



SAFETY ON SCENE



Bakken Crude Oil – Rail Response Considerations

The [Pipeline and Hazardous Materials Safety Administration](#) (PHMSA) has issued a [safety alert](#) to notify emergency responders that recent derailments and resulting fires indicate that the crude oil originating in the Bakken region may be more flammable than crude oil from other regions. The IAFC Hazmat Committee and Industrial Section have prepared this briefing for IAFC members and other first responders.

The Issues and Response

- ❑ Current capacity of existing pipelines has been unable to keep up with the growing crude oil supply forcing more crude shipments by rail.
- ❑ There have been a number of major derailments involving tank cars containing crude oil in the past year.
- ❑ Bakken Crude is very light crude. Its flashpoint and boiling points may be lower than other traditional light crude oil.
- ❑ First responders should check with local rail carriers, storage, and refining facilities in their response areas to see if this type of crude oil is moving through or into their area.
- ❑ If shipments of flammable liquids are moving through your response area, first responders should pre-plan for the possibility of an emergency incident, which may include:
 - Rail events involving the derailment of tank cars.
 - Highway events involving the rollover of cargo tank trucks.
 - Fixed facility events involving a release from storage tanks or pipelines.
- ❑ "PHMSA stresses the importance of appropriate classification and packing group (PG) assignment of crude oil shipments, whether the shipment is in a cargo tank, rail tank car or other mode of transportation. Emergency responders should remember that light sweet crude oil, such as that coming from the Bakken region, is typically assigned a packing group I or II. The PGs mean that the material's flashpoint is below 73 degrees Fahrenheit and, for packing group I materials, the boiling point is below 95 degrees Fahrenheit. This means the materials pose significant fire risk if released from the package in an accident."
- ❑ If Bakken crude is involved in an incident, use caution in reviewing the shipping documents (shipping papers, manifests, etc.) due to the possibility that the flash points and/or boiling points may be classified incorrectly – lower temperature points may be more appropriate.
- ❑ Tank cars of crude oil that are on fire and cars adjacent to other cars that are on fire should be cooled at the vapor space with unmanned hoselines to prevent heat induced tears.
- ❑ When operating near a crude oil fire or spill emergency scene first responders should wear the appropriate PPE and respiratory protection. All crude oils contain a percentage of benzene which is a known carcinogen and a percentage of hydrogen sulfide which is a toxic and flammable gas.
- ❑ Crude oil is lighter than water and will float on the surface. Spills near waterways may spread rapidly especially in moving water situations. Containment booms may need to be deployed quickly.

- ❑ Weather conditions can affect the response to crude oil emergencies. Warmer temperatures can cause crude to vaporize quickly and migrate creating additional concerns.

Responder Preparedness

Pre-incident planning of crude oil movement will provide a mechanism for making effective and informed decisions in advance of an emergency. It allows responders to gather valuable information prior to an emergency. Periodic review will provide timely and accurate information that can be useful during a hazardous materials emergency. Pre-planning provides a tool for response agencies to begin the collaborative process of emergency planning.

Responders should develop comprehensive hazardous materials pre-plans for transportation emergencies involving both rail and over the road as well as the potential impact on towns, communities, and facilities where those products are moved or handled. Important preparedness elements include:

- ❑ Emergency contacts and notifications
- ❑ Location/exposures
- ❑ Emergency response resources
- ❑ Type of construction
- ❑ Type of business/process
- ❑ Water supply
- ❑ Facility access
- ❑ Communications and security
- ❑ Electrical/gas shutoffs
- ❑ Water shutoffs and sprinklers
- ❑ Location/type/quantity of chemicals and their hazards
- ❑ Emergency medical support availability
- ❑ Work schedules/number of employees on site
- ❑ Emergency resources on site
- ❑ Contingency plans for fixed facilities
- ❑ Protective clothing available on site
- ❑ Vulnerability of surrounding area/ability to evacuate
- ❑ Adjacent facilities and other exposures that cannot be evacuated or shut down
- ❑ Compatibility of resources
- ❑ Waterways and storm sewers, particularly those that empty into a waterway
- ❑ Public information and notification plans

In the past, traditional heavy crude emergency incidents were considered a low probability – high consequence for rail and over the road events since the majority of crude was transported through the pipeline system. Now that production has increased, especially light sweet crude from the Bakken region, more crude oil is being transported by rail and cargo tank truck. Hence, crude oil emergency incidents have now become a higher probability-high consequence event.

First responders must remain vigilant of the type and amount of crude oil passing through their response area. An understanding of the chemical properties of this type of light sweet crude oil is paramount. PHMSA and the FRA have stressed to the providers of crude oil to make sure that the information provided on their shipping documents and the placarding of cars is appropriate for the characteristics of the product. PHMSA will be conducting tests on the chemical properties of this type of crude oil to assist in determining the suitable shipping information.

[Go to the DOT PHMSA safety alert](#)