

June 3, 2014

Mr. Thomas Campbell  
California Governor's Office of Emergency Services  
3650 Schriever Avenue  
Mather, CA 95655

**SENT ELECTRONICALLY**

**Subject: DOT-OST-2014-0067**

Dear Mr. Campbell:

In accordance with an Emergency Restriction/Prohibition Order (Order) by the United States Department of Transportation (DOT) issued on May 7, 2014, the Union Pacific is required to notify the State Emergency Response Commission (SERC) for each state in which it operates trains transporting 1,000,000 gallons or more of Bakken crude oil.

This Order requires Union Pacific to provide the following information to the SERC:

- A reasonable estimate of the number of trains that are expected to travel per week through each county within the state;
  - **Union Pacific currently does not run Bakken crude oil trains exceeding the threshold established in the Order in California**
- To identify and describe the petroleum crude oil expected to be transported in accordance with 49 CFR part 172, subpart C (Attachment 1);
- To provide all applicable emergency response information required by 49 CFR part 172, subpart G (Attachment 2); and,
- To identify the routes over which the material will be transported.
  - **Union Pacific currently does not run Bakken crude oil trains exceeding the threshold established in the Order in California**

The Order also requires Union Pacific to identify at least one point of contact (POC) for the SERCs and relevant emergency responders to contact for questions concerning the transportation of Bakken crude oil. Union Pacific has identified the following individual as the POC:

Ben Salo  
Manager, Hazardous Materials  
1400 Douglas Street, MC1040  
Omaha, NE 68179  
402-544-4981  
brsalo@up.com



In the event that Mr. Salo is unavailable, please contact the following:

Response Management Communication Center  
888-877-7267

Even though Union Pacific does not currently operate trains meeting the thresholds of the Order in California, we will continue to monitor the traffic and will update you if we begin handling Bakken crude oil above the established threshold. Beyond the issue of Bakken crude oil, we will of course continue to work with the appropriate hazardous materials and first responders in the state, and in the communities through which our trains travel, to ensure they are aware of what we carry through those communities and to help them receive training as part of response preparation.

If you have any questions about the information provided or the transportation of Bakken crude oil over the Union Pacific system, please do not hesitate to contact the POC.

Sincerely,

**UNION PACIFIC RAILROAD**



Benjamin R. Salo  
Manager, Hazardous Materials

Attachments (2)

1. Description of crude oil
2. Emergency response information

## **DESCRIPTION OF PETROLEUM CRUDE OIL BEING TRANSPORTED**

UN1267  
PETROLEUM CRUDE OIL  
3  
PG I or II  
HMRC (STCC) 4910165 or 4910191

### Details:

UN1267 – Unique identification number assigned by DOT

PETROLEUM CRUDE OIL – Proper DOT shipping name

3 – Indicates the DOT hazard class. Hazard class 3 is flammable liquid

PG – Packing Group further describes the hazard class based on the materials flash point and initial boiling point as follows:

Packing group	Flash point (closed-cup)	Initial boiling point
I		≤35 °C (95 °F)
II	<23 °C (73 °F)	>35 °C (95 °F)
III	≥23 °C, ≤60 °C (≥73 °F, ≤140 °F)	>35 °C (95 °F)

Bakken petroleum crude is shipped as either PG I or PG II

HMRC (STCC) – Hazardous Materials Response Code (Standard Transportation Commodity Code) drives emergency response information included as part of railroad shipping papers (see Attachment 3). Most petroleum crude uses 4910165. Crude oil from the Bakken region will soon carry 4910191 as the HMRC.

