

Why Do These Train Cars Carrying Oil Keep Blowing Up?

Millions of gallons of crude oil are being shipped across the country in "the Ford Pinto of rail cars."

—By **Michael W. Robbins**

| Tue May 27, 2014 6:00 AM EDT — Mother Jones

Early on the morning of July 6, 2013, a runaway freight train derailed in Lac-Mégantic, Quebec, setting off a series of massive explosions and inundating the town in flaming oil. The inferno destroyed the downtown area; 47 people died.

The 72-car train had been carrying nearly 2 million gallons of crude oil from North Dakota's Bakken fields. While the recent surge in domestic oil production has raised concerns about fracking, less attention has been paid to the billions of gallons of petroleum crisscrossing the country in "virtual pipelines" running through neighbor-hoods and alongside waterways. Most of this oil is being shipped in what's been called "the Ford Pinto of rail cars"—a tank car whose safety flaws have been known for more than two decades.

HOLEY ROLLER: THE DOT-111 The original DOT-111 tank car was designed in the 1960s. Its safety flaws were pointed out in the early '90s, but more than 200,000 are still in service, with about 78,000 carrying crude oil and other flammable liquids. The DOT-111 tank car's design flaws "create an unacceptable public risk," Deborah Hersman, then chair of the National Transportation Safety Board, testified at a Senate

hearing in April. Sen. Charles Schumer (D-N.Y.) has compared the car to "a ticking time bomb." While the rail industry has voluntarily rolled out about 14,000 stronger tank cars, about 78,000 of the older DOT-111s remain in service. Retrofitting them would cost an estimated \$1 billion.

Chris Philpot

THE BAKKEN FACTOR The sudden flood of Bakken crude (currently 1 million barrels a day), which is potentially more flammable, volatile, and corrosive than traditional crude, also poses a new hazard. The violence of the Lac-Mégantic blast and other recent wrecks involving this variety of crude stunned railroads and regulators. In May, the Department of Transportation issued an emergency order requiring state crisis managers to be notified about large shipments of Bakken oil. The agency also advised railroads to stop carrying the oil in older DOT-111s, citing the increased propensity for accidents. Meanwhile, as US officials decide what to do next, Canada has ordered its railways to stop all crude shipments in the cars by 2017.

Tank cars carrying crude oil derailed in Lac-Mégantic, Quebec, in July 2013, killing 47 people. *AP Photo/The Canadian Press, Paul Chiasson*

MORE TRAINS, MORE SPILLS Trains carry more than 10 percent of all US oil, particularly from areas without major pipelines, such as the Bakken. The sudden surge of oil shipments has so clogged the rails that farmers in North Dakota complain that they can't get fertilizer shipped in or their crops shipped out.

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<http://www.desmogblog.com/2014/07/08/dairyland-petrostate-wisconsin-oil-rail-routes-published-first-time>

DESMOG BLOG.com
STEVE HORN

America's Dairyland Turning to Petrostate: Wisconsin Oil-By-Rail Routes Published for First Time

DeSmogBlog is publishing the first documents ever obtained from the Wisconsin government revealing routes for oil-by-rail trains in the state carrying oil obtained via hydraulic fracturing ("fracking") in the Bakken Shale basin.

The information was initially submitted to the U.S. Department of Transportation (DOT) under the auspices of a May 7 Emergency Order, which both the federal government and the rail industry initially argued should only be released to those with a "need to know" and not the public at-large.

The Wisconsin documents show the three companies that send Bakken crude trains through the state — Burlington Northern Santa Fe (BNSF), Union Pacific and Canadian Pacific — all initially argued routes are "sensitive security information" only to be seen by those with a "need to know."

As covered in a previous DeSmogBlog article revealing the routes of oil trains traveling through North Dakota for the first time, the rail industry used this same line of legal argument there and beyond.

Wisconsin Emergency Management did not buy the argument, though, and released the documents to DeSmogBlog through the state's Public Records Act.

BNSF Hugs the Mississippi

As with North Dakota, BNSF is the chief mover of oil-by-rail in Wisconsin.

BNSF is owned by Warren Buffett, one of the richest men on the planet and a major campaign contributor to President Barack Obama and expected major donor for Hillary Clinton's 2016 presidential bid.

According to the records it submitted to Wisconsin Emergency Management, BNSF moves the majority of its crude-by-rail trains along the state's western corridor, which hugs the Mississippi River.

