



## Hazardous train spills prompt calls for tougher safety rules

New bipartisan legislation has been proposed to protect health and safety following a train derailment in East Palestine, Ohio, USA. Susan Jaffe reports from Washington, DC.

A flammable brew of toxic chemicals from a freight train that went off the tracks in the Ohio village of East Palestine is no longer burning but the impact of the wreck is far from over. A massive clean-up continues along with water, soil, and air monitoring. Several government agencies are involved in recovery efforts and are investigating what went wrong. And in a rare show of bipartisanship, Democrats and Republicans in Congress have proposed legislation aimed at closing the gaps in rail safety rules that the accident exposed.

The accident's aftermath has also reached the courts. The US Department of Justice has sued the rail company Norfolk Southern for violations of the Clean Water Act and federal hazardous waste laws, demanding that the company pays potentially hundreds of thousands of dollars in penalties in addition to all clean-up costs. Ohio is also suing Norfolk Southern for damages and clean-up costs, and several residents in Ohio and neighbouring Pennsylvania have filed class action lawsuits against the company.

The risks of shipping hazardous materials on the nation's railways have become difficult to ignore. Since the derailment on Feb 3, Norfolk Southern has had three more accidents. No hazardous substances were released after derailments in Alabama and Springfield, Ohio, but in Cleveland, Ohio, a conductor was killed when his locomotive crashed into a dump truck. A Burlington Northern Sante Fe (BNSF) train spilled nearly 5000 gallons of diesel oil in Washington state on March 16, and another BNSF train derailed in western Arizona without spilling its cargo of corn syrup. And on March 30, four carriages from another BNSF train derailed in Minnesota and their ethanol cargo caught fire.

The Norfolk Southern train was about 3 km long and had a two-person crew for its 149 carriages. Of the 38 carriages that derailed, 11 carried hazardous materials including vinyl chloride, isobutylene, dipropylene glycol, butyl acrylate, benzene, ethylene glycol, and lubricating oil. Human exposure to these substances can increase the risk of cancer, threaten fetal development, or damage the liver, kidneys, lungs, and skin, among other health conditions.

But 3 days after the derailment, Norfolk Southern feared that one of the five carriages containing vinyl chloride might explode. After a 2 square mile area was evacuated, the company released more than 115 580 gallons of the chemical from all five tanks into a ditch and set it on fire, creating a huge low-lying black cloud.

No one in East Palestine died or was seriously injured, although immediately after the fires residents reported headaches, nausea, skin rashes, and other symptoms. Chemicals from the derailment contaminated streams and killed thousands of aquatic animals.

### What next?

Last week, 40–45 trucks a day carried away contaminated soil and other debris to hazardous waste landfills across the country, with about 23 000 tons of hazardous excavated soil waiting to be shipped. Polluted water from streams and creeks is going to decontamination facilities in nearby states. Ohio and Pennsylvania, as well as federal agencies, are monitoring air, soil, and water for contamination. Two separate teams of independent researchers are also collecting samples and analysing the environmental effects of the derailment. One is from Texas A&M University, led by Ivan Rusyn, Director of the Texas A&M Superfund Research Center. Another

team of volunteer faculty, staff, and students from Purdue and Carnegie Mellon Universities is headed by Andrew Welton, a Purdue professor of engineering.

Surface water quality continues to improve using air sparging and air diffusion in and around the derailment site in East Palestine, said James Lee, a spokesperson for the Ohio Environmental Protection Agency (EPA). The water is aerated so that oxygen as well as microbes can break down chemicals such as acrylates and glycols in the sediment.

"Any chemicals that could be released to the air through this process would be minimal," he said. "Air testing by US EPA has been ongoing throughout this remedial work and continues to show no levels of concern for public health in East Palestine."

Residents still worry about fallout from any toxic substances that might still contaminate drinking water. Another potential health threat could come from the compounds created when toxic chemicals burned in the fires following the derailment. Local community groups and environmental advocates claim that officials are not testing for all toxic substances related to the derailment and clean-up that could threaten residents' health. Judith Enck,



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a former EPA regional administrator appointed by then President Barack Obama, criticised the agency for waiting a month before directing Norfolk Southern to test for dioxins, a typical by-product of hazardous waste incineration.