# PETROLEUM CRUDE OIL

## Class 3 (Flammable Liquid) or Combustible Liquid

### GENERAL INFORMATION

Petroleum crude oil is a flammable, variably light to dark colored liquid hydrocarbon with properties between gasoline and kerosene. It is used as a raw material for making fuels and various chemicals. Barely soluble in water and slightly lighter, petroleum crude oil will form a floating surface slick. Flammability of this product can vary widely having a flash point range from -45 to 392°F. The liquid may evaporate easily even at low temperatures. The vapors of the more volatile, and therefore more flammable crude oil, are heavier than air, may accumulate and persist in low areas, and may travel some distance to a source of ignition and flash back. Similarly, accumulations of vapor in confined spaces such as buildings or sewers may explode if ignited and there is some potential that containers of liquid may rupture violently if exposed to fire or excessive heat for sufficient time duration. Typical crude oil weigh approximately 6.3-8.3 pounds per gallon.

Petroleum crude oil will not react with water or other common materials and is stable in normal transportation. It is incompatible with strong oxidizers, and may attack some forms of plastics, rubber, and coatings. Toxicity by potential routes of exposure is generally considered low to moderate. The more volatile mixtures may be present in air in high concentrations creating an inhalation hazard. There is also the possibility that the crude oil may contain some fraction of toxic benzene or hydrogen sulfide (see separate guides). Products of combustion may include toxic constituents.

### CHEMICAL/PHYSICAL DATA

**Solubility in Water:** Practically insoluble, below 0.1%

**Solubility in Other Chemicals:** Soluble in various hydrocarbon liquids.

**Specific Gravity (Liquid):** Varies, 0.75 - 0.99

**Vapor Density:** 3.4 (approximately)

**Boiling Point:** Varies, 1000+°F (538+°C).

**Melting Point:** Unavailable

**Freezing Point:** Unavailable

**Molecular Weight:** Complex mixture, approximately 99

**Heat of Combustion:** 10,290 - 10,460 cal/g (Petroleum distillates)

**Evaporation Rate (butyl acetate=1):** 10 (approximately)

**Vapor Pressure:** Varies widely with composition, 40 mmHg for petroleum distillates.

**Flash Point:** Varies widely -45 to 392°F (-43 to 200°C)

**Autoignition Temperature:** 450 - 500°F (232 - 260°C)

**Burning Rate:** 4 mm/minute

**Flammable Limits:** 0.4% (LEL) - 15% (UEL)

**Stability:** Stable

**Polymerization Potential:** Will not occur.

**Corrosiveness:** Relatively noncorrosive but may attack some forms of plastics, rubber, and coatings.

**Reactivity with Water:** No reaction

**Reactivity and Incompatibility:** Reacts with strong oxidizing materials. Avoid chlorine, fluorine.

### IDENTIFICATION

**Shipping Name(s):** Petroleum crude oil (USDOT & IMO).

**Synonyms and Tradenames:** Crude oil ; Mineral oil; Rock oil; Coal oil; Petroleum.

**CAS Registry No.:** 8002-05-9

**Chemical Formula:** C<sub>6</sub>-C<sub>13</sub> hydrocarbon mixture. Crude oil is a naturally occurring complex mixture of hydrocarbons whose exact composition and physical properties can vary widely depending upon its source.

**Constituent Components (% each):** Complex mixture of petroleum hydrocarbons; may contain 0-10% benzene.

**UN/NA Designation:** UN1267

**IMO Designation:** 3.1, 3.2 or 3.3, Flammable liquids

**NFPA 704 Hazard Rating:** 2(Health): 3(Flammability): 0(Reactivity)

**Physical Form as Shipped:** Liquid

**Physical Form as Released:** Liquid

**Color of the Shipped Material:** Dark yellow to brown or greenish-black, oily liquid.

**Odor Characteristics:** Like gasoline and kerosene

**Reportable Quantity:** See appendix I.

**Common Uses:** Raw material for making fuels and various chemicals.

**ADDITIONAL INFORMATION AND ASSISTANCE: FOR 24-HOUR TECHNICAL SUPPORT FOR ACCIDENTS INVOLVING SPILLS, LEAKS, FIRES OR EXPOSURES TO CHEMICALS, CONTACT CHEMTREC AT (800) 424-9300 OR (703) 527-3887 (COLLECT).**

# PETROLEUM CRUDE OIL

## Class 3 (Flammable Liquid) or Combustible Liquid



or



or



### POTENTIAL HAZARDS

#### GENERAL HAZARDS

**Threshold Odor Concentration:** Varies

**Unusual Hazards:** Properties uncertain. Vapors of some crude oil may be heavier than air and may travel to a source of ignition. Some may include significant amounts of benzene (see separate guide).