For the week of June 5 through June 11, records show BNSF sent 39 oil-by-rail trains through Buffalo County, La Crosse County, Pepin County, Pierce County and Trempealeau County. All of these counties border the Mississippi.

As covered here on DeSmogBlog in January, the BNSF-owned Bakken oil train that exploded in Casselton, North Dakota on December 30, 2013 was headed to a Mississippi River terminal in Missouri owned by Marquis Energy.

Canadian Pacific Hugs Lake Michigan

While BNSF dominates Wisconsin's Mississippi River corridor, Canadian Pacific does the same — albeit to a much lesser extent — along another major body of water: Lake Michigan.

According to the data submitted by the company, Canadian Pacific ships three to five train-loads of Bakken oil per week through Milwaukee County, Racine County and Kenosha County. Canadian Pacific slices through the heart of the state in a west-to-east transit route to reach Milwaukee County.

Milwaukee, Racine and Kenosha all border Lake Michigan. And once it crosses into northeastern Illinois, the rail line sits in close proximity to Lake Michigan, particularly in Waukegan (a train line traversed many times by this writer, a Kenosha native).

Canadian Pacific owns a major rail transload facility — Great Lakes Reloading — located on the southeast side of Chicago. It sits close to both Lake Michigan and the Calumet River.

Great Lakes Reloading serves as a key thoroughfare for many of the company's freight rail transportation routes, including for crude-by-rail.

Union Pacific: Didn't Meet Threshold

Industry giant Union Pacific did not meet the oil-by-rail carriage threshold that requires companies to submit routes to State Emergency Response Commissions (SERCs), one of which is Wisconsin Emergency Management.

That threshold, as explained by Union Pacific in its letter to Wisconsin Emergency Management, is one million gallons of Bakken crude per week.

Union Pacific is perhaps best known to many in southeast Wisconsin and northeast Illinois for its Metra public transit line running from Kenosha to Chicago (and vice versa) and from Chicago to many Chicago-area suburbs (and vice versa).

Yet Another Oil Train Has Derailed and Caught Fire

—By **Luke Whelan** — *Mother Jones*

| Thu Mar. 5, 2015 9:44 PM EST

Earlier today, yet another massive train carrying crude oil derailed and caught on fire, this time in northern Illinois near the Mississippi River. One-hundred-and-three of the train's 105 cars were carrying crude oil—from where was not immediately clear (**Update:** BNSF has since confirmed the train was traveling from North Dakota; see below for their response)—eight of which derailed. Two of the derailed cars have caught on fire, according to BNSF Railway which owns the train, sending plumes of smoke and fire into the sky above Galena, Illinois, a town of just over 3,300.

The image of smoldering oil train cars is now a familiar sight: Incidences of exploding oil trains have been rapidly rising in North America thanks to the fracking boom in North Dakota's Bakken oil fields (Bakken oil is potentially more flammable than normal crude) and the slow transition away from old, unsafe rail cars. Oil-by-rail carloads are up 4000 percent from 2008 in the United States and this is the the third derailment in North America in the last three weeks, including a massive explosion in West Virginia on February 16 that injured one person and spilled oil into the nearby Kanawha River. In fact, a Department of Transportation report predicted trains carrying crude and ethanol would derail an average of 10 times per year in the next two decades. This is bad news for people who live near railways and the ecosystems in which they reside.

People living within a mile radius of today's derailment have begun evacuating, and authorities are monitoring the Mississippi River for leakage. BNSF Railway has not responded to inquiries from *Mother Jones* about the age of the trains' cars and whether the train was carrying Bakken crude. (**Update:** See below for a response from BNSF). The Birkshire Hathaway subsidiary did tell *Reuters*, however, that no injuries had been sustained.

Update 3/6/15 11:30 AM PST: BNSF spokesman Mike Trevino has confirmed to *Mother Jones* that the train was traveling from North Dakota, and the AP is reporting its tankers were carrying Bakken crude. Trevino said the cars were the CPC-1232 model (newer than the notorious DOT-111 that has raised concern amongst lawmakers), but were nonetheless "unjacketed." Kristen Boyles, an attorney with environmental advocacy group Earthjustice, told *Mother Jones* that "unjacketed" tankers do not have the insulated steel shells that US regulators have proposed mandating for new cars to prevent puncturing after derailment. "This derailment is yet another indication that these trains are not good enough and we've got to get federal standards greatly strengthened," Boyles said. The White House's Office of Management and Budget says it will finalize the DOT's proposed rules in May.



