

Camden Collins

Brother Slagle

ENG-301

March 2023

On February 3, 2023, a 38-train car derailment occurred in East Palestine, Ohio.

(Burakoff and Costley) The Norfolk Southern train was going about 47 miles per hour when the derailment happened, while the maximum speed allowed is 50 miles per hour (NTSB). An axle was detected to be at a very high temperature, which set off an alarm, causing the operators to notice smoke and fire down the train (NTSB). The operators stopped the train and uncoupled the main train cars and getting a mile away from the rest of the line (NTSB).

The fires were put out by responders (NTSB) and one of the derailed cars was identified to be rising in temperature, meaning that risk of explosion was high, so the chemicals were burned in a controlled explosion (Sullivan). The train cars were decontaminated on the ground and an investigation into potential hazards and the cause of the derailment will continue in the following months (NTSB).

Several of the derailed train cars were carrying the chemical vinyl chloride, which is used in plastic, is extremely flammable in its liquid form, and is known to cause cancer with exposure (Sullivan). The controlled explosion released a lot of the chemicals into the air, and the surrounding area was evacuated (Sullivan). When vinyl chloride is burned, it releases hydrogen chloride and phosgene, which are also potentially harmful chemicals (Jones). Thousands of fish near the area were found dead, which led to concerns for residents of East Palestine that they might be in danger from the chemicals (Ebrahimji, Yan).

The effect of the vinyl chloride on the surrounding area is a major concern that is difficult to gauge. The Environmental Protection Agency has been monitoring the air, and they claim that the chemicals in the air are “below levels of concern” because they are chemicals that can dissipate (Segal). Delphine Farmer, a chemist at Colorado State University says that the technology used is not very sensitive and not good at picking up trace chemicals in the air, like the vinyl chloride that was burned and spread across a vast area (Jones). The EPA has multi-step approach to measuring health risk where they look at the identified chemicals are, what their effects are, what different amounts of exposure do, and what the risks of the particular situation entail (Sullivan).

The liquid vinyl chloride spilled into a stream right next to the tracks and is in the process of being decontaminated and cleaned up by responders (Jones). The varied mix of different chemicals hasn’t been deeply tested and it is not fully understood how they interact with each other and what their effects on people are (Jones). If the danger was made more clear, it would be easier to determine if the chemicals are a concern.

There have been a lot of different photos spread around through articles and social media posts that don’t correspond with the East Palestine derailment but are presented over writing regarding the derailment. One Facebook post going around claimed that a photo of dead birds in a street in Kentucky was caused by chemicals released from the trains (Grubb). The photo was taken in 2018, the birds reportedly having eaten fermented berries, which intoxicate the small animals and make them fall from the sky (Herzog). A journalist named Wenhao, who follows China propaganda and censorship found articles and videos being shared on Chinese social medias showing footage of dark clouds that don’t correspond with Ohio, despite being characterized as so. One video of a person driving under dark clouds has an origin at least a week

before the derailment occurred (@ThisIsWenhai). “Chernobyl 2.0” went trending on Twitter following the derailment, with some uninformed users calling it the “largest environmental disaster,” which greatly overemphasizes the actual environmental effects (Thompson). Many of the users seem to be looking at photographs of the controlled burn that caused a massive dark smoke plume to spread into the sky, and assumed that the disaster was a severe explosion or another sort of disastrous spread of chemicals.

Another source of misinformation is about Electronically Controlled Pneumatic Brakes, which use compressed air to counteract the motion of the train car wheels (Cornell), and the some articles have claimed that Trump and Biden Administrations are to blame for the derailment because they did not require the trains to have the specific brakes (Daly). A law requiring trains carrying great amounts of chemicals to have ECP Brakes was passed by the Obama Administration and withdrawn by the Trump administration due to the brake system being very expensive (Daly). The train involved in the crash would not have required the ECP brakes due to Vinyl Chloride being a Class 2 flammable gas, while the Obama law only applied to Class 3 flammables (Wornell). Tests conducted by the U.S. Department of Transportation showed that the ECP Brake system could only lead to “1.2 to 1.6 fewer railcars derailing,” (AAR) meaning that ECP brakes would not have been very effective in preventing the derailment.

