. Shut off source taking normal safety precautions. Take measures to minimize the effects on ground water. Recover by pumping using explosion-proof equipment or contain spilled liquid with sand or other suitable absorbent and remove mechanically into containers. If necessary, dispose of adsorbed residues as directed in Section 13.

WATER SPILL: Eliminate sources of ignition. Advise occupants and ships in the vicinity in downwind areas of fire and explosion hazard and warn them to stay clear. Notify port and other relevant authorities. Do not confine in area of leakage. Allow liquid to evaporate from the surface. Do not use dispersants.

ENVIRONMENTAL PRECAUTIONS: Prevent material from entering sewers, water sources or low lying areas; advise the relevant authorities if it has, or if it contaminates soil/vegetation.

PERSONAL PRECAUTIONS: See Section 8

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## 7. HANDLING AND STORAGE

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HANDLING: USE NON-SPARKING TOOLS AND EXPLOSION-PROOF EQUIPMENT. NEVER SIPHON GASOLINE BY MOUTH. GASOLINE SHOULD NOT BE USED AS A SOLVENT OR AS A CLEANING AGENT. Avoid contact with skin. Avoid

inhalation of vapors or mists. Use in well ventilated area away from all ignition sources. This liquid is volatile and gives off invisible vapors. Either the liquid or vapor may settle in low areas or travel some distance along the ground or surface to ignition sources where they may ignite or explode. Use product with caution around heat, sparks, pilot lights, static electricity, and open flames. It is unlawful and dangerous to put gasoline into unapproved containers. Do not fill container in or on a vehicle. Static electricity may ignite vapors and cause fire. Place container on ground when filling and keep nozzle in contact with container. See Section 8 for additional personal protection advice when handling this product.

STORAGE: Drums must be grounded and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters. Store away from all ignition sources in a cool, well ventilated area equipped with an automatic sprinkling system. Outside or detached storage preferred. Storage containers should be grounded and bonded.

SPECIAL PRECAUTIONS: To prevent and minimize fire or explosion risk from static accumulation and discharge, effectively bond and/or ground product transfer system. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers, etc.) in or around any fueling operation or storage area unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. Electrical equipment and fittings must comply with local fire prevention regulations for this class of product. Use the correct grounding procedures. Refer to national or local regulations covering safety at petroleum handling and storage areas for this product.

EMPTY CONTAINER WARNING: Empty containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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### OCCUPATIONAL EXPOSURE LIMITS:

ExxonMobil recommends an 8-hour time-weighted average (TWA) exposure of 300 mg/m<sup>3</sup> (100 ppm vapor).

---TWA--- -----STEL--- NOTE

Substance Name (CAS-No.) Source ppm mg/m<sup>3</sup> ppm mg/m<sup>3</sup>

-----  
GASOLINE (8006-61-9)  
OSHA 300 900 500 1500

ACGIH 300 890 500 1480  
XOM 100 300

METHYL-TERT-BUTYL ETHER  
(1634-04-4)  
ACGIH 40 144  
XOM 25 75

ETHANOL (64-17-5)  
OSHA 1000 1900  
ACGIH 1000 1880

XYLENE (1330-20-7)  
O, M, P, -Isomers OSHA 100 435 150 655  
O, M, P, -Isomers ACGIH 100 434 150 651