Report: Oil train in fatal Quebec explosion passed through region

AUGUST 23, 2014 12:00 AM • BY CHRIS HUBBUCH

The Canadian oil train that derailed in 2013 killing 47 people in Lac-Mégantic passed through the Coulee Region on its way to Quebec, according to Canadian safety officials.

A report from Canada's Transportation Safety Board blamed "systemic weaknesses" in the Montreal, Maine & Atlantic Railway's safety system for the July 6 derailment.



The MMA train carrying 1.6 million gallons of crude oil derailed after it was left unattended overnight on a downhill grade, according to the TSB report. The ensuing explosions destroyed 40 buildings, and contaminated the city's downtown as well as a nearby river and lake.

According to the report, the tank cars originated in New Town, N.D., and were hauled by Canadian Pacific through Minneapolis, Milwaukee, Chicago and Detroit on their way to Montreal, where they were transferred to the MMA railway.

That route follows the Mississippi River south from the Twin Cities, passing through Winona, Minn., and La Crosse before heading east across Wisconsin.

A Canadian Pacific spokesman emphasized that the derailment occurred on another railroad and that "CP has implemented every operational change that has been mandated since this tragic incident in order to mitigate risk, and, in many cases, we exceed the base regulatory requirements."

The derailment brought additional attention to the increase in rail shipments of highly flammable crude oil as production in the Bakken formation of North Dakota has soared.

In 2008, railroads transported about 9,500 carloads of oil. Last year they moved an estimated 434,000 loads. That number is expected to reach 650,000 in 2014, according to the Congressional Research Service.

That increased traffic has resulted in up to seven oil trains a day passing through La Crosse and neighboring counties, according to industry data provided to state emergency management officials.

The majority of those trains — 26 to 43 per week — are on the BNSF line along the Wisconsin

side of the Mississippi River. Canadian Pacific reported three to five trains a week along its line, which bisects the southern third of the state, running through La Crosse and Monroe counties.

Canadian authorities attributed the crash to a combination of factors including insufficient brakes, unaddressed mechanical issues in the locomotive and problems with MMA's safety management system.

Canadian Pacific said in a statement it has stepped up track and train inspections, enhanced its disaster response capabilities and changed the way it secures unattended trains.

The report also found problems with the tank cars: 59 of the 63 cars that derailed leaked because of impact damage.

"The damage to the tank cars in Lac-Mégantic clearly indicates that product release could have been reduced had the tank car shells and heads been more impact-resistant," the report stated. "Design improvements to these types of cars are needed to mitigate the risks of a dangerous goods release and the consequences observed in the Lac-Mégantic accident."

In most cases railroads do not own the cars they haul. Canadian Pacific imposes a \$325 surcharge on shippers whose tank cars don't meet the Association of American Railroads' strictest safety standards.

But only about 15 percent of the 94,000 tank cars used to transport flammable liquids meet the new safety standards, according to the industry group.

Read more here:

<http://www.mcclatchydc.com/2014/06/16/230497/government-numbers-on-crude-oil.html#storylink=cpy> **Democrats want oil train rules on fast track**

Posted on March 10, 2015 at 4:51 pm by Jennifer A. Dlouhy in Accidents, featured, Politics/Policy, Rail

Derailed oil tanker train cars burn near Mount Carbon, W.Va., Monday, Feb. 16, 2015. A CSX train carrying more than 100 tankers of crude oil derailed in a snowstorm, sending a fireball into the sky and threatening the water supply of nearby residents, authorities and residents said Tuesday. (AP Photo/The Daily Mail, Marcus Constantino)

WASHINGTON — The Obama administration should take “immediate action” to boost the safety of moving crude by rail following a string of oil train explosions, argue a pair of Wisconsin lawmakers.

Wisconsin Democratic Sen. Tammy Baldwin and Rep. Ron Kind insist that the accidents — including two in Ontario, one in Illinois and another in West Virginia in the past four weeks — illustrate the need for a rapid phase out of “antiquated” tank cars that are prone to rupture as well as stepped-up standards for new models.

The Department of Transportation proposed requiring more resilient tank cars, speed limits and better braking systems for trains heaving highly hazardous material last July, but those mandates have not been finalized despite a Jan. 15 deadline imposed by Congress.