The negative environmental effects that Vinyl Chloride spilling is seen with the thousands of fish dead found near the derailment location (Ebrahimji, Yan), but the discussion around the event has been flaring up a lot, bringing attention to many of the different causes and effects of the crash. Another comparison being made to the derailment is the Flint, Michigan Water Crisis, where lead put into the water system, exposing residents to dangerous amount of

the lead which resulted in an outbreak of legionnaire disease, killing at least 12 people and making many other residents sick (Ray). Responders were able to react to the derailment quickly and took action to contain the nearby streams to ensure the vinyl chloride wasn't spread into the water system (Jones), so it will definitely not end up like the Flint disaster. On top of the water concerns, the burned vinyl chloride is likely to dissipate, and the air will be back to its regular conditions soon enough.

Another topic of discussion is about the cause of the train's derailment. There have been two different Norfolk Southern train derailments, one of them being the East Palestine train (TIME). The amount of derailments that happen in the U.S. every year is actually very high, with an average of 1475 derailments each year in the U.S. (TIME). Most of these derailments have not led to disasters, but the fact that about 4 different derailments happen a day should be of greater concern. The quality control of railways and safety standards could probably be raised to prevent these derailments. A lot of railroads go through partially wooded areas, which can lead to the rails slowly being deformed, making them more dangerous to drive over. One safety upgrade Norfolk Southern announced they would be implementing is having more detectors along the tracks that can catch overheating issues quicker and alert operators sooner, possibly preventing derailment and allowing any problems to be solved (TIME).

The East Palestine, Ohio train derailment got a lot of attention through social media after the controlled burn. All of that attention led to a lot of assumptions being made, and had misinformed views on the event reach widely across the internet. A similar derailment happened in New Jersey in 2012, where a bridge collapsed, releasing 23,000 gallons of vinyl chloride into a large creek that led into the Delaware River (NOAA). That event didn't get nearly as much media attention, despite being a much bigger spread of Vinyl Chloride. With the internet and

social media being much less prominent in 2012, it could be a contributing factor to the big difference in attention. A lot of the discussion around the East Palestine derailment regards the environmental concerns surrounding vinyl chloride, but also a discussion of train safety in the U.S.. Especially in a packed residential area, a train derailment could be extremely dangerous for residents. With this event getting some attention from the U.S. government, new policies regarding train safety or chemical transportation could be brought up.

Works Cited:

A Train Derails in Paulsboro, N.J., Releasing 23,000 Gallons of Toxic Vinyl Chloride Gas,
<https://response.restoration.noaa.gov/about/media/train-derails-paulsboro-nj-releasing-23000-gallons-toxic-vinyl-chloride-gas.html>.

Report about New Jersey vinyl chloride train derailment, from government source and could be referenced alongside the Ohio derailment.

Burakoff, Maddie, and Drew Costley. "Analysis: Did Dangerous Substances Spread after the Ohio Train Derailment?" *PBS*, Public Broadcasting Service, 25 Feb. 2023,
<https://www.pbs.org/newshour/health/analysis-did-dangerous-substances-spread-after-the-ohio-train-derailment>.

This article talks about the amount of cars that derailed and the date it happened. It goes over the potential effects of the chemical leakage.

Daly, Michael. "Trump Admin Is to Blame in Ohio Disaster-but so Is Biden." *The Daily Beast*, The Daily Beast Company, 18 Feb. 2023, <https://www.thedailybeast.com/trump-admin-is-to-blame-in-ohio-disasterbut-so-is-biden>.

This article blames the recent 2 presidents' administration for the derailment, because the Obama administration had passed a bill requiring trains carrying chemicals to use a specific brake system. The author is dismissive of some information about the brake system itself, mostly focusing on the fact that there was a law that involved certain brakes.

"Definition: ECP Brake System from 49 CFR § 232.5 | LII / Legal Information Institute." *Legal Information Institute*, Legal Information Institute,
https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=fea57403ccab8d1ab3d150f90d9e18d6&term_occur=7&term_src=Title%3A49%3ASubtitle%3AB%3AChapter%3AII%3APart%3A232%3ASubpart%3AG%3A232.611#:~:text=ECP%20brake%20system%20means%20a,to%20the%20reservoirs%20on%20each.

Cornell University definition of ECP Brakes. Explains the function of the brakes.

Ebrahimji, Alisha, and Holly Yan. "It's Been More than a Month since a Freight Train Carrying Hazardous Chemicals Derailed in Ohio. Here's What's Happened Since." *CNN*, Cable

News Network, 23 Mar. 2023, <https://www.cnn.com/2023/02/23/us/east-palestine-ohio-train-derailment-timeline>.