ISOPENTANE (78-78-4)  
All Isomers ACGIH 600 1770

TRIMETHYL BENZENE  
(25551-13-7)  
OSHA 25 125  
ACGIH 25 123

TOLUENE (108-88-3)  
OSHA 100 375 150 560  
Skin ACGIH 50 188  
XOM 200

BUTANE (106-97-8)  
OSHA 800 1900  
ACGIH 800 1900  
XOM 1000 1500

2-METHYLPENTANE (107-83-5)  
Isomer of N-Hexane ACGIH 500 1760 1000 3500

PENTANE (109-66-0)  
OSHA 600 1800 750 2250  
All Isomers ACGIH 600 1770

3-METHYLPENTANE (96-14-0)  
Isomer of N-Hexane ACGIH 500 1760 1000 3500

BENZENE (71-43-2)  
OSHA 1 5  
Skin ACGIH 0.5 1.6 2.5 8

2,3-DIMETHYLBUTANE  
(79-29-8)  
Isomer of N-Hexane ACGIH 500 1760 1000 3500

N-HEXANE (110-54-3)  
OSHA 50 180

Other Isomers OSHA 500 1800 1000 3600  
N-Hexane Skin ACGIH 50 176  
Other Isomers ACGIH 500 1760 1000 3500

ETHYL BENZENE (100-41-4)  
OSHA 100 435 125 545  
ACGIH 100 434 125 543

METHYLCYCLOHEXANE  
(108-87-2)  
OSHA 400 1600  
ACGIH 400 1610

NOTE: Limits shown for guidance only. Follow applicable regulations.

VENTILATION: Ventilation equipment must be explosion proof.  
RESPIRATORY PROTECTION: Approved respiratory equipment must be used when airborne concentrations are unknown or exceed the recommended exposure limit. Self-contained breathing apparatus may be required for use in confined or enclosed spaces.  
EYE PROTECTION: If splash with liquid is possible, chemical type goggles should be worn.  
SKIN PROTECTION: Impervious gloves should be worn. Good personal hygiene practices should always be followed.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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Typical physical properties are given below. Consult Product Data Sheet for specific details.

APPEARANCE: Liquid  
COLOR: Clear (May Be Dyed)  
ODOR: Gasoline  
ODOR THRESHOLD-ppm: NE  
pH: NA  
BOILING POINT C(F): > 35(95)  
MELTING POINT C(F): NA  
FLASH POINT C(F): < -40(-40) (ASTM D-56)  
FLAMMABILITY (solids): NE  
AUTO FLAMMABILITY C(F): NE  
EXPLOSIVE PROPERTIES: NA  
OXIDIZING PROPERTIES: NA  
VAPOR PRESSURE-mmHg 20 C: > 200.0  
VAPOR DENSITY: 3.0  
EVAPORATION RATE: NE  
RELATIVE DENSITY, 15/4 C: 0.79  
SOLUBILITY IN WATER: Negligible  
PARTITION COEFFICIENT: > 1  
VISCOSITY AT 40 C, cSt: < 1.0  
VISCOSITY AT 100 C, cSt: NA  
POUR POINT C(F): NA  
FREEZING POINT C(F): NE  
VOLATILE ORGANIC COMPOUND: NE  
DMSO EXTRACT, IP-346 (WT.%): NA

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES

FOR FURTHER TECHNICAL INFORMATION, CONTACT YOUR MARKETING REPRESENTATIVE

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10. STABILITY AND REACTIVITY  
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STABILITY (THERMAL, LIGHT, ETC.): Stable.

CONDITIONS TO AVOID: Heat, sparks, flame and build up of static electricity.

INCOMPATIBILITY (MATERIALS TO AVOID): Halogens, strong acids, alkalies, and oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Product does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

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11. TOXICOLOGICAL DATA  
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---ACUTE TOXICOLOGY---

ORAL TOXICITY (RATS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.

DERMAL TOXICITY (RABBITS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.

INHALATION TOXICITY (RATS): Practically non-toxic (LC50: greater than 5 mg/l). ---Based on testing of similar products and/or the components.

EYE IRRITATION (RABBITS): Practically non-irritating. (Draize score: greater than 6 but 15 or less). ---Based on testing of similar products and/or the components.

SKIN IRRITATION (RABBITS): Irritant. (Primary Irritation Index: 3 or greater but less than 5). ---Based on testing of similar products and/or the components.

