



# NOTIFICATION

**Bakken Crude Oil Shipment  
forwarded from  
Virginia Emergency  
Operations Center (VEOC)  
DATE: June 13 2014**

## DISTRIBUTION LIST

- ☒ LOCAL EM COORDINATOR
- ☒ LOCAL HAZMAT COORDINATOR
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- ☒ VDEM HAZMAT and LSS
- ☒ VERC AGENCIES
- ☒ SECRETARY PS/HS and SEC. TRANSPORTATION

Questions, contact the VEOC at 804-674-2400 or [veoc@vdem.virginia.gov](mailto:veoc@vdem.virginia.gov)



**COMMONWEALTH of VIRGINIA**  
*Department of Emergency Management*

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June 13, 2014

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M E M O R A N D U M

To: Local Government Emergency Management Coordinators  
Local Government HAZMAT Coordinators  
Local Government Public Safety Answering Points (PSAP)  
VDEM Technological Hazards Division  
VDEM Local Support Services Division  
Virginia Emergency Response Council Agencies  
Secretariat of Public Safety and Homeland Security  
Governor's Office

From: Jeffrey D. Stern 

Subject: First Bakken Crude Oil Shipment Notification

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Included with this memorandum is the first notification the Virginia Emergency Response Council (VERC) has received regarding the shipment of Bakken crude oil by rail in the Commonwealth.

On May 7, 2014, the U.S. Department of Transportation (USDOT) issued an emergency order requiring railroads operating trains containing more than one million gallons (1,000,000) of Bakken crude oil to notify state emergency response commissions. Notification must include the estimated volume of crude oil being transported, frequency of anticipated train traffic, and the route through which the crude oil will be transported. In Virginia, the VERC serves as our state emergency response commission, and VDEM serves as the chair of VERC. The USDOT emergency order can be viewed at: <http://www.dot.gov/briefing-room/emergency-order>.

Currently, CSX is the only company that has notified the VERC that it transports Bakken crude oil in this quantity in the Commonwealth of Virginia. CSX has provided VDEM with very basic notification information. Two pages of this notification have been labeled as business sensitive and proprietary by CSX. VDEM signed a non-disclosure agreement (NDA) with CSX after review by the Attorney General's office. CSX remains responsible for determining what they consider business sensitive and proprietary, not the Commonwealth. VDEM is passing on the entire CSX notification package to you, including the proprietary information, as we have determined you are an authority responsible for preparedness or response to rail incidents or accidents and have a need to know this information. VDEM is not asking you to sign this NDA. We are simply passing it on as part of the entire package and ask you to treat marked information on a need-to-know basis. As you will find, this proprietary information has already been disclosed in the public domain, and I have asked CSX to remove the proprietary markings to remove the perception that anything is being kept from response authorities or the public.

We are currently reviewing the safety information that CSX has provided with subject matter experts from VDEM, the Virginia Department of Fire Programs, and other response agencies. If you identify any concerns or issues with the information CSX has provided, or have other comments or questions, please report those issues to our point of contact at VDEM, Brookie Crawford, at [brookie.crawford@vdem.virginia.gov](mailto:brookie.crawford@vdem.virginia.gov).

VDEM will be asking CSX if it can provide more detailed information on specific railroad response assets and contact information that can be passed to local incident commanders and emergency planners. VDEM will also be requesting CSX to work with us to develop a procedure so communities can notify CSX of special events, allowing CSX to modify train schedules to avoid crude oil shipments at those times. It is a sensible mitigation measure and VDEM will advocate for developing such a procedure.

VDEM expects to receive and forward these notifications on a quarterly basis for as long as the emergency order from USDOT is in place. You will receive the notification as an alert email via the StateWide Alert Network (SWAN). VDEM will adjust these notification procedures if needed, based upon your feedback. Please let us know if any additional local response authorities should be added to this notification list.

