

New testing finds toxins above screening levels after 2023 East Palestine, Ohio derailment

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More than three-and-a-half years after residents of East Palestine, Ohio, were told it was safe to return home following the Norfolk Southern derailment and toxic chemical fire, newly released environmental testing is giving them their first detailed look at evidence of widespread contamination that was not made available to them at the time.

The testing indicates that roughly half of the locations sampled contained dioxins above the health screening level used by investigators, while approximately 70 percent exceeded the corresponding level for carcinogenic polycyclic aromatic hydrocarbons, or PAHs.

On February 3, 2023, a Norfolk Southern freight train carrying hazardous materials derailed in East Palestine. Three days later, five tank cars carrying roughly 1.1 million pounds of vinyl chloride were deliberately breached and burned, sending a massive black plume over the area. Residents were soon permitted to return, as Norfolk Southern and government officials cited environmental testing as evidence that the community was safe.

Chemical engineer and industrial hygienist Stephen Petty presented the findings September 11 at a “Right to Know” town hall in Columbiana, Ohio, alongside independent environmental tester Scott Smith. Video of the full town hall meeting here.

The National Transportation Safety Board later concluded that the vent-and-burn was unnecessary. Important evidence bearing on the extent of contamination, however, remained unavailable to residents for years.

The reports became public only days earlier after being filed September 8 in separate federal litigation brought by East Palestine-area businesses against Norfolk Southern. Petty said legal agreements had previously prevented him from releasing the testing. The *World Socialist Web Site* reported earlier this month on the delayed release.

Petty added: “My frustration always was that when people said ‘there’s nothing to see here’ ... Well, I’m not saying everything’s bad, but there is something to see here.”

Petty stressed that high contamination levels do not by themselves prove that exposure caused a particular cancer or illness; determining cumulative exposure by area remains necessary.

Dioxins and PAHs far above health screening levels

Dioxins are highly persistent toxic compounds, some of which are known carcinogens. Scientists use toxic equivalency, or TEQ, to express the combined toxicity of different dioxins. PAHs are produced by incomplete combustion, and several are also carcinogenic.

Petty said his investigation concentrated on persistent contaminants produced by the fires rather than only on chemicals originally carried by the train. Two cars carrying polyvinyl chloride, or PVC, pellets burned from the first day of the derailment, followed by the deliberate burning of

the five vinyl chloride tank cars on February 6.

“Anytime you have soot, that means you don’t have complete combustion,” he said, referring to the black plume produced by the February 6 operation. “So we know that was not a controlled burn.”

Rosenfeld’s May 29 report analyzed 105 dioxin samples and 90 PAH samples.

Using a 95 percent upper confidence limit—a statistical estimate of the upper bound of the average concentration represented by the samples—he calculated dioxin levels of 121.3 to 136 ng-TEQ/kg, 25 to 28 times the 4.8 ng/kg health screening level.

For carcinogenic PAHs, the corresponding figures were 2,142 to 3,245 µg/kg, 20 to 30 times the 110 µg/kg screening level.

Rosenfeld argues that the results show elevated contamination was not confined to a handful of isolated “hot spots.”

Petty emphasized that the findings draw on four separately collected datasets, including his own and Smith’s. He required full “Level 4” analytical data packages and an independent quality-assurance review, with problematic samples excluded.

Smith contrasted this with what he described as deficiencies in some sampling relied upon by Norfolk Southern and Arcadis, including chain-of-custody records that he said failed to identify samplers and improper handling of soil samples.

On the morning of February 6, winds were generally from the northwest and the evacuation zone was established largely southeast of the derailment. The burn did not occur until later that afternoon, after weather conditions had changed dramatically, Petty said.

According to hourly data he reviewed, from roughly 4 p.m. through 9 p.m. the wind was calm about half the time and otherwise came largely from the south or southeast. Petty argued that the plume could therefore remain over the community longer or move north and west into areas whose residents had not been evacuated.

Two property owners west of the derailment later told Petty that the plume had passed directly over them.

“And I’m like, my god, they went ahead with this thing when they had to know,” he said.

Petty believes economic considerations drove the decision. “I’ve always felt that the decision to go forward was an economic decision as opposed to an environmental decision,” he said, noting that offloading the vinyl chloride would have delayed reopening the rail line.

Background sampling is supposed to provide a comparison with soil unaffected by the derailment. Petty said areas north, west and east of the site were nevertheless later used to establish background levels.