OTHER ACUTE TOXICITY DATA: Inhalation of high concentrations of vapors or aerosols/mists, especially deliberate or abuse exposure, may cause respiratory system irritation and damage. These exposures may also result in central nervous system depression and damage, possibly leading to death. Prolonged skin contact with gasoline may cause severe skin irritation similar to a chemical burn. The above effects, which may result from the whole gasoline or some of the gasoline components, are well documented in the medical literature. HAZARDS OF COMBUSTION PRODUCTS: Exposure to high concentrations of carbon monoxide can cause loss of consciousness, heart damage, brain damage and death.

---SUBCHRONIC TOXICOLOGY (SUMMARY)---

Two dermal studies resulted in significant irritation in rabbits but no significant systemic toxicity. 90-day inhalation exposures (approximately 1500 ppm vapor) in rats and monkeys produced light hydrocarbon nephropathy in male rats, but no other significant systemic toxicity.

---NEUROTOXICOLOGY (SUMMARY)---

Exposure to high concentrations of unleaded gasoline in rodents caused reversible central nervous system depression, however, no persistent neurotoxic effects were observed in subchronic inhalation studies of gasoline blending streams. No neurotoxic effects, as measured by a functional observation battery, motor activity, and neuropathology, were observed in rats exposed to light alkylate naphtha for 13 weeks at concentrations up to 6600 ppm. The medical literature clearly documents neurotoxic effects in humans from abusive gasoline inhalation (sniffing).

---REPRODUCTIVE TOXICOLOGY (SUMMARY)---

Two separate inhalation teratology studies of unleaded gasoline vapor at exposures up to 1600 ppm and 9000 ppm for 6 hours/day on days 6-20 did not result in any significant developmental effects in rats. No significant effects were observed in the mothers or offspring. A two-generation inhalation reproductive study (CONCAWE) of unleaded gasoline showed no reproductive or developmental effects in rats exposed to concentrations up to 20,000 mg/m<sup>3</sup> (approx. 8000 ppm).

---CHRONIC TOXICOLOGY (SUMMARY)---

A lifetime mouse skin painting study of unleaded gasoline applied at 50 microliters, three times weekly, resulted in some severe skin irritation and changes, but no statistically significant increase in skin cancer or cancer to any other organ. A lifetime inhalation study of vaporized unleaded gasoline at up to 2000 ppm caused liver tumors in female mice and increased kidney tumors in male rats. The kidney tumors resulted from the formation of a compound unique to male rats, and are not considered relevant to humans. The U.S. EPA Risk Assessment Forum concluded that the male rat kidney tumor results are not relevant for human risk assessment. The implications for the female mice liver tumor data for human risk assessment have not been fully determined. Multiple short-term cancer predicative tests (Ames Test, etc.) have routinely been negative (no cancer or mutagenic potential) for unleaded gasoline.

---SENSITIZATION (SUMMARY)---

Unleaded gasoline was not a skin sensitizer in tests in a Buehler Guinea Pig Sensitization Assay.

---OTHER TOXICOLOGY DATA---

Gasoline and Refinery Streams: Isolated constituents of gasoline may display these or other potential hazards in laboratory tests. Gasoline consists of a complex blend of petroleum/processing derived paraffinic, olefinic, naphthenic and aromatic hydrocarbons which include up to 5% benzene (with 1-2 % typical in the U.S.), n-hexane, mixed xylenes, toluene, ethylbenzene and trimethyl benzene. Benzene has also caused damage to the fetus of test animals in developmental studies. Benzene has tested positive (mutagenic) in a number of short-term cancer/mutation predicative tests. Repeated exposures to low levels of benzene (50-500 ppm) have been reported to result in blood abnormalities including anemia and, in rare cases, leukemia in both animals and humans. Prolonged exposure to n-hexane may result in a condition known as peripheral neuropathy. This is nervous system damage

and is characterized by numbness of the extremities and, in extreme cases, paralysis. This product contains ethylbenzene. The International Agency for Research on Cancer (IARC) has evaluated ethylbenzene and classified it as possibly carcinogenic to humans (Group 2B) based on sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans. Methyl Tertiary Butyl Ether (MTBE) was tested for carcinogenicity, neurotoxicity, chronic, reproductive, and developmental toxicity. The NOAEL for all end points evaluated in three animal species was 400 ppm or greater. An increase in kidney tumors/damage and liver tumors was observed in animals exposed to high concentrations of MTBE. Some embryo/fetal toxicity and birth defects were observed in the offspring of pregnant mice exposed to maternally toxic doses of MTBE, however the offspring of exposed pregnant rabbits were unaffected. The significance of the animal findings at high exposures are not believed to be directly related to potential human health hazards in the workplace.