Article focuses on the environmental impacts of the chemicals spreading, aftermath of derailment.

“Flint Water Crisis.” *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., 11 Dec. 2022, <https://www.britannica.com/event/Flint-water-crisis>.

Summary of the Flint Water Crisis, to use for reference.

Grubb, Amy “Maybe we should be concerned with what's going on In Ohio. These birds dropped de@d in Ky” Facebook, 17 Feb. 2023, <https://archive.is/fv0sn>.

Misinformed Facebook post showing dead birds in Kentucky, claiming to be caused by the train derailment.

Herzog, Rachel. “Dead Birds Found in Downtown Little Rock Possibly Intoxicated from Fermented Berries, Expert Says.” *Arkansas Online*, 9 Apr. 2018, <https://www.arkansasonline.com/news/2018/apr/09/dead-birds-downtown-little-rock-street-possibly-in/>.

Original article showing dead birds to disprove the misinformed Facebook post.

Jones, Benji. “Yes, the Ohio Train Wreck Is an Environmental Disaster. No, It's Not Chernobyl.” *Vox*, Vox, 18 Feb. 2023, <https://www.vox.com/science/2023/2/18/23603471/east-palestine-ohio-derailment-water-contamination-health>.

Gives some detailed analysis and the word of a researcher regarding the chemicals and potential environmental impact.

Mansoor, Sanya. “Why Train Derailments Are More Common than You Think.” *Time*, Time, 8 Mar. 2023, <https://time.com/6260906/train-derailments-how-common/#:~:text=Train%20derailments%20are%20quite%20common,they%20rarely%20lead%20to%20disaster>.

Gives good statistics for train derailments as reported by the US Transportation Administration.

Ohlhaber, Kathy. "Electronically Controlled Pneumatic (ECP) Brakes & Hazmat." *Association of American Railroads*, 3 Mar. 2023, <https://www.aar.org/article/ecp-brakes/>.

Gives statistics regarding the ECP brakes, including research and experiments to test their reliability by the AAR, which is trustworthy.

Segal, Edward. "A Delayed Crisis That Could Be Caused by the Ohio Train Derailment." *Forbes*, Forbes Magazine, 27 Feb. 2023, <https://www.forbes.com/sites/edwardsegal/2023/02/25/a-delayed-crisis-that-could-be-caused-by-the-ohio-train-derailment/?sh=237c50012f5d>.

Goes in depth on potential chemical impact.

Sullivan, Becky. "What to Know about the Train Derailment in East Palestine, Ohio." *NPR*, NPR, 16 Feb. 2023, <https://www.npr.org/2023/02/16/115733630/east-palestine-ohio-train-derailment>.

Talks about potential environmental impact as well as residents' concerns and reactions to the derailment.

Thompson, Stuart A. "'Chernobyl 2.0'? Ohio Train Derailment Spurs Wild Speculation." *The New York Times*, The New York Times, 16 Feb. 2023, <https://www.nytimes.com/2023/02/16/technology/ohio-train-derailment-chernobyl.html>.

Talks about "Chernobyl 2.0" twitter trending topic regarding the derailment.

"Norfolk Southern Railway Train Derailment with Subsequent Hazardous Material Release and Fires" *NTSB*, 3 Feb. 2023, <https://www.ntsb.gov/investigations/Documents/RRD23MR005%20East%20Palestine%20OH%20Prelim.pdf>.

Press release by the National Transportation Safety Board. Very credible and in-depth.

Wenhao. "Now That China Has Made the Ohio Train Derailment the Focal Point of Its Recent Anti-US Propaganda, a Bunch of Nationalist Commentators and Influencers Are Doing What They Do Best--Spreading Misinformation, Taking Advantage of Chinese Netizens's

Lack of Access to Foreign Media.” *Twitter*, Twitter, 15 Feb. 2023,
<https://twitter.com/ThisIsWenhao/status/1625931992087789593?lang=en>.

Post by journalist that shows some misinformation. One of the photos seems to be incorrectly labeled as misinformation, but others have original sources from before the derailment.

Wornell, Tyler. “ECP Brakes: Could Technology Have Mitigated Ohio Derailment?” *NewsNation*, NewsNation, 17 Feb. 2023, <https://www.newsnationnow.com/us-news/infrastructure/ecp-brakes-technology-ohio-derailment/>.

States that the Obama Administration bill about ECP brakes would not have covered the Ohio train.