**Short Term Exposure Limit (STEL):** Unavailable

**Time Weighted Average (TLV-TWA):** 86 ppm (350 mg/m<sup>3</sup>) (Petroleum distillates).

**Ceiling (C) Limit:** 444 ppm (1800 mg/m<sup>3</sup>) (Petroleum distillates).

**IDLH:** 1100 ppm or 10% LEL (Petroleum distillates).

**Conditions to Avoid:** Heat, fire, or sparks; contact with incompatible materials; runoff to sewers or water bodies; inhalation, ingestion, or direct physical contact.

#### HEALTH HAZARDS

**Public Health Hazards:** Major hazard is from inhalation of high vapor concentrations in air. Ingestion and direct contact are also to be avoided. (Note: Any benzene in the product increases both acute and chronic health risks.)

**Hazards of Skin or Eye Contact:** Repeated or prolonged contact with liquid petroleum crude oil may cause drying, cracking, and inflammation of the skin due to the defatting action of the product. Contact with the eyes may result in irritation and possibly temporary corneal injury.

**Hazards of Inhalation:** Vapors of petroleum crude oil may be irritating to the eyes and the upper respiratory tract. High concentrations in air may result in narcosis and central nervous system depression with symptoms including inebriation, headache, nausea, dizziness, drowsiness, unconsciousness, convulsions, and possibly death. Some symptoms may be evident after 1 hour at 4000-7000 ppm in air. Acute overexposure may also result in persistent anorexia and nervousness on occasion.

**Hazards of Ingestion:** Ingestion may cause a burning sensation, vomiting, diarrhea, drowsiness, and symptoms listed above. Aspiration into the lungs during vomiting may result in pulmonary edema with possibly severe consequences.

#### FIRE HAZARDS

**Lower Flammable Limit:** 0.4%

**Upper Flammable Limit:** 15%

**Behavior in Fire:** Flammable liquid. Liquid will burn but may be difficult to ignite depending on constituents. Flammable liquids may generate large quantities of flammable vapor upon release. Vapors of flammable liquids are heavier than air, may accumulate and persist in low areas, and may travel to a source of ignition and flash back. There is some potential that containers may rupture violently in fire.

**Hazardous Decomposition Products:** Not well-defined, may include toxic constituents such as carbon monoxide, carbon dioxide, oxides of sulfur and reactive hydrocarbons.

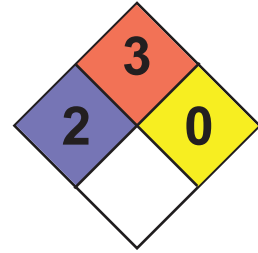
#### EXPLOSION HAZARDS

**Explosive Potential:** Explosion may result if vapors are ignited in a confined area. There is some potential that containers may rupture violently in fire. Product is sensitive to static discharge and is an extreme fire hazard. Vapors can burn with explosive violence.

1267

# PETROLEUM CRUDE OIL

## Class 3 (Flammable Liquid) or Combustible Liquid



### PERSONAL PROTECTIVE CLOTHING AND EQUIPEMENT

**Protective Clothing Required:** Equipment should prevent repeated or prolonged skin contact and any reasonable probability of eye contact with the spilled product. This may include rubber boots, gloves, face shields, splash-proof safety goggles, and other impervious and resistant clothing. Compatible materials may include neoprene, nitrile rubber, chlorinated polyethylene, polyurethane, polyvinyl alcohol, Viton<sup>®</sup>, and nitrile-butadiene rubber.

**Respiratory Protection:** For unknown concentrations, fire fighting, or high concentrations, a self-contained breathing apparatus (SCBA) with full facepiece. For lesser concentrations, an air purifying respirator (APR) with organic vapor cartridge with a full facepiece within the use limitations of these devices.