The administration should “issue final rules without further delay,” Baldwin and Kind say in a March 9 letter to President Barack Obama that also makes the case for strengthening the proposal.

“Recent accidents make clear the need for rules stronger than those originally proposed,” they wrote. “These catastrophes have illuminated the many areas ripe for improvement.”

In particular, Baldwin and Kind want the Transportation Department to accelerate the planned phaseout of legacy DOT-111 tank cars — and go faster than the proposed two-year time frame. They also want the government to boost the proposed safety requirements for tank cars going forward, since the recent accidents involved newer CPC-1232 tank cars that were designed to be more resilient in crashes.

Read more: West Virginia train derailment puts focus on rail safety

“Standards in the final rule should require enhanced safety features beyond those installed in the cars recently deployed by the industry,” Baldwin and Kind say.

They also add their voices to a growing clamor for the crude shipped on U.S. railroads to first be stabilized, a process that removes volatile gases such as methane and propane. North Dakota regulations, adopted in December and set to go into effect on April 1, would require oil producers to stabilize their crude with the goal of lowering its vapor pressure to 13.7 pounds per square inch.

But there is no national standard and some lawmakers have questioned whether the North Dakota threshold is sufficient.

Read more: Senator wants tougher rules for volatile oil

Baldwin and Kind also argue that local communities should have more information about oil trains that rumble by — going beyond the Transportation Department's proposal for state emergency response commissions to be notified about trains containing 1 million gallons of Bakken crude.

And they suggest that proposed speed limits are insufficient; those requirements should factor in both braking technology and tank car durability. "If the tank car cannot reasonably withstand impact above a certain speed, then the train should not travel at that speed," Baldwin and Kind say.

Big rewrites to the July 2014 proposal could further delay the rule making, and it is not clear how far regulators could stray beyond the original draft.

Oil industry representatives, including the American Petroleum Institute, have argued for a holistic approach to crude-by-rail safety — going beyond thickening tank car shells to ensuring the integrity of the tracks on which they travel.

The Federal Railroad Administration is responsible for inspecting some 160,000 miles of track in the United States.

Baldwin and Kind acknowledged that infrastructural deficiencies may also be at play.

"Preliminary reports from the scene of the recent oil train accidents have suggested that a failure of rail infrastructure has been to blame for the derailments," the lawmakers write. "We have also seen evidence of deteriorating bridges in our state on rail lines that carry crude oil and have called on railroads to repair them swiftly."

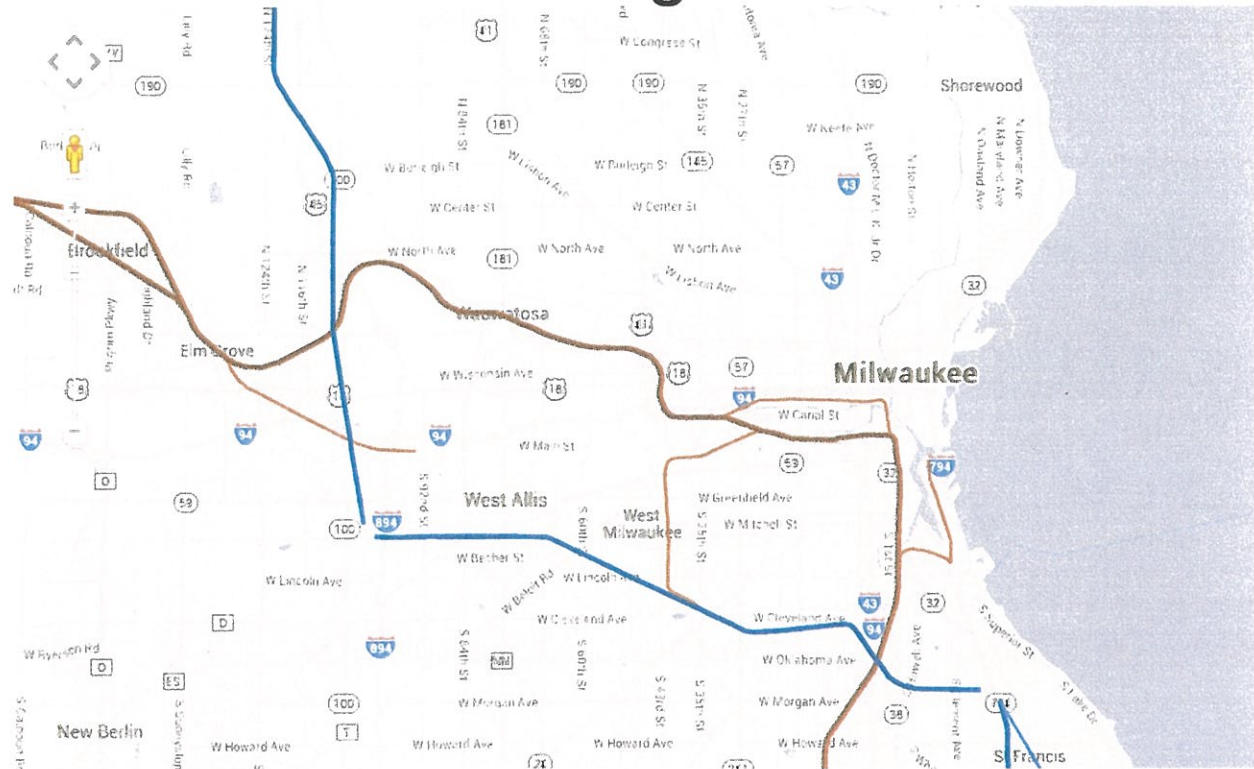
High-profile oil train accidents may make it more difficult for regulators to justify relatively permissive tank car changes and phaseout schedules, noted ClearView Energy Partners in a research note to clients.