VDEM has identified the following communities along the current shipping route that have a need to know about these shipments; we will send these notifications to the local emergency managers, local hazmat coordinators, and local 9-1-1 public safety answering points:

- Albemarle County
- Alleghany County
- Amherst County
- Appomattox County
- Bedford County
- Botetourt County
- Buckingham County

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- Campbell County
- Charles City County
- Chesterfield County
- Town of Clifton Forge
- City of Covington
- Cumberland County
- Fluvanna County
- Goochland County
- Henrico County
- James City County
- City of Lynchburg
- Nelson County
- New Kent County
- City of Newport News
- Powhatan County
- City of Richmond
- Rockbridge County
- City of Williamsburg
- York County

As you are aware, a 105-car CSX train carrying Bakken crude oil derailed in downtown Lynchburg on April 30, 2014. This train was carrying approximately 3,000,000 gallons of oil. A total of 17 tank cars derailed, and three of them ended up partially submerged in the James River. The derailment led to a large fire and release of oil into the river. This spill was the latest in a series of high profile accidents involved crude oil in the U.S. Therefore, VDEM has added communities that border the James River to this list, even if your community does not have the CSX railroad track within its border.

Virginia has responded to aftermath of the Lynchburg train crash and USDOT emergency order aggressively. Governor Terry McAuliffe has established a Rail Safety and Security Task Force, led by Secretary of Public Safety and Homeland Security Brian Moran and Secretary of Transportation Aubrey Layne. The task force held its first meeting on June 4. As part of the Rail Safety and Security Task Force efforts, we will begin to work with you to reassess response capabilities for rail emergencies in your communities. VDEM looks forward to working with you to reduce the risk posed by the routine transport of hazardous materials in the Commonwealth. VDEM's Technological Hazards Division and Local Support Services Division staffs are available for additional questions.

No response procedures are changing at this time, and our VDEM Watch Center at the VEOC remains our 24/7 point of contact at [VEOC@vdem.virginia.gov](mailto:VEOC@vdem.virginia.gov) or 804-674-2400 for emergency incidents.

JDS





# CSX Transportation

## Response to:

DOT May 7, 2014

Emergency Restriction/  
Prohibition Order

Transport of  
Bakken Crude Oil in  
Virginia

Prepared for:  
Virginia Emergency  
Response Commission  
June 3, 2014







## To the State Emergency Response Commission of Virginia:

As you may already be aware, the U.S. Department of Transportation (“DOT”) issued an emergency order on May 7, 2014, that requires railroads to provide certain information in writing to the State Emergency Response Commission (“SERC”) in each state in which it operates trains transporting 1,000,000 gallons or more of Bakken crude oil (hereafter “Bakken crude oil unit trains”). Railroads are required to provide the information to the state SERC within 30 days of the May 7 DOT emergency order.

In accordance with the DOT emergency order, CSX is submitting the following information to the SERC regarding the transportation of Bakken crude oil unit trains through your state.

- The estimated number of trains that travel each week through each county in the State or Commonwealth meeting the 1,000,000 gallons or greater threshold (Exhibit 2).
- The routes over which CSX moves Bakken crude oil unit trains in each county of the State or Commonwealth as required in the DOT emergency order (Exhibit 2).
- The description of the petroleum crude oil expected to be moved through each county in the State or Commonwealth as required in 49 CFR part 172, subpart C (Exhibit 3).
- A CSX point of contact that the SERC and emergency responders can call for information about the transportation of Bakken crude oil by CSX (Exhibit 3).
- Applicable emergency response information as required by 49 CFR part 172, subpart G (Exhibits 4-6).

DOT has determined that the information included in Exhibit 2 of this document contains highly confidential and sensitive business information that can only be shared with individuals with a need-to-know. (See *DOT Frequently Asked Questions on DOT’s May 7, 2014 Emergency Order Regarding Notification to Communities of Bakken Crude Oil Shipments* published on FRA’s website on May 23, 2014). Specifically, DOT states that it “expects the SERCs to treat this data as confidential, providing it only to those with a need-to-know, and with the understanding that recipients of the data will continue to treat it as confidential.” Additionally, DOT states that “railroads may require reasonable confidentiality agreements prior to providing this information.”