### FIRST AID

**Nonspecific Symptoms:** Irritation of the eyes, skin, or respiratory tract; other symptoms of exposure.

**First Aid for Inhalation:** Remove victim to fresh air and keep warm and at rest. If breathing becomes difficult or if breathing has stopped, administer artificial respiration. Get medical attention immediately. (Caution: Administration of mouth-to-mouth resuscitation may expose the first aid provider to chemical within the victim's lungs or vomit.)

**First Aid for Skin Contact:** In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes, while holding eyelids apart in order to rinse entire surface of eye and lids with water. Provide supportive care and seek immediate medical assistance by a physician from the nearest medical treatment facility.

**First Aid for Eye Contact:** Remove all contaminated clothing. Wash affected body areas with large amounts of water. Decontaminate the patient thoroughly before transporting to a medical treatment facility to prevent the potential for secondary contamination.

**First Aid for Ingestion:** Do not induce vomiting. Keep victim warm and at rest. Get medical attention immediately.

**Note to Physician:** Hydrocarbons may sensitize the heart to epinephrine and other circulating catecholamines so that arrhythmias may occur. Careful consideration of this potential adverse effect should precede administration of epinephrine or other cardiac stimulants and the selection of bronchodilators.

### FIRE RESPONSE

**Extinguishing Agents:** Carbon dioxide, dry chemical, foam, or water spray. Water may be ineffective and there is some possibility that foam or water may cause some frothing.

**Extinguishing Techniques:** Stay upwind. Wear breathing apparatus and appropriate protective clothing. Move container from fire area if no risk. Do not extinguish burning cargo unless flow can be stopped safely. Be alert to container rupture potential. Stay away from ends of tank involved in fire but realize that shrapnel may travel in any direction. Use water from side and from safe distance to keep fire exposed containers cool. For massive fire in cargo area, use unmanned hose holder or monitor nozzles. Withdraw immediately in case of rising sound from venting safety device or discoloration of tank.

Note: Crude oil fires may produce a highly dangerous phenomenon known as a BOILOVER, whereby light hydrocarbons burn off at the surface of the fire and heavy superheated hydrocarbons sink to the bottom and come in contact with water bottoms. The super heated product converts the water to steam and forces burning crude oil out of the tank. Burning crude oil which has accumulated in tanks or diked areas are susceptible to boilovers. Seek expert advice on how to fight a crude oil fire.

### SPILL RESPONSES

**General Information:** Proceed with caution. Restrict access to area. Keep unprotected personnel upwind of spill area.

Eliminate ignition sources. Prevent liquid from entering sewers and confined spaces. Protect sewers and waterways from contaminated runoff. Notify proper authorities, downstream sewer and water treatment operations, and other downstream users of potentially contaminated water. Note that intake of petroleum crude oil may result in rupture or explosion of boilers or industrial process equipment. Use intrinsically safe equipment where necessary. Choose equipment, where possible, that is not corroded or otherwise damaged by the spilled product. Take the specific flammability hazard and possible volatility of the spilled product into account while planning the response.

# PETROLEUM CRUDE OIL

## Class 3 (Flammable Liquid) or Combustible Liquid

### AIR RELEASE

#### **TECHNIQUE**

MONITOR THE SITUATION . . . The product may not produce large amounts of hazardous airborne contaminants in many outdoor spill situations. It may be advisable in some cases to simply monitor the situation until the spilled product is removed by product and container specialists.

#### **CONSEQUENCE**

Hazardous levels of product in air may be found in the local spill area and immediately downwind.

#### **MITIGATION**

Remove the spilled product as soon as possible. Restrict access to the local spill area and areas immediately downwind by unprotected personnel.

#### **TECHNIQUE**

WATER FOG OR SPRAY . . . Water fog or spray applied to petroleum crude oil vapors or fumes may accelerate their dispersal in the atmosphere. (Note: There is some possibility that water may cause frothing.)