“And they said, ‘See, the background’s no different than what’s under the plume,’” he said. “And I said, ‘Well, no kidding. You’re measuring under the plume. That’s not background.’”

Rosenfeld found that samples designated as background by EPA averaged approximately 6.7 ng-TEQ/kg—about 40 percent above the 4.8 ng/kg screening level—while 16 samples selected independently by Petty

farther from the affected area averaged about 2.3 ng-TEQ/kg.

Rosenfeld argues that at least some original background locations may therefore have received contamination from the derailment and fires. If affected soil is treated as the baseline, elevated contamination elsewhere can appear closer to normal.

Rosenfeld's plume modeling, using meteorological data and measured contamination, also shows modeled deposition extending in multiple directions rather than only southeast.

High dioxin measurements more than two years later

Smith, who has made repeated sampling trips to East Palestine, also presented later testing.

At one location near the derailment, Smith reported dioxin TEQ concentrations ranging from approximately 1,900 ng/kg in May 2023 to 5,300 in August 2025. The latter was more than 1,100 times the 4.8 ng/kg health screening level.

Intermediate readings fluctuated sharply. Smith said this may reflect redistribution of contaminated material through remediation work, flooding or other disturbances, although the measurements alone do not establish why concentrations changed.

His August 2025 testing also found 51 ng-TEQ/kg along one bank of Sulphur Run near Rebecca Street, more than 10 times the screening level.

At Leslie Run, concentrations of semi-volatile organic compounds were far higher along the creek banks than in the sediment between them. Smith argues that testing flowing water or sediment alone can miss contamination retained along the banks.

Petty said the environmental data are a starting point for determining cumulative exposure by geographic area—where people lived, how long they were exposed and the pathways through which contaminants may have entered their bodies.

As the WSWs reported earlier this week, East Palestine resident Jami Wallace has compiled a list of 84 cancer diagnoses, including 15 brain cancers, among residents and others connected to the surrounding area. Her tally is not an epidemiological study and does not by itself establish causation.

Residents also demanded remediation. One asked why authorities continued studying the problem while contaminated soil and creek banks remained in place.

"You can do all the health studies, you can push all the data you want," she said. "If we're not remediating the actual environment ... nobody's ever going to get better."

Petty said remediation should begin with the most contaminated areas and move outward, but that agencies first have to accept the data and use it to direct cleanup.

Reports kept from residents for years

Petty had originally been retained by attorneys representing residents in the class-action lawsuit. He objected to EPA testing methods and official assurances and became concerned that his findings were not being disclosed. His report remained unavailable to residents, and a nondisclosure agreement prevented him from releasing the underlying data.

Smith publicly challenged the official testing and carried out his own sampling. EPA personnel dismissed him as a "fake scientist," class-action

attorneys hired a public-relations firm that the Government Accountability Project says was used in part to discredit him. Norfolk Southern served him with a subpoena in October 2023. Later Freedom of Information Act records showed EPA personnel monitoring his activities. Petty subsequently submitted a declaration supporting Smith's sampling methodology.

The reports finally became public after attorney Jon Conlin retained Petty in separate litigation brought by businesses that had opted out of the \$600 million class settlement. Petty said he agreed only after receiving a commitment that his data and analysis would be released to the public.

Petty's reports, Rosenfeld's report and Petty's June 23 deposition were filed in federal court September 8. Ohio Advocates for Medical Freedom has collected the documents and related materials here.

Republican gubernatorial candidate Vivek Ramaswamy attended the meeting and came to dominate much of the question-and-answer period. He promised disclosure and a review of the class-action settlement but made no call for criminal charges against Norfolk Southern or officials whom residents accused of misleading them. Asked whether accountability would extend to Governor Mike DeWine, Vice President JD Vance and President Donald Trump, he said only, "We're going to get the truth."

The new material provides evidence that areas outside the evacuation zone were exposed to the plume and that some soil used to establish official "background" levels may itself have been contaminated. Residents were told it was safe to return without access to this information about what had been released into their community.

The data do not answer every question. Petty stressed that determining where contamination was deposited is only the first step; a comprehensive assessment of cumulative exposure remains necessary. This should be accompanied by long-term medical monitoring and healthcare for residents, continued independent testing and remediation, and the release of all government, railroad and contractor records concerning the derailment, vent-and-burn, sampling and cleanup.

Lonnie Miller, whose sister Connie Bennett died in June after being diagnosed with stage 4 lymphoma, summed up the demand for disclosure: "She had the right to know what was taking place in her front yard. We all had the right to know."



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