Therefore, in accordance with DOT's guidance, we have included CSX's requirements (Exhibit I) for safeguarding and sharing this sensitive and confidential proprietary business information with county emergency management or planning agency officials that have a need-to-know within the State or Commonwealth. Please note you can share the attachment containing the information described above in its entirety with the appropriate county emergency management or planning agency officials under the terms of CSX's confidentiality requirements in Exhibit I. You may also share this information with the appropriate Tribal Emergency Response Commissions (TERCs) under the same confidentiality terms.

In addition to the information specifically required by the DOT emergency order, CSX is also including some additional emergency planning and response information that we hope will provide additional value in responding to a train-related emergency. Also enclosed are:

- The CSX Community Awareness and Emergency Planning Guide for railroad emergencies (Exhibit 7).
- The CSX Emergency Response to Unit Train Incidents Guidebook (Exhibit 8).

Finally, upon written request from the SERC, CSX will provide additional hard copies of this information to the SERC for distribution to the appropriate county emergency management and/or emergency planning officials within your state or commonwealth that have a need-to-know.

CSX has, for many years, provided community emergency response agencies with information and training to address a rail-related emergency. At CSX, we are committed to the safe transportation of hazardous materials by rail, and we remain dedicated to educating our communities and first responders about rail emergency preparedness programs.

We appreciate your assistance in this effort. Should you have any questions or concerns, please contact me at 904-366-5815.

Sincerely,

Romano De Simone  
Director Hazardous Materials  
CSX Transportation



**EXHIBIT I**

## **CSX Guidelines for Handling Sensitive and Confidential Proprietary Business Information**

The information being provided to you in accordance with the May 7, 2014 DOT emergency order contains highly sensitive and confidential proprietary business information. It also includes highly sensitive confidential routing information regarding the transportation of Bakken crude oil unit trains in your state or commonwealth that could be detrimental to transportation security and public safety if publicly disclosed. In accordance with DOT guidance (see *Frequently Asked Questions on DOT's May 7, 2014 Emergency Order Regarding Notification to Communities of Bakken Crude Oil Shipments* published on FRA's website on May 23, 2014), the SERC must treat this information as confidential, providing it only to those with a need-to-know, and with the understanding that recipients of the information will continue to treat it as confidential. Therefore, CSX is submitting the attached information to the Virginia SERC under the following terms and conditions:

1. The SERC shall restrict the disclosure of the attached information to only emergency response officials and/or emergency management agencies that have a legitimate need-to-know the information for purposes of emergency response planning;
2. The SERC shall prohibit the disclosure of the attached information to the general public;
3. The SERC shall not post the attached information on any website, including its intranet, or otherwise make the information available through electronic means in a manner that could lead to its disclosure to unauthorized individuals;
4. The SERC shall not provide the attached information in response to any Freedom of Information Act (FOIA) request or similar state or federal public records act request without either the prior written consent of CSX or providing CSX with a reasonable opportunity to respond to the request and seek protection or other relief from state or federal court; for access to or release of the attached information; and
5. The SERC shall make each county or other emergency management agency and/or emergency response official that receives a copy of the attached information aware of the confidentiality and limitations on use of the information as set forth in this letter.

CSX requests that you acknowledge the confidentiality restrictions set forth in this letter by signing the space provided below and promptly returning a copy via fax to 904-245-2867 or email to Romano\_DeSimone@CSX.com by July 10, 2014. Please note CSX will not provide any updates regarding the transportation of Bakken crude oil unit trains through your State or Commonwealth until we have received a fully executed copy of this letter agreement.