#### **CONSEQUENCE**

Increases in spill surface area and atmospheric conditions may increase the rate of vapor generation. In enclosed areas, runoff may add to spill volume and overflow impoundments. Water runoff may contain a small amount (if any) of petroleum crude oil from contact with airborne vapors or fumes.

#### **MITIGATION**

Contain contaminated water and remove or treat as soon as possible to prevent spread of contamination. Be alert to conditions such as fire hose runoff or rainwater that may add to spill volume and overflow impoundments.

#### **TECHNIQUE**

FOAM . . . Firefighting foam applied to the surface of liquid pools may slow the release of petroleum crude oil vapors into the atmosphere. (Note: There is some possibility that foam may cause frothing.)

#### **CONSEQUENCE**

The effects of the foam may be short term. As the foam breaks down, release of vapors will increase. Products of foam breakdown will add to the volume of spilled material.

#### **MITIGATION**

Continue foam applications until spilled product is removed. Contain foam runoff and treat as hazardous waste.

### LAND SPILL

#### **TECHNIQUE**

CONFINEMENT DIKES . . . Petroleum crude oil may be confined by building dikes using soil, sand or other materials.

#### **CONSEQUENCE**

Confined petroleum crude oil may percolate into soil or seep through dike material. This may result in loss of confined product and spread of contamination.

#### **MITIGATION**

Remove or neutralize contained product as soon as possible to prevent spread of contamination. Be alert to conditions such as fire hose runoff or rainwater that may overflow impoundments. Where possible, line collection area with compatible impervious materials.

#### **TECHNIQUE**

EXCAVATION . . . Spills of material may be confined by building trenches or ditches.

#### **CONSEQUENCE**

Material may leach into soil. Deep excavations may increase the potential for groundwater contamination in some areas. This may result in loss of confined product and spread of contamination.

#### **MITIGATION**

Remove material from contaminated area as quickly as possible to prevent possible contamination beyond the spill area. Water sprays may be used to reduce vapors, except in enclosed areas where runoff may accumulate and overflow impoundments. Be alert to condition such as increasing spill volume with runoff or rain water which may overflow diked areas. If possible, confinement areas should be lined with suitable, impervious material to prevent penetration into soil.

# PETROLEUM CRUDE OIL

## Class 3 (Flammable Liquid) or Combustible Liquid

### **TECHNIQUE**

PUMPING/VACUUM SUCTION . . . Spilled material confined in diked areas may be recovered using compatible hoses, pumps and vacuum trucks. All product transfer equipment should be properly bonded and grounded.

### **CONSEQUENCE**

Equipment that is not compatible with the spilled product may become damaged and present a safety hazard for response personnel. Mechanical equipment will become contaminated with removed product.

### **MITIGATION**

Use equipment constructed of materials compatible with the spilled product. Decontaminate equipment.

### **TECHNIQUE**

ABSORPTION . . . Spreading of spilled product may be controlled by absorbing liquid with sand, earth, clay, fly ash, cement powder, peat moss, saw dust, straw, commercial sorbents, or other compatible substances.

### **CONSEQUENCE**

Once used, sorbent materials pose the same hazards as the spilled product. Their use adds to the overall volume of contaminated material.

### **MITIGATION**

Deplete accumulated liquid pools with pumps or vacuum trucks if possible before applying sorbents. Remove contaminated sorbents to safe storage by mechanical means.

### **TECHNIQUE**

MECHANICAL REMOVAL . . . Soil contaminated with spilled material may be removed by shovels, as well as a variety of heavy equipment such as backhoes and loaders.

### **CONSEQUENCE**

Mechanical equipment used in clean-up operations may become contaminated and present a safety and/or health hazard to response personnel. Any flammable vapors present in the area may be ignited by motorized removal equipment.

### **MITIGATION**

Use equipment constructed of materials compatible with the spilled product. Decontaminate equipment. Continually monitor for presence of flammable vapors.

## **WATER SPILL**

### **TECHNIQUE**

STOP USE . . . Notify downstream industrial, municipal and public users to stop water intake or to monitor water for contamination.