In its July 2014 proposal, regulators at the Transportation Department invited stakeholders to weigh in on three different designs for tank cars constructed after Oct. 1, 2015 that transport flammable crude:

- One of the options largely mirrors the CPC-1232 design voluntarily adopted by the industry in 2011, with requirements for 7/16 inch thick steel hulls and steel jackets but no rollover protection or electronically controlled pneumatic brakes.
- A second option would step up the steel thickness to 9/16 inch, but without imposing requirements for electronically controlled pneumatic brakes or rollover protection.
- A third option would have all three changes: 9/16 inch steel, electronically controlled pneumatic brakes and rollover protection.

Some 52,000 legacy DOT-111 tank cars were still being used to haul crude and ethanol last year, according to Transportation Department estimates.

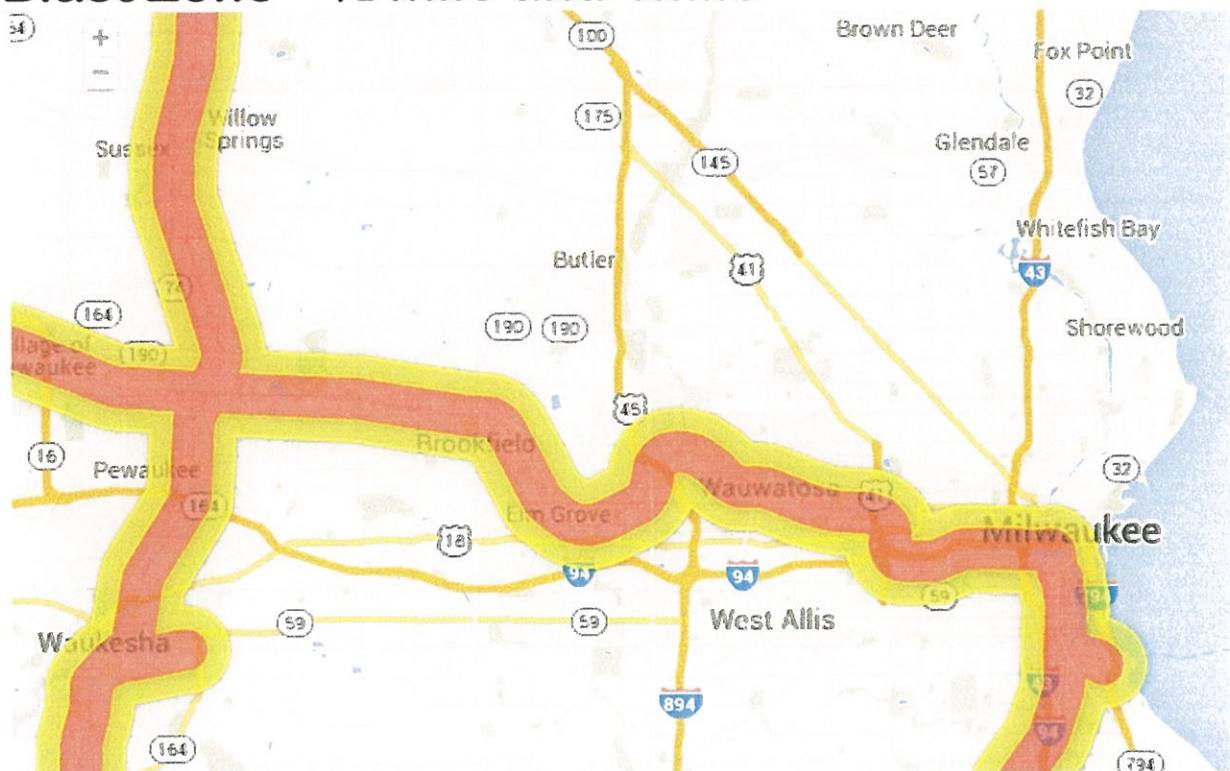
Oil Train Routes Through Milwaukee Area



Red line – Canadian Pacific

Blue line – Union Pacific – not used as much for oil tankers

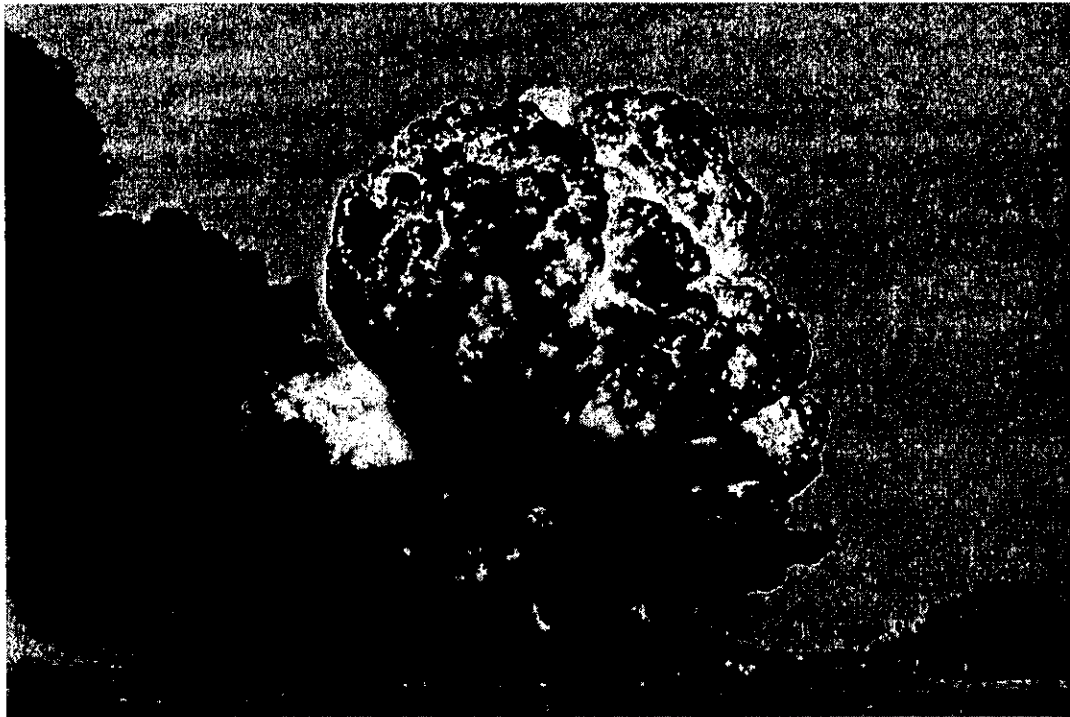
Blast Zone – ½ mile and 1 mile



350.org Milwaukee. For more information contact www.350mke.org

Top Ten Questions About Oil Trains

Source: ForestEthics, March 2015



Dec. 2013, Casselton, ND: Derailment and Explosion of Mile-Long Oil Train

1. When did trains start exploding?

Rail transportation of crude oil is growing rapidly and dangerously – from fewer than 10,000 carloads in 2008 to nearly half a million in 2014 – for two reasons: Bakken oil from North Dakota and Canadian tar sands. The North American boom means oil companies are trying to frack and mine more of this extreme oil, crude that is high in carbon, difficult and expensive to produce, and dangerous to transport.