Accepted and agreed by:

**VIRGINIA STATE EMERGENCY RESPONSE COMMISSION**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





**EXHIBIT 2**

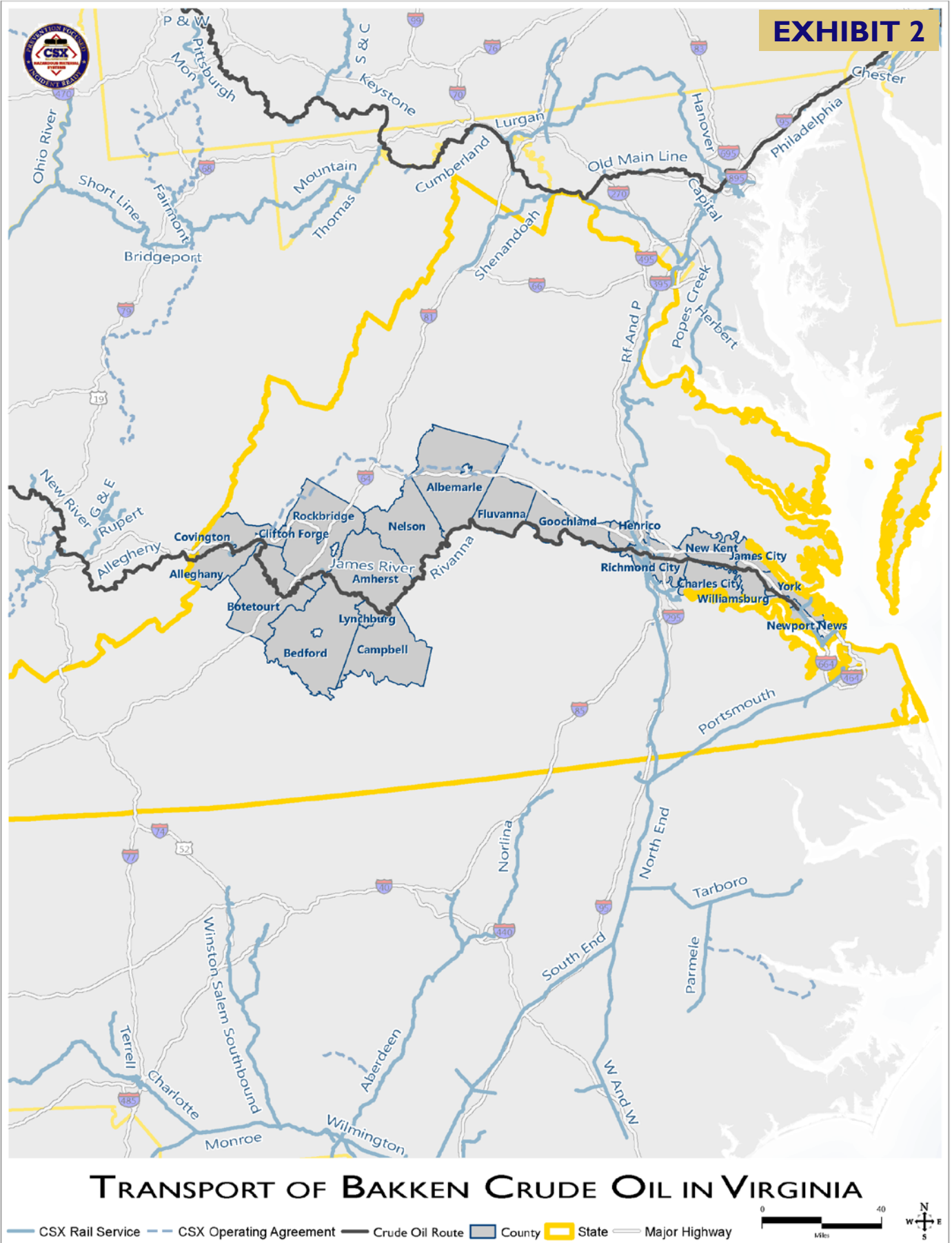
## Bakken Crude Oil Transport in Virginia by County

In Virginia, CSX transports crude oil in 20 counties. The estimated weekly average numbers listed below represent those trains that are transporting 1,000,000 gallons or more of Bakken crude.