### **CONSEQUENCE**

Alternative water supplies may be needed to be established. Consult environmental specialists for assistance, as needed.

### **MITIGATION**

Provide alternative water supplies as needed until water supply is declared safe.

### **TECHNIQUE**

FLOATING BOOMS/BARRIERS . . . Oil spill confinement booms of compatible material may be deployed. Alternatively, mesh or nets may be strung across stream and anchored every 6-8 feet. Straw or peat placed on upstream side of mesh should absorb and retard spreading of spilled product.

### **CONSEQUENCE**

Leakage may occur under or through barrier if high waves or current present or if not properly deployed. Incompatible materials may be damaged by spilled product. Booms, barrier materials, and deployment equipment may be contaminated. Fire hazards pose risk to response personnel and equipment.

### **MITIGATION**

Proceed with caution. Stage barriers in series where necessary. Recover spilled product as soon as possible. Decontaminate equipment after use. Dispose of waste materials in proper and safe manner. Use compatible equipment. Eliminate ignition sources.



# PETROLEUM CRUDE OIL

## Class 3 (Flammable Liquid) or Combustible Liquid

### **TECHNIQUE**

**WATER UNDER-FLOW DAMS . . .** Streams may be provided with an under-flow dam. This is a dam made of compacted earth, clay, or other material with open tubes or pipes passing through under water. Upstream ends of pipes or tubes should be well below the layer of floating contaminant. Downstream ends should be at a higher elevation but still below the floating layer. Valves may be installed on downstream ends to control water flow.

### **CONSEQUENCE**

Earthen dams may become saturated with water and seep through or collapse. An insufficient number of under-flow tubes or pipes or additional water may cause overflow.

### **MITIGATION**

Use sufficient number and capacity of tubes or pipes. Be alert for conditions that may lead to overflow, saturation or dam collapse. Remove spilled product as soon as possible.

### **TECHNIQUE**

**DIVERSION . . .** Where other means are unavailable, floating slicks may be temporarily herded, diverted, or controlled using water hose streams, small boat propeller wash or chemical surface tension modifiers known as spill herders.

### **CONSEQUENCE**

Hose streams and propeller washes have limited applicability and effectiveness. The latter may cause undesired mixing of spilled product and water due to extreme agitation. Chemical spill herders should not be used until approval is obtained from authorized environmental officials.

### **MITIGATION**

Use other means if available.

### **TECHNIQUE**

**SURFACE SKIMMING . . .** Oil spill skimming devices may be deployed to recover floating petroleum crude oil.

### **CONSEQUENCE**

Incompatible equipment may be damaged. Equipment may be contaminated and pose hazard to future users. Fire hazard may pose risk to response personnel and equipment.

### **MITIGATION**

Decontaminate equipment after use. Use compatible equipment. Store recovered product in safe and secure location. Eliminate ignition sources.

### **TECHNIQUE**

**ABSORPTION . . .** Straw, hay, peat, or commercial sorbent materials compatible with petroleum crude oil may be used to absorb spilled product from the water surface, preferably after the spill has been confined.

### **CONSEQUENCE**

Once used, sorbent materials pose the same hazards as the spilled product. Their use adds to the overall volume of contaminated material. Deployment and recovery can be difficult. Fire hazards pose risk to response personnel and equipment.

### **MITIGATION**

Deplete accumulated liquid pools with pumps or vacuum trucks if possible before applying sorbents. Decontaminate equipment after use. Store and dispose of waste materials in proper and safe manner. Use compatible equipment. Eliminate ignition sources.

**Attachment 2B**  
**DOT-OST-2014-0067**  
**Emergency Response Information**  
**Source: AAR**

---

PETROLEUM CRUDE OIL 4910191  
CLASS 3 (FLAMMABLE LIQUID) UN1267

PETROLEUM CRUDE OIL IS A DARK VISCOUS LIQUID. IT HAS A FLASH POINT OF LESS THAN 141 DEG. F. IT IS LIGHTER THAN WATER AND INSOLUBLE IN WATER. ITS VAPORS ARE HEAVIER THAN AIR.