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## 12. ECOLOGICAL INFORMATION

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### ENVIRONMENTAL FATE AND EFFECTS:

In the absence of specific environmental data for this product, this assessment is based on information for representative substances.

**ECOTOXICITY:** Based on test results for similar products, this substance may be toxic to aquatic organisms such as algae and daphnia (EL50/ IrL50 =1-10 mg/L). This substance has also been shown to be toxic to fish (LL50 = 1-10 mg/L).

**MOBILITY:** Dissolution of the higher molecular weight hydrocarbon components in water will be limited, but losses through sediment adsorption may be significant.

**PERSISTENCE AND DEGRADABILITY:** The majority of the components in this product would be expected to be inherently biodegradable. When released into the environment, some of the constituents of gasoline will volatilize and be photodegraded in the atmosphere. The less volatile, more water-soluble components which are aromatic hydrocarbons will also undergo aqueous photodegradation.

**BIOACCUMULATIVE POTENTIAL:** Not established.

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## 13. DISPOSAL CONSIDERATIONS

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**WASTE DISPOSAL:** Product is suitable for burning for fuel value in compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.

**RCRA INFORMATION:** Disposal of unused product may be subject to RCRA

regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity, or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP).

BENZENE: 2.3200 PCT (TCLP)

FLASH: < -40(-40) C(F)

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#### 14. TRANSPORT INFORMATION

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USA DOT:

SHIPPING NAME: Gasoline

HAZARD CLASS & DIV: 3

ID NUMBER: UN1203

ERG NUMBER: 128

PACKING GROUP: PG II

STCC: NE

DANGEROUS WHEN WET: No

POISON: No

LABEL(s): Flammable Liquid

PLACARD(s): Flammable

PRODUCT RQ: NA

MARPOL III STATUS: NA

RID/ADR:

HAZARD CLASS: 3

PACKING GROUP: II

LABEL: 3

DANGER NUMBER: 33

UN NUMBER: 1203

SHIPPING NAME: Motor Spirit

REMARKS: NA

IMO:

HAZARD CLASS & DIV: 3

UN NUMBER: 1203

PACKING GROUP: PG II

SHIPPING NAME: Gasoline

LABEL(s): Flammable Liquid

MARPOL III STATUS: NA

ICAO/IATA:

HAZARD CLASS & DIV: 3

ID/UN Number: 1203

PACKING GROUP: PG II

SHIPPING NAME: Gasoline

SUBSIDIARY RISK: NA

LABEL(s): Flammable Liquid

STATIC ACCUMULATOR (50 picosiemens or less): YES

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#### 15. REGULATORY INFORMATION

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US OSHA HAZARD COMMUNICATION STANDARD: Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined to be hazardous.

EU Labeling: Product is dangerous as defined by the European Union Dangerous Substances/Preparations Directives.

Symbol: F+ T N Extremely flammable, Toxic, Dangerous for the environment.

Risk Phrase(s): R12-45-38-65-67-51/53.

Extremely flammable. May cause cancer. Irritating to skin. Harmful: may cause lung damage if swallowed. Vapors may cause drowsiness and dizziness. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrase(s): S16-53-45-2-23-24-29-43-62.

Keep away from sources of ignition - No smoking. Avoid exposure - obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Keep out of the reach of children. Do not breathe vapor. Avoid contact with skin. Do not empty into drains. In case of fire use foam/drypowder/CO2. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Contains: Low Boiling Point Naphtha.