County	Route Name (Subdivision)	Estimated Number of Trains: Weekly Average	Miles of Track
Albemarle	Rivanna	2 – 5	11.81
Alleghany	Allegheny	2 – 5	44.66
	James River	2 – 5	3.71
Amherst	James River	2 – 5	27.12
Bedford	James River	2 – 5	18.93
Botetourt	James River	2 – 5	44.57
Campbell	James River	2 – 5	9.50
Charles City	Peninsula	2 – 5	3.88
Covington	Allegheny	2 – 5	5.58
Fluvanna	Rivanna	2 – 5	26.77
Goochland	Rivanna	2 – 5	43.46
Henrico	Peninsula	2 – 5	19.87
	Rivanna	2 – 5	7.12
James City	Peninsula	2 – 5	27.77
Lynchburg	James River	2 – 5	13.55
Nelson	James River	2 – 5	2.19
	Rivanna	2 – 5	33.13
New Kent	Peninsula	2 – 5	13.06
Newport News	Peninsula	2 – 5	7.63
Richmond City	Peninsula	2 – 5	2.66
	Rivanna	2 – 5	13.15
Rockbridge	James River	2 – 5	9.99
Williamsburg	Peninsula	2 – 5	6.96
York	Peninsula	2 – 5	6.37

**Warning:** This record contains confidential security and proprietary business information of CSX. In accordance with the U.S. Department of Transportation guidelines, use and disclosure of this record is restricted to only state and local emergency management agencies or emergency response officials that have a legitimate “need to know” the information for purposes of emergency response planning. (See DOT Frequently Asked Questions on DOT’s May 7, 2014 Emergency Order Regarding Notification to Communities of Bakken Crude Oil Shipments published on FRA’s website on May 23, 2014). Public disclosure of this record is strictly prohibited without the express prior written permission of CSX Transportation.

**EXHIBIT 2**

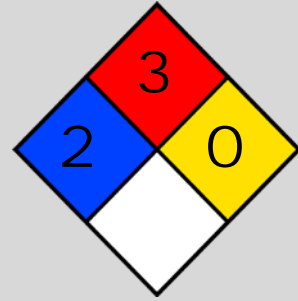




**EXHIBIT 3**

## Petroleum Crude Oil

UN #: 1267  
DOT Hazard Class: 3  
Packing Group(s): I, II, III\*  
Emergency Response Guidebook 128\*\*



### CSX Transportation Point of Contact

**Mr. Romano De Simone**  
Director Hazardous Materials



500 Water Street, J -275  
Jacksonville, FL 32202



904-366-5815



Romano\_Desimone@csx.com



**To report a CSX railroad emergency, call  
CSX's Public Safety Coordination Center  
(PSCC) immediately at 800-232-0144.**

\*Source: 2014 United States Department of Transportation Emergency Order DOT-OST-2014-0025, dated March 6, 2014. Petroleum Crude Oil in bulk quantities can only be shipped under Packing Group (PG) I or II hazardous material only.

\*\*Source: 2014 Emergency Response Guidebook. Published by U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration; Transport Canada; Secretariat of Transport and Communications.





## EXHIBIT 4

### Hazardous Special Handling Instructions\*

#### Emergency Handling Precautions – Hazardous Commodity – Class 3 (Flammable Liquid)

**Petroleum Crude Oil** is a dark, viscous liquid. It has a flash point of less than 141° Fahrenheit. It is lighter than water and insoluble in water. Its vapors are heavier than air.

**If Material Is 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 Is NOT On Fire Or 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 it can be done 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, or 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.

\* **Source:** Emergency Handling of Hazardous Materials in Surface Transportation, published by Bureau of Explosives, Association of American Railroads, 1987.