An EPA spokesperson stressed that soil sampling is “a first round” and may require an expansion of testing to a broader array of chemicals including by-products. Results from EPA’s air monitoring of indicator chemicals—those likely to appear if dioxins were present—suggest a low probability of dioxins, she added. EPA has asked Norfolk Southern to test soil for dioxins directly.

Aaron Bragg, a risk engineer, is not reassured. He and his family live 6 km from East Palestine and he owns rental property there. “What are the chronic effects of these chemicals?” he said. “I’m worried about the health and safety of my family and the residents of the village of East Palestine.” While “not as many people are getting sick now”, he said “what’s our chronic health outlook going to be?”

For many of East Palestine’s 4700 residents, the continuing anxiety caused by an uncertain health threat is inescapable. “Even if we wanted to leave, we couldn’t”, East Palestine resident Misti Allison told the US Senate Committee on Commerce, Science and Transportation at a hearing 2 weeks ago. “Who would buy our homes?”

### Apologies

Norfolk Southern Chief Executive Officer Alan Shaw has said he is “deeply sorry” for the East Palestine derailment and promised repeatedly “to make it right”. The company has distributed US\$26.6 million to compensate local residents and business, “which is just a start”, a spokesperson added.

Yet, during the recent Senate hearing, Shaw refused requests to postpone a plan to spend \$7.5 billion to repurchase stock until the East Palestine clean-up and recovery is completed. Ohio Democrat Senator Sherrod Brown was

not pleased. “If Norfolk Southern can afford billions in stock buybacks that reward executives, this multi-billion dollar corporation can afford to pay for 100% of the clean-up in East Palestine—from water and soil tests, to long-term health monitoring and medical bills, to lost property values”, said Brown after the hearing.

### Political fallout

Shaw also appeared before the Senate committee and agreed, under questioning, that the East Palestine derailment could have been prevented. He also told senators that the train crew “did nothing wrong”, referring to one of the preliminary findings of the National Safety Transportation Board (NSTB). He said that there were no track defects and that heat detectors along the tracks were working properly. He noted that the NSTB investigation has focused on the failure of a wheel bearing, which is suspected of causing sparks that might have ignited the derailment fire. Shaw did not answer questions about what should have happened to prevent the accident and who should have taken those steps. Senators were especially frustrated by his refusal to endorse requirements for a minimum two-person crew.

Brown also testified before the Senate committee to discuss the bipartisan Railway Safety Act, which he co-sponsored with Ohio’s Republican Senator J D Vance, to prevent future accidents. A similar but less comprehensive bipartisan bill has been introduced in the House of Representatives. Changes proposed in the Senate legislation include some measures that were not in place before the East Palestine accident and, as a result, created unsafe conditions that the NSTB and rail worker representatives say might have contributed to the accident.

For example, the legislation would require shippers to notify emergency responders before transporting hazardous materials by rail, and defines which substances are reportable,

including so-called “high-hazard flammable” cargo. Another provision would require training for rail crews and set a specified minimum amount of time for them to inspect carriages with hazardous materials at regular intervals. A minimum two-person crew would be required for trains carrying flammable liquids or that are at least 7500 feet (2.3 km) long. Legislation would also provide additional funding for hazardous material training for local emergency responders.

Several new requirements address the use of heat detectors along the tracks, including how far apart they should be placed and what temperature readings would trigger alerts to the crew of a potential wheel bearing failure. Shortly before the East Palestine derailment, two consecutive detectors recorded rapidly increasing temperatures, but the crew did not stop the train until a third detector recorded 110°C, according to the NSTB.

To ensure compliance, the legislation would also raise maximum penalties for railway safety violations. Brown told the committee that current penalties are too small to be an effective deterrent. According to statistics from the most recent fiscal year, he said Norfolk Southern had 579 violations cited in closed cases and paid an average fine of less than \$3300.

The Association of American Railroads, an industry lobbying group, supports voluntary safety improvements instead of new requirements, such as a Federal Railroad Administration proposal to increase crew requirements. In December, Norfolk Southern urged the Federal Railroad Administration to withdraw its proposal.

Brown appealed to his colleagues to reject the industry’s approach. “It shouldn’t take a train derailment for elected officials to put partisanship aside and work together for the people whom we serve, not corporations like Norfolk Southern”, he said.

*Susan Jaffe*