Governmental Inventory Status: All components comply with TSCA, and EINECS/ELINCS.

U.S. Superfund Amendments and Reauthorization Act (SARA) Title III: This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312) REPORTABLE HAZARD CATEGORIES:  
FIRE CHRONIC ACUTE

This product contains the following SARA (313) Toxic Release Chemicals:

CHEMICAL NAME CAS NUMBER CONC.

-----  
BENZENE (COMPONENT ANALYSIS) 71-43-2 2.3%  
PSEUDOCUMENE (1,2, 95-63-6 4.6%  
4-TRIMETHYLBENZENE) (COMPONENT  
ANALYSIS)  
ETHYL BENZENE (COMPONENT 100-41-4 1.6%  
ANALYSIS)  
TOLUENE (COMPONENT ANALYSIS) 108-88-3 4.7%  
N-HEXANE (COMPONENT ANALYSIS) 110-54-3 1.7%  
XYLENES (COMPONENT ANALYSIS) 1330-20-7 9.9%  
METHYL-TERT-BUTYL 1634-04-4 15.1%  
ETHER (COMPONENT ANALYSIS)

The following product ingredients are cited on the lists below:

CHEMICAL NAME CAS NUMBER LIST CITATIONS \*

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ETHYL ALCOHOL (COMPONENT ANALYSIS) 64-17-5 1, 6, 10, 18, 19, 20, 21, 23, 25, 26

BENZENE (COMPONENT ANALYSIS) 71-43-2 1, 2, 4, 6, 9, 10, (2.32%) 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26

ISOPENTANE (COMPONENT ANALYSIS) 78-78-4 1, 19, 24, 25

2,3-DIMETHYLBUTANE (COMPONENT ANALYSIS) 79-29-8 1, 19, 25

PSEUDOCUMENE (1,2, 95-63-6 1, 20, 24, 25

4-TRIMETHYLBENZENE) (COMPONENT ANALYSIS)

PENTANE, 3-METHYL- (COMPONENT 96-14-0 1, 19, 25

ANALYSIS)

METHYL CYCLOPENTANE (COMPONENT 96-37-7 19, 25, 26

ANALYSIS)

ETHYL BENZENE (COMPONENT ANALYSIS) 100-41-4 1, 8, 10, 18, 19, 20, 21, 23, 24, 25, 26

BUTANE (COMPONENT ANALYSIS) 106-97-8 1, 10, 18, 19, 20, 21, 23, 24, 25, 26

PENTANE, 2-METHYL- (COMPONENT 107-83-5 1, 19, 23, 25

ANALYSIS)

METHYLCYCLOHEXANE (COMPONENT 108-87-2 1, 10, 18, 19, 20, 21, 23, 25, 26

ANALYSIS)

TOLUENE (COMPONENT ANALYSIS) 108-88-3 1, 10, 17, 18, 19, (4.65%) 20, 21, 22, 23, 24, 25, 26

PENTANE (COMPONENT ANALYSIS) 109-66-0 1, 10, 18, 19, 20, 21, 23, 24, 25, 26

N-HEXANE (COMPONENT ANALYSIS) 110-54-3 1, 10, 18, 19, 20, 21, 23, 24, 25, 26

2-METHYL 2-BUTENE (COMPONENT 513-35-9 19, 25

ANALYSIS)

3-METHYLHEXANE (COMPONENT ANALYSIS) 589-34-4 19, 25

HEXANE, 2-METHYL- (COMPONENT 591-76-4 19, 25

ANALYSIS)

1-HEXENE (COMPONENT ANALYSIS) 592-41-6 1, 19, 25

XYLENES (COMPONENT ANALYSIS) 1330-20-7 1, 10, 18, 19, 20, (9.90%) 21, 22, 23, 24, 25, 26

METHYL-TERT-BUTYL ETHER (COMPONENT 1634-04-4 1, 21, 24, 25

ANALYSIS)