IF MATERIAL ON FIRE OR INVOLVED IN FIRE  
DO NOT EXTINGUISH FIRE UNLESS FLOW CAN BE STOPPED  
USE WATER IN FLOODING QUANTITIES AS FOG  
SOLID STREAMS OF WATER MAY SPREAD FIRE  
COOL ALL AFFECTED CONTAINERS WITH FLOODING QUANTITIES OF WATER  
APPLY WATER FROM AS FAR A DISTANCE AS POSSIBLE  
USE FOAM, DRY CHEMICAL, OR CARBON DIOXIDE

IF MATERIAL NOT ON FIRE OR NOT INVOLVED IN FIRE  
KEEP SPARKS, FLAMES, AND OTHER SOURCES OF IGNITION AWAY  
KEEP MATERIAL OUT OF WATER SOURCES AND SEWERS  
BUILD DIKES TO CONTAIN FLOW AS NECESSARY  
ATTEMPT TO STOP LEAK IF WITHOUT UNDUE PERSONNEL HAZARD  
USE WATER SPRAY TO KNOCK-DOWN VAPORS

PERSONNEL PROTECTION  
AVOID BREATHING VAPORS  
KEEP UPWIND  
WEAR APPROPRIATE CHEMICAL PROTECTIVE GLOVES, BOOTS AND GOGGLES  
DO NOT HANDLE BROKEN PACKAGES UNLESS WEARING  
APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT  
WASH AWAY ANY MATERIAL WHICH MAY HAVE CONTACTED THE BODY  
WITH COPIOUS AMOUNTS OF WATER OR SOAP AND WATER

ENVIRONMENTAL CONSIDERATIONS - LAND SPILL  
DIG A PIT, POND, LAGOON, HOLDING AREA  
TO CONTAIN LIQUID OR SOLID MATERIAL  
DIKE SURFACE FLOW USING SOIL, SAND BAGS,  
FOAMED POLYURETHANE, OR FOAMED CONCRETE  
ABSORB BULK LIQUID WITH FLY ASH, CEMENT POWDER,  
OR COMMERCIAL SORBENTS

ENVIRONMENTAL CONSIDERATIONS - WATER SPILL  
USE NATURAL BARRIERS OR OIL SPILL CONTROL BOOMS TO LIMIT SPILL TRAVEL  
REMOVE TRAPPED MATERIAL WITH SUCTION HOSES

ENVIRONMENTAL CONSIDERATIONS - AIR SPILL  
APPLY WATER SPRAY OR MIST TO KNOCK DOWN VAPORS

FIRST AID RESPONSES  
MOVE VICTIM TO FRESH AIR; CALL EMERGENCY MEDICAL CARE.  
IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION.  
IF BREATHING IS DIFFICULT, GIVE OXYGEN.  
IN CASE OF CONTACT WITH MATERIAL, IMMEDIATELY FLUSH SKIN OR EYES WITH  
RUNNING WATER FOR AT LEAST 20 MINUTES.  
REMOVE AND ISOLATE CONTAMINATED CLOTHING AND SHOES AT THE SITE.