## EXHIBIT 5

# Petroleum Crude Oil

Emergency Response Guidebook 128\* : Flammable Liquid – Non-Polar/Water-Immiscible

### POTENTIAL HAZARDS

#### FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors, or in sewers.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.
- Substance may be transported hot.
- For UN3166, if Lithium ion batteries are involved, also consult GUIDE 147.
- **If molten aluminum is involved, refer to GUIDE 169.**

#### HEALTH

- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire may produce irritating, corrosive, and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

### PUBLIC SAFETY

- **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.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

#### PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

#### EVACUATION

##### Large Spill

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

##### Fire

- 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.

\*Source: 2012 Emergency Response Guidebook. Published by U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration; Transport Canada; Secretariat of Transport and Communications.



**EXHIBIT 5**

## Petroleum Crude Oil (*continued*)

Emergency Response Guidebook 128 : Flammable Liquid – Non-Polar/Water-Immiscible

### EMERGENCY RESPONSE

#### FIRE

**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.

##### Small Fire

- Dry chemical, CO<sub>2</sub>, water spray, or regular foam.

##### Large Fire

- Water spray, fog, or regular foam.
- **Do not use straight streams.**
- Move containers from fire area if you can do it without risk.

##### Fire Involving Tanks and/or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

#### SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks, or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements, or confined areas.
- A vapor-suppressing foam may be used to reduce vapors.
- Absorb or cover with dry earth, sand, or other non-combustible material and transfer to containers.
- Use clean non-sparking tools to collect absorbed material.

##### Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor; but may not prevent ignition in closed space.

#### FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water.
- Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.





## EXHIBIT 6

# Crude Oil Emergency Action Guide\*

## 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.

\*Source: Emergency Action Guides, published by Bureau of Explosives, Association of American Railroads, 2003



## EXHIBIT 6

### Crude Oil Emergency Action Guide (continued)

<b>PETROLEUM CRUDE OIL</b> Class 3 (Flammable Liquid) or Combustible Liquid	
	
or	or
	
<b>POTENTIAL HAZARDS</b>	
<b>GENERAL HAZARDS</b>	
<i>Threshold Odor Concentration:</i> Varies	
<i>Unusual Hazards:</i> 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).	
<i>Short Term Exposure Limit (STEL):</i> Unavailable	
<i>Time Weighted Average (TLV-TWA):</i> 86 ppm (350 mg/m <sup>3</sup> ) (Petroleum distillates).	
<i>Ceiling (C) Limit:</i> 444 ppm (1800 mg/m <sup>3</sup> ) (Petroleum distillates).	
<i>IDLH:</i> 1100 ppm or 10% LEL (Petroleum distillates).	
<i>Conditions to Avoid:</i> Heat, fire, or sparks; contact with incompatible materials; runoff to sewers or water bodies; inhalation, ingestion, or direct physical contact.	
<b>HEALTH HAZARDS</b>	
<i>Public Health Hazards:</i> 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.)	
<i>Hazards of Skin or Eye Contact:</i> 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.	
<i>Hazards of Inhalation:</i> 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.	
<i>Hazards of Ingestion:</i> 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.	
<b>FIRE HAZARDS</b>	
<i>Lower Flammable Limit:</i> 0.4%	
<i>Upper Flammable Limit:</i> 15%	
<i>Behavior in Fire:</i> 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.	
<i>Hazardous Decomposition Products:</i> Not well-defined, may include toxic constituents such as carbon monoxide, carbon dioxide, oxides of sulfur and reactive hydrocarbons.	
<b>EXPLOSION HAZARDS</b>	
<i>Explosive Potential:</i> 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.	



**EXHIBIT 6**

## Crude Oil Emergency Action Guide (continued)

**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®, 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.





**EXHIBIT 6**

## Crude Oil Emergency Action Guide (*continued*)

### **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 if 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.



**EXHIBIT 6**

## Crude Oil Emergency Action Guide (*continued*)

### **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.



**EXHIBIT 6**

## Crude Oil Emergency Action Guide (*continued*)

### **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.