

# Oil and Hazardous Substance Rail Transportation Fact Sheet

## CRUDE OIL BY RAIL

Much of America's expansion of its crude oil production relies on rail transportation due to limited pipelines. Since 2008, the United States has seen an increase in crude oil production of over 170% with the state of North Dakota seeing over 600% growth. Over this same time period, U.S. crude oil transportation by rail has increased from 9,500 carloads in 2008 to nearly 500,000 carloads in 2014.

According to the American Association of Railroads (AAR) 99.9% of all hazardous materials rail shipments, including crude oil, arrive at their destination without incident. Since 2013 there have been 23 crude-related train accidents in the United States with the majority of incidents occurring without the release of any crude oil product. Nevertheless, rail incidents are rare but have significant consequences when they occur.

## CRUDE OIL TRAIN ACCIDENTS

Crude Oil Trains are a particularly problematic hazard due to the amount of oil transported on a unit train (a 100 car train may have over 3.5 million gallons of crude oil on board). Petroleum crude oil is a liquid hydrocarbon containing flammable gasses. While it is not a uniform substance and its physical and chemical properties may vary, the type of crude oil being transported through Minneapolis may contain flammable gasses such as butane and propane which can readily ignite if released. These crude oils may also contain hydrogen sulfide, a toxic inhalation hazard material, in the vapor space of the tank car. Due to the characteristics of crude oil, in an accident scenario, the behavior of this product may range from that of gasoline for the lighter (sweet) crude oils to diesel fuel for the heavier (sour) crude oils.

## OTHER HAZARDOUS MATERIALS- RAIL

Cargo trains include a variety of chemical cargo that is classified as hazardous materials. These include flammable substances with similar characteristics as those described above and other chemicals that present more of an environmental and public health hazard.

## WHAT IS THE RISK?

Crude oil, like gasoline and other hydrocarbons, is flammable. The U.S. Department of Transportation classifies crude oil as a Class 3 material – the designation for flammable liquids.

In the event of an accident and derailment, thousands of gallons of this volatile petroleum product may be discharged into the environment, including waterways. If there is an ignition of the product involving tank cars of crude oil unit train, the resulting fire and explosion potential is extreme.

In addition to the hazard of flammability, releases may create vapor/air explosion hazards indoors, in confined spaces, outdoors, or in sewers. Volatile vapors released from the spill area may create flammable atmospheres. Some crude oil vapors may be heavier than air and accumulate in low areas, and travel some distance to a source of ignition and flash back.

The more volatile materials in crude oil may be present in air in high concentrations creating an inhalation hazard. There is also the possibility that the crude oil may contain varying concentrations of benzene or hydrogen sulfide. Products of combustion may also include toxic constituents contributing to the inhalation hazard.

A crude oil unit train derailment will have the potential to impact a wide area with devastating consequences including pollution, fire and explosion. Explosions, typically a "boiling liquid, expanding vapor explosion" (BLEVE) can be catastrophic.

The response to an oil train accident will require a significant amount of resources and specialized outside resources meaning that it will take longer to bring the incident under control.

## DID YOU KNOW?

Rail and pipeline safety legislation was passed by the Minnesota Legislature and signed by Gov. Mark

Dayton in 2014. The new law includes increased oversight of railroad companies, requires more railway inspections and provides for better emergency response training and preparedness in communities across Minnesota.

## FACT CHECK

### Petroleum Crude Oil

DOT Hazard Class: 3

### FLAMMABLE LIQUID

ERG Guide No. 128

Hazard Rating = High



*DOT Hazard Classification and NFPA 704 - Standard System for the Identification of the Hazards of Materials for Emergency Response*

## RECEIVE ALERTS

How will you receive alerts, warnings and official information and instructions?

Minneapolis uses the SwiftReach notification system to alert residents of rail incidents and other emergencies that impact your neighborhood. The alerts will tell you the type of warning, the affected area, and the expected duration of the event.

With SwiftReach, residents will:

- Receive calls with information specific to your address
- Get notified of emergencies by phone
- Deaf or hard of hearing: get emergency messages sent to your TTY/TDD phones

If you are not receiving these calls, register now at

<http://www.ci.minneapolis.mn.us/subscriptions/>

In addition, public safety officials will use local media outlets to disseminate public safety messages and directions.

## WORDS TO KNOW

- **Shelter In Place** - Means to take immediate shelter where you are—at home, work, school, or in between - and do not go outside of the building you are currently in. It may also mean "seal the room;" in other words, take steps to prevent outside air from coming in. You may be instructed to "shelter-in-place" by local authorities if chemical contaminants are released into the environment. It is important to listen to TV or radio to understand whether the authorities wish you to merely remain indoors or to take additional steps to protect yourself and your family.
- **Evacuation** - Some kinds of chemical accidents, such as a train derailments, may make staying at your current location dangerous. In such cases, it may be safer for you to evacuate, or leave the immediate area. You may need to go to an emergency shelter after you leave the immediate area if you have no other place to go.

## OIL AND HAZARDOUS SUBSTANCE RAIL TRANSPORTATION DO'S AND DON'TS

### Do

- Maintain an evacuation kit and shelter in place supplies
- Listen for official notification and warnings
- Obey official instructions to shelter in place / evacuate
- Avoid smoke and chemical exposure:
  - Breathing the chemical
  - Swallowing contaminated food, water, or medication
  - Touching the chemical, or coming into contact with clothing or things that have touched the chemical

### Do Not

- Re-enter the area until officials have issued all clear to do so
- Attempt clean up unless you have proper training, materials supplies, personal protection clothing/ equipment

## BE PREPARED

### Before

Build an emergency kit. Make a family emergency plan to include communications plan and reunification. Tell all family members if you hear of a rail incident on the TV or radio. If you reside within a rail corridor maintain a household evacuation kit. (See our website below for more information and tools.) Think about where you would go if ordered to evacuate.

### During

Listen to authorities and public safety officials for directions and safety precautions if there is an active rail incident. Public safety officials will be making public safety announcements that will help guide your decisions. They may ask you to shelter in place, or evacuate depending on the circumstances. Activate your family emergency plan and evacuation kit.

### After

Stay away from the incident area until specifically given authorization to return to the area. Upon returning to the area, be aware of any new hazards that may be in the area and report them in needed.

### **SUGGESTED ITEMS TO TAKE DURING AN EVACUATION**

The Minneapolis Office of Emergency Management provides the following list of suggested items that the public should take with them during an evacuation:

- Cash and Credit Cards
- Important Documents
  - Social Security Cards
  - Driver's License
  - Passport
  - Medical Records
  - Insurance Information
  - Deeds
  - Titles
  - Most Recent Tax Returns
- Names, Addresses, and Telephone Numbers of Doctors and Pharmacists
- Change of Clothing for each Family Member
- Family Photos
- Baby Items
- Special Needs Items
  - Wheelchair
  - Medications
  - Canes
- Personal Hygiene Items
  - Toothbrush and Toothpaste
  - Shampoo
  - Lotion
  - Soap
  - Deodorant
  - Kleenex
  - Essential medicines and eyeglasses
  - Feminine hygiene supplies
  - Other personal hygiene supplies (based on individual needs)
  - Diapers
  - Formula
  - Food
  - Change of Clothing
- Pet Care Items
  - Identification
  - Immunizations
  - Carrier or Cage
  - Muzzle or Leash
  - Food