ERG2012	<b>FLAMMABLE LIQUIDS</b> (NON-POLAR/WATER-IMMISCIBLE)	<b>GUIDE</b> <b>128</b>
<b>EMERGENCY RESPONSE</b>		
<b>FIRE</b> CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient. CAUTION: For mixtures containing alcohol or polar solvent, alcohol-resistant foam may be more effective.		
<b>Small Fire</b> <ul style="list-style-type: none"> <li>• Dry chemical, CO<sub>2</sub>, water spray or regular foam.</li> </ul>		
<b>Large Fire</b> <ul style="list-style-type: none"> <li>• Water spray, fog or regular foam.</li> <li>• Do not use straight streams.</li> <li>• Move containers from fire area if you can do it without risk.</li> </ul>		
<b>Fire involving Tanks or Car/Trailer Loads</b> <ul style="list-style-type: none"> <li>• Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.</li> <li>• Cool containers with flooding quantities of water until well after fire is out.</li> <li>• Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.</li> <li>• ALWAYS stay away from tanks engulfed in fire.</li> <li>• For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.</li> </ul>		
<b>SPILL OR LEAK</b>		
<ul style="list-style-type: none"> <li>• ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).</li> <li>• All equipment used when handling the product must be grounded.</li> <li>• Do not touch or walk through spilled material.</li> <li>• Stop leak if you can do it without risk.</li> <li>• Prevent entry into waterways, sewers, basements or confined areas.</li> <li>• A vapor suppressing foam may be used to reduce vapors.</li> <li>• Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.</li> <li>• Use clean non-sparking tools to collect absorbed material.</li> </ul>		
<b>Large Spill</b> <ul style="list-style-type: none"> <li>• Dike far ahead of liquid spill for later disposal.</li> <li>• Water spray may reduce vapor; but may not prevent ignition in closed spaces.</li> </ul>		
<b>FIRST AID</b>		
<ul style="list-style-type: none"> <li>• Move victim to fresh air.</li> <li>• Call 911 or emergency medical service.</li> <li>• Give artificial respiration if victim is not breathing.</li> <li>• Administer oxygen if breathing is difficult.</li> <li>• Remove and isolate contaminated clothing and shoes.</li> <li>• In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.</li> <li>• Wash skin with soap and water.</li> <li>• In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.</li> <li>• Keep victim warm and quiet.</li> <li>• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.</li> </ul>		
Page 195		

GUIDE	<b>FLAMMABLE LIQUIDS</b> (NON-POLAR/WATER-IMMISCIBLE)	<b>ERG2012</b>
128		
<b>POTENTIAL HAZARDS</b>		
<b>FIRE OR EXPLOSION</b> <ul style="list-style-type: none"> <li>• <b>HIGHLY FLAMMABLE:</b> Will be easily ignited by heat, sparks or flames.</li> <li>• Vapors may form explosive mixtures with air.</li> <li>• Vapors may travel to source of ignition and flash back.</li> <li>• Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).</li> <li>• Vapor explosion hazard indoors, outdoors or in sewers.</li> <li>• Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.</li> <li>• Runoff to sewer may create fire or explosion hazard.</li> <li>• Containers may explode when heated.</li> <li>• Many liquids are lighter than water.</li> <li>• Substance may be transported hot.</li> <li>• For UN3166, if Lithium ion batteries are involved, also consult GUIDE 147.</li> <li>• <b>If molten aluminum is involved, refer to GUIDE 169.</b></li> </ul>		
<b>HEALTH</b>		
<ul style="list-style-type: none"> <li>• Inhalation or contact with material may irritate or burn skin and eyes.</li> <li>• Fire may produce irritating, corrosive and/or toxic gases.</li> <li>• Vapors may cause dizziness or suffocation.</li> <li>• Runoff from fire control or dilution water may cause pollution.</li> </ul>		
<b>PUBLIC SAFETY</b>		
<ul style="list-style-type: none"> <li>• <b>CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.</b></li> <li>• As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.</li> <li>• Keep unauthorized personnel away.</li> <li>• Stay upwind.</li> <li>• Keep out of low areas.</li> <li>• Ventilate closed spaces before entering.</li> </ul>		
<b>PROTECTIVE CLOTHING</b>		
<ul style="list-style-type: none"> <li>• Wear positive pressure self-contained breathing apparatus (SCBA).</li> <li>• Structural firefighters' protective clothing will only provide limited protection.</li> </ul>		
<b>EVACUATION</b>		
<b>Large Spill</b> <ul style="list-style-type: none"> <li>• Consider initial downwind evacuation for at least 300 meters (1000 feet).</li> </ul>		
<b>Fire</b> <ul style="list-style-type: none"> <li>• If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.</li> </ul>		
Page 194		