GASOLINE 8006-61-9 1, 8, 10, 18, 19, 20, 21, 23, 26

TRIMETHYL BENZENE (COMPONENT 25551-13-7 1, 10, 18, 19, 20, 21, 23, 25, 26

ANALYSIS)

--- REGULATORY LISTS SEARCHED ---

1=ACGIH ALL 6=IARC 1 11=TSCA 4 16=CA P65 CARC 21=LA RTK  
 2=ACGIH A1 7=IARC 2A 12=TSCA 5a2 17=CA P65 REPRO 22=MI 293  
 3=ACGIH A2 8=IARC 2B 13=TSCA 5e 18=CA RTK 23=MN RTK  
 4=NTP CARC 9=OSHA CARC 14=TSCA 6 19=FL RTK 24=NJ RTK  
 5=NTP SUS 10=OSHA Z 15=TSCA 12b 20=IL RTK 25=PA RTK

26=RI RTK

\* EPA recently added new chemical substances to its TSCA Section 4 test rules. Please contact the supplier to confirm whether the ingredients in this product currently appear on a TSCA 4 or TSCA 12b list.

Code key:CARC=Carcinogen; SUS=Suspected Carcinogen; REPRO=Reproductive

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16. OTHER INFORMATION  
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USE: UNLEADED MOTOR FUEL

NOTE: PRODUCTS OF EXXON MOBIL CORPORATION AND ITS AFFILIATED COMPANIES ARE NOT FORMULATED TO CONTAIN PCBS.

Health studies have shown that many hydrocarbons pose potential human health risks which may vary from person to person. Information provided on this MSDS reflects intended use. This product should not be used for other applications. In any case, the following advice should be considered:

INJECTION INJURY WARNING: If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

Precautionary Label Text:

CONTAINS GASOLINE

DANGER!

EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. CAUSES SKIN IRRITATION. RESPIRATORY IRRITATION, HEADACHE, DIZZINESS, NAUSEA, LOSS OF CONSCIOUSNESS, AND IN CASES OF EXTREME EXPOSURE, POSSIBLY DEATH. LOW VISCOSITY MATERIAL-IF SWALLOWED, MAY BE ASPIRATED AND CAN CAUSE SERIOUS OR FATAL LUNG DAMAGE.

OVEREXPOSURE TO BENZENE MAY RESULT IN CANCER, BLOOD DISORDERS, AND DAMAGE TO THE BONE MARROW. LONG-TERM EXPOSURE TO GASOLINE VAPOR HAS CAUSED KIDNEY AND LIVER CANCER IN LABORATORY ANIMALS, BLOOD EFFECTS, AND NERVOUS SYSTEM DAMAGE.

Keep away from heat, sparks, and flame. Avoid all personal contact. Avoid prolonged breathing of vapor. Use with adequate ventilation. Keep container closed. Approved portable containers must be properly grounded when transferring fuel. For use as a motor fuel only. Misuse of gasoline may cause serious injury or illness. Never siphon by mouth. Not to be used as a solvent or skin cleaning agent.

FIRST AID: In case of contact, wash skin with soap and water. Immediately remove contaminated clothing, including shoes. Destroy or wash clothing before reuse. If swallowed, seek immediate medical attention. Do not induce vomiting. Only induce vomiting at the instruction of a physician.

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm. Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm are created by the combustion of this product. Refer to product Material Safety Data Sheet for further safety and health information.

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\*\*\*\*\*  
For Internal Use Only: MHC: 1\* 1\* 1\* 1\* 2\*, MPPEC: CF, TRN: 33126-00,  
CMCS97: 97C112, REQ: US - MARKETING, SAFE USE: G  
EHS Approval Date: 18FEB2003  
\*\*\*\*\*

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Prepared by: ExxonMobil Oil Corporation  
Environmental Health and Safety Department, Clinton, USA

