



# NTSB 2015 MOST WANTED TRANSPORTATION SAFETY IMPROVEMENTS

## IMPROVE RAIL TANK CAR SAFETY

### *What is the issue?*

More crude oil and ethanol than ever is moving across America's rails. But accidents demonstrate that the DOT-111 tank cars moving these flammable liquids are not up to the task.

Changes to the North American energy landscape have pressed the railroads into service as never before as carriers of energy products. In 2009, more than 10,000 tank cars transported crude oil. In 2013, that number increased to nearly 500,000. And, in 2013, more than 290,000 tank cars transported ethanol. The routes from new crude oil extraction sites are not connected by pipeline to refineries but were built decades ago to accommodate yesterday's energy map.

So the crude oil used to make the gasoline or diesel fuel powering your car or the fuel oil heating your home, increasingly, gets to the refinery by rail. The ethanol that is blended with your gas gets there by rail too. Often providers ship them in "unit trains" which can be a mile long that travel alongside highways and houses.

These changes to the North American energy landscape provide many more chances for fires, explosions, and releases of flammable liquids, and the proliferation of unit trains provides more fuel for any fire that does happen.

DOT-111 tank cars, the "workhorse" of the industry, are the most common rail tank car in use. The NTSB has identified a number of vulnerabilities in DOT-111 tank car design with respect to tank heads, shells, and fittings. These vulnerabilities create the risk that, in an accident, hazardous materials could be released and, in the case of flammable liquids such as crude oil and ethanol, could ignite and cause catastrophic damage.

On July 6, 2013, a 4,700-foot-long train that contained 72 DOT-111 tank cars loaded with crude oil from the Bakken fields derailed in Lac-Mégantic, Quebec. At least 60 cars released an estimated 1.6 million gallons of crude oil, which triggered an intense fire. The fire engulfed the surrounding area and completely destroyed buildings and property. Forty-seven people died.

The NTSB assisted Canada's Transportation Safety Board with its investigation of this event, and has investigated many other accidents involving the rupture of DOT-111 tank cars carrying hazardous materials here in the U.S.

For example, on December 30, 2013, a BNSF Railway Company crude oil unit train derailed near Casselton, North Dakota, after striking another train. Several DOT-111 tanks cars ruptured resulting in violent, fiery eruptions. The toxic smoke forced a temporary evacuation of the town.

On June 19, 2009, a train derailed and caught fire in Cherry Valley, Illinois, killing one person, injuring nine others, and forcing the evacuation of 600 houses. Thirteen of 19 derailed DOT-111 tank cars ruptured, releasing about 324,000 gallons of ethanol.

These are just two examples of many accidents that have occurred. Regulators and industry must act to prevent more, and to enable the best emergency response to any such accidents that occur.



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### *What can be done?*

With more than 100,000 DOT-111 cars currently in use according to the Railway Supply Institute, it's crucial to strengthen existing rail tank cars and new rail tank car regulatory requirements. The NTSB recommends enhanced tank head and shell puncture-resistance systems and top fittings protection.

Preventing tragedies similar to Lac-Mégantic and Cherry Valley will require a systems approach that keeps trains from derailing, especially in sensitive areas, and preserves tank car integrity if a derailment occurs. Adequate emergency preparedness is also crucial.

One of the first steps industry can take is to appropriately plan and select routes to minimize the amount of hazardous materials that travel through highly populated areas. And the use of rail technologies such as positive train control can help keep the train on the track.

Regulators, industry, and emergency responders must prepare to handle the consequences of a rail tank car rupture. Regulators have taken steps toward enhancing the testing and classification of hazardous materials, and have required railroads to provide more information to State Emergency Response Commissions.

But ultimately, without robust safety modifications, using the same tank cars that carry corn oil to carry crude oil endangers the people who live or travel alongside the tracks, as well as railroad workers themselves.



Critical changes  
needed to reduce  
transportation  
accidents  
and save lives



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NTSB on 

The NTSB's Most Wanted List highlights safety issues identified from the NTSB's accident investigations to increase awareness about the issues and recommended safety solutions.

The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation - railroad, highway, marine and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, the NTSB carries out special studies concerning transportation safety and coordinates the resources of the Federal Government and other organizations to provide assistance to victims and their family members impacted by major transportation disasters.

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