2. Are cities and towns with rail lines safe?

With the exception of Capitol Hill (the rail industry seems to be sparing Washington, DC) most routing is done specifically throughout cities and towns. No, the oil and rail industries are probably not purposely targeting us, it's just that the rails in populated places tend to be better maintained and rated for heavier cargoes. The sane thing to do would be to stop hauling crude oil if it can't be transported safely. A far distant

next best is to make these trains as safe as possible and require rerouting around cities and water supplies.

3. What is the government doing?

Not nearly enough. While 100-plus car trains full of an explosive crude roll through our towns, the US government is barely moving, bogged down by nearly 100 of Washington's most expensive K-Street lobbyists. In fall 2014, ForestEthics, Earthjustice, and the Sierra Club sued the Department of Transportation to speed up new safety standards on oil trains. We called the trains an imminent danger to public safety. The federal government responded by once again delaying their decision on new rules that have been in the works for years.

4. What is the slowest speed at which an oil explosion could happen?

An oil tank car can catch fire and explode in an accident at zero miles per hour. Assuming a slightly raised rail bed, an oil car that tips over while standing still (this can and has happened on poorly maintained rails) will strike the ground going approximately 16 miles per hour – more than fast enough to breach the tank, spark, and ignite if it hits a rock, a curb, any hard protrusion.

5. Do firefighters know when and where oil trains are moving?

First responders do not know when, where, how much oil, and what kind is coming through their town. The US Department of Transportation ordered that railroads and oil companies make this information public. But only for trains carrying more than a million gallons of Bakken crude, and even this information is not being made public on a consistent basis.

6. How do you extinguish oil train fire?

You don't put out an oil train fire; nobody does. Oil fires require specialized foam, which fire departments do not have in nearly sufficient supply to fight the fire from even a single 30,000 gallon tank car. All firefighters can do is evacuate those in danger, move outside the one mile blast zone and let the fire burn out, which can take days. In Illinois, firefighters unloaded their equipment to fight an oil train fire, realized the danger and left behind \$10,000 in equipment getting out of harm's way. You can prevent these fires by banning oil trains – but you can't fight these fires once they happen.

7. The older oil cars are definitely unsafe, what about the newer ones?

The antiquated DOT-111 tank cars make up 80 percent of the fleet in the US – US rail safety officials first called them "inadequate" to haul crude oil more than 20 years ago. The jury is now in on the newer CPC-1232 tank cars and they are not much safer. The derailments and explosions in West Virginia and Illinois were 1232s

traveling at or below the speed limit. In fact, the former head of the federal rail safety agency said in a radio interview that the recent derailments and fires were "the last nail in the coffin" for the CPC-1232 as an alternative to DOT-111 for oil transport.

8. We know that Bakken crude explodes; does tar sands explode?

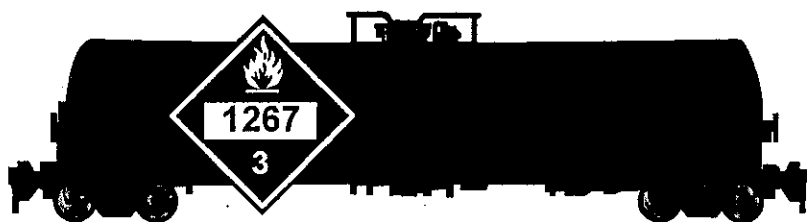
Ordinarily it might not, but to move tar sands by rail (or pipeline for that matter) you have to mix in highly flammable, toxic diluents (light petroleum products like propane.) So if it's on a train or in a pipeline the flashpoint for tar sands crude is lower than for Bakken oil. The oil train explosion on February 16, 2015 in Ontario, Canada occurred in -40 degrees F weather – proving that this stuff can ignite even in arctic cold. So not only is tar sands the dirtiest oil on Earth, but also it may well be the most dangerous too.

9. Do I live in the Blast Zone?

ForestEthics used oil rail routes from industry, Google maps, and census data to calculate that 25 million Americans live in the oil train blast zone – the dangerous evacuation zone in the case of an oil train derailment and fire. You can use the map to see if your home, office, school, or favorite natural area, landmark or sports stadium is in danger. Visit www.blast-zone.org.

10. What's the solution?

The solution is to ban oil trains. If you can't do something safely, you shouldn't do it at all. This cargo is too dangerous to our families, our cities, our drinking water, our wildlife and our climate. The extreme crude carried on trains is only a tiny fraction of the oil we use each day as a nation. So while we transition our economy to clean energy and get beyond all oil, we should leave this extreme oil from Alberta and North Dakota in the ground.



350

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