ATTACHMENT D

AIR PRODUCTS & CHEMICALS -- PROPANE  
MATERIAL SAFETY DATA SHEET

FSC: 6810

NIIN: 00F037664

Manufacturer's CAGE: 00742

Part Number/Trade Name: PROPANE

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General Information

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Company's Name: AIR PRODUCTS AND CHEMICALS INC

Company's Street: 7201 HAMILTON BLVD

Company's City: ALLENTOWN

Company's State: PA

Company's Country: US

Company's Zip Code: 18195-1501

Company's Emerg Ph #: 215-481-4911/800-523-9374

Company's Info Ph #: 800-322-9092/800-523-9374

Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 001

Status: SE

Date MSDS Prepared: 01JUN90

Safety Data Review Date: 15DEC94

Preparer's Company: AIR PRODUCTS AND CHEMICALS INC

Preparer's St Or P. O. Box: 7201 HAMILTON BLVD

Preparer's City: ALLENTOWN

Preparer's State: PA

Preparer's Zip Code: 18195-1501

MSDS Serial Number: BWJPX

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Ingredients/Identity Information

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Proprietary: NO

Ingredient: PROPANE

Ingredient Sequence Number: 01

NIOSH (RTECS) Number: TX2275000

CAS Number: 74-98-6

OSHA PEL: 1000 PPM

ACGIH TLV: SIMPLE ASPHYXIAN

Other Recommended Limit: 1800 MG/CUM

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Physical/Chemical Characteristics

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Appearance And Odor: COLORLESS ODORIZED GAS W/SICKENING SWEET SMELL

Boiling Point: -43.8F

Melting Point: -305.9F

Vapor Pressure (MM Hg/70 F): 147 PSIA

Vapor Density (Air=1): 0.117

Specific Gravity: 1.56

Solubility In Water: 6.5% BY VOLUME

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Fire and Explosion Hazard Data

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Flash Point: -156F

Lower Explosive Limit: 2.1

Upper Explosive Limit: 9.5

Extinguishing Media: DRY CHEMICAL, CO<sub>2</sub>, HALON

Special Fire Fighting Proc: RESCUE PERSONNEL SHOULD AVOID EXPOSURE/WEAR SCBA. DON'T ENTER AREAS W/IN FLAMMABLE RANGE DUE TO IMMEDIATE FIRE & EXPLOSION HAZARD. COOL CONTAINERS W/WATER SPRAY

Unusual Fire And Expl Hazrds: PROPANE GAS VAPORS ARE DENSE/CAN COLLECT & REMAIN IN LOW SPOTS EVEN AFTER THE SOURCE OF GAS HAS BEEN ELIMINATED. CONTAINERS CAN RUPTURE VIOLENTLY DUE TO FIRE.

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#### Reactivity Data

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Stability: YES

Cond To Avoid (Stability): HEAT, FLAME, IGNITION SOURCE, STATIC ELECTRICAL DISCHARGE.

Materials To Avoid: OXIDIZERS, OXYGEN, CHLORINE, FLOURINE

Hazardous Decomp Products: NONE

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NONE

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#### Health Hazard Data

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Route Of Entry - Inhalation: YES

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: INHALATION: EXPOSURE TO PROPANE DEPENDING ON CONCENTRATION & DURATION OF EXPOSURE MAY INCLUDE RAPID RESPIRATION, AIR HUNGER, DEATH. SKIN: MAY CAUSE FROSTBITE.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NONE

Signs/Symptoms Of Overexp: INCOORDINATION, FATIGUE, NAUSEA, VOMITING, CONVULSIONS, LOSS OF CONSCIOUSNESS, SKIN COLOR CHANGED TO GRAY/WHITE, COLD FEELING, NUMBNESS.

Emergency/First Aid Proc: INHALATION: MOVE TO FRESH AIR. GIVE CPR/ OXYGEN IF NEEDED. KEEP WARM & QUIET. SKIN: IN EVENT OF FREEZING, FROZEN TISSUES SHOULD BE FLOODED/SOAKED W/TEPID WATER (105-115F). DON'T USE HOT WATER. FIRST DEGREE BURNS WHICH RESULT IN FIRE EXPOSURE/OTHER SMALL AREA OF BODY MAY BE IMMERSSED IN COOL WATER FOR 10-20 MINS TO RELIEVE PAIN. DON'T IMMERSSED WHOLE BODY IN A COLD BATH. (SEE SUPP)

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#### Precautions for Safe Handling and Use

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Steps If Matl Released/Spill: VENTILATE AREA TO PREVENT FLAMMABLE MIXTURE FROM FORMING. REMOVE SOURCES OF IGNITION, HEAT, SPARKS. AVOID ENTERING AREA OF FLAMMABLE ATMOSPHER. CAREFULLY REMOVE CYLINDERS W/SLOW LEAKS TO A REMOTE, OUTDOOR LOCATION.

Waste Disposal Method: DON'T ATTEMPT TO DISPOSE OF RESIDUAL PROPANE IN CYLINDERS. RETURN TO AIR PRODUCTS FOR DISPOSAL W/POSITIVE PRESSURE IN CYLINDER, CYLINDER VALVE TIGHTLY CLOSED & VALVE CAPS IN PLACE. DISPOSE OF IAW/FEDERAL, STATE & LOCAL REGULATIONS.

Precautions-Handling/Storing: USE ONLY IN WELL VENTILATED AREA. PROPANE GAS CYCLINDERS CONTAIN GAS AT HIGH PRESSURE, HANDLE W/CARE. NEVER EXPOSE A PROPANE CYLINDER TO HEAT.(SEE SUP

Other Precautions: ALWAYS KEEP PROPANE CYLINDERS UPRIGHT/SECURE CYLINDERS WHEN IN USE. ALWAYS OPEN & CLOSE VALVES SLOWLY. AVOID DRAGGING/ROLLING/

SLIDING CYLINDERS. STORAGE OF 300 LBS/LESS OF PROPANE IS PERMISSIBLE W/IN INDUSTRIAL BUILDINGS.

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Control Measures

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Respiratory Protection: USE ORGANIC VAPOR CANISTER/SCBA.  
Ventilation: NATURAL/MECHANICAL WHERE GAS IS PRESENT. LOCAL EXHAUST/GENERAL AS NECESSARY.  
Protective Gloves: LEATHER/WELDING.  
Eye Protection: SAFETY GLASSES/WELDERS GOGGLES  
Other Protective Equipment: LEATHER SLEEVES, LEATHER APRON, SAFETY SHOES.  
Suppl. Safety & Health Data: FIRST AID CONT'D: COVER BURNS W/CLEAN MATERIAL. DON'T USE BURN OINTMENTS/GREASEY MATERIALS ON BURNS THAT SHOW MORE THAN LOCALIZED REDDENING. OBTAIN MEDICAL ATTENTION IN ALL CASES. WHEN THE CONCENTRATION OF PROPANE IN ATMOSPHERE > THE FLAMMABLE LIMIT THERE IS AN IMMEDIATE FIRE/EXPLOSION HAZARD.

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Transportation Data

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Disposal Data

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Label Data

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Label Required: YES  
Label Status: G  
Common Name: PROPANE  
Special Hazard Precautions: INHALATION: EXPOSURE TO PROPANE DEPENDING ON CONCENTRATION & DURATION OF EXPOSURE MAY INCLUDE RAPID RESPIRATION, AIR HUNGER, DEATH. SKIN: MAY CAUSE FROSTBITE. INCOORDINATION, FATIGUE, NAUSEA, VOMITING, CONVULSIONS, LOSS OF CONSCIOUSNESS, SKIN COLOR CHANGED TO GRAY/WHITE, COLD FEELING, NUMBNESS.  
Label Name: AIR PRODUCTS AND CHEMICALS INC  
Label Street: 7201 HAMILTON BLVD  
Label City: ALLENTOWN  
Label State: PA  
Label Zip Code: 18195-1501  
Label Country: US  
Label Emergency Number: 215-481-4911/800-523-9374