

DATE:	03/03/2023
TO:	Health Alert Network
FROM:	Debra L. Bogen, MD, FAAP, Acting Secretary of Health
SUBJECT:	East Palestine Train Derailment: Clinical Considerations
DISTRIBUTION:	Allegheny, Beaver, Butler, Lawrence, Mercer, Washington Counties
LOCATION:	Statewide
STREET ADDRESS:	n/a
COUNTY:	n/a
MUNICIPALITY:	n/a
ZIP CODE:	n/a

This transmission is a “Health Advisory,” and provides important information for a specific incident or situation; may not require immediate action.

HOSPITALS: PLEASE SHARE WITH ALL MEDICAL, PEDIATRIC, INFECTION CONTROL, NURSING AND LABORATORY STAFF IN YOUR HOSPITAL EMS COUNCILS: PLEASE DISTRIBUTE AS APPROPRIATE; FQHCs: PLEASE DISTRIBUTE AS APPROPRIATE; LOCAL HEALTH JURISDICTIONS: PLEASE DISTRIBUTE AS APPROPRIATE; PROFESSIONAL ORGANIZATIONS: PLEASE DISTRIBUTE TO YOUR MEMBERSHIP

- A Norfolk Southern train derailed in East Palestine, Ohio on February 3, 2023. Five of the fifty-three cars that derailed contained [vinyl chloride](#). Additional cars contained other chemicals of concern.
- Currently, individuals in the affected area are past the period of acute exposure (14 days).
- Thus far, vinyl chloride, hydrogen chloride, and phosgene air [monitoring levels](#) have not exceeded health-based thresholds for short-term exposure.
- Individuals at risk of exposure to the chemicals of concern can present with non-specific symptoms such as skin irritation, cough, shortness of breath, nausea and/or vomiting, headache, dizziness, and/or lethargy.
- There is no specific test or treatment recommended.
- Clinicians are encouraged to consult with the **Pittsburgh Poison Center (1-877-603-0170)** for additional medical guidance and information.
- If you have questions about this guidance, please call your local health department or 1-877-PA-HEALTH (1-877-724-3258).

On February 3, 2023, at approximately 9:30pm, a Norfolk Southern train had 53 cars derail in East Palestine, Ohio. The site of the derailment is just west of the Pennsylvania border. Five of the train cars contained the hazardous material, vinyl chloride. Additional train cars contained other [chemicals of concern](#), including ethylene glycol, butyl acrylates, ethylhexyl acrylate, benzene, ethanol, and isobutylene. Norfolk Southern scheduled a controlled vent and burn of the vinyl chloride from all five train cars containing vinyl chloride on the afternoon of February 6. By February 8, the fire and smoke plume subsided enough to allow for residents to safely return to their homes. Since then, air quality monitors around the perimeter of the derailment site have not measured any harmful pollutant levels entering Pennsylvania as a result of the derailment or the controlled burn. Specifically, **thus far there are [no measurements](#) of vinyl chloride, hydrogen chloride, phosgene, or benzene that have exceeded health-based thresholds for short-term exposure in Pennsylvania.**

Environmental, health, and safety officials from Pennsylvania, Ohio, and [multiple federal agencies](#) are working together to continue to monitor air and water quality in the region. Since February 16, Pennsylvania Department of Environmental Protection (DEP) has been conducting water sampling to closely monitor water contamination risks. As of February 25, 2023, water samples from nearly every private water well within a one-mile radius have been collected. The results from this sampling will be available in a few weeks. DEP continues to sample private drinking water wells within the two-mile radius of the train derailment. Multiple rounds of water samples will be taken over the year to watch for impacts to groundwater. DEP believes that long-term effects to ground or surface waters in Pennsylvania from the derailment are unlikely due to an evaluation of regional geology through published geologic reports. This is due to anticipated westward flow of groundwater from the derailment site. Additionally, DEP is assisting regional public and bottled water suppliers, including evaluating source water at the Beaver Falls Municipal Authority's surface water intake on the Beaver River.

The following are general guidelines for managing patients who were potentially exposed to the East Palestine train derailment, chemical spill, fire, and associated events in 2023. Consultation with an expert is recommended for agent-specific and patient-specific guidance, when clinically appropriate.

Healthcare providers are encouraged to consult with the **Pittsburgh Poison Center** for additional medical advice and information by calling **1-877-603-0170**. This toll-free number was recently established by Pittsburgh and Ohio's Poison Centers to specifically address medical questions related to the train derailment.

Chemicals of Concern

Smoke, [vinyl chloride](#), [phosgene](#), [hydrogen chloride](#), 2-butoxyethyl acetate, 2-ethylhexyl acrylate, butyl acrylate, and methyl acrylate. Some chemicals were being carried on the train; other chemicals currently involved are combustion by-products. [A list of additional chemicals on the train](#) is provided on US EPA's [dedicated website](#) for the incident.

Exposure

Initial exposures may have been via contact with skin and/or via inhalation. Subsequent exposures may also include ingestion (oral route).

Clinical sequelae depend on exposure variables such as route, duration, intensity, a chemical's mechanism of action, as well as medical comorbidities. Many of the chemicals act as dermal, respiratory, and/or mucous membrane irritants. Smoke inhalation may exacerbate underlying respiratory diseases such as asthma or emphysema.

Symptoms

At this point in time, individuals in the affected area are outside the period of acute exposure (14 days or less). Those at greatest risk of exposure are individuals who were within a two-mile radius of the derailment. Exposed individuals may complain of the following symptoms:

- Eye, skin, and/or throat irritation
- Cough, shortness of breath, and/or wheezing
- Headache
- Nausea and/or vomiting
- Dizziness
- Lethargy
- Confusion

[Vinyl chloride](#) exposure may manifest as non-specific symptoms such as skin irritation, extremity numbness and/or tingling. High concentrations of vinyl chloride may result in symptoms such as dizziness, lethargy, and/or respiratory symptoms such as shortness of breath, cough, and/or wheezing. Vinyl chloride is a carcinogen known to cause hepatic angiosarcoma; however, it has only been

observed in workers chronically exposed to very high concentrations of vinyl chloride over extended periods of time.

- **Some of the chemicals involved cause acute symptoms such as watery eyes or eye, nasal, or respiratory irritation but are unlikely to cause long-term effects (i.e., effects are reversible – dissipating over time once exposure ends).**

Testing Considerations

- Regarding the utility of laboratory testing or biomonitoring for a patient with environmental exposures, the following should be considered:
 - Which chemical(s) was the patient exposed to,
 - How long will the chemical remain in the patient’s body, and
 - How accurate is the test in question
- It is reasonable to evaluate measures of end organ effect (liver function tests [LFTs], kidney function, complete blood count [CBC], etc.), particularly if there is a history of significant exposure or if a patient’s symptoms would suggest further workup
- Specialized testing for the chemicals of concern is generally NOT clinically useful, because these tests:
 - Are neither sensitive nor specific,
 - Have long turnaround times,
 - Do not guide clinical management,
 - Are not easy to interpret,
 - May not have population reference values, and
 - Neither rule-in nor rule-out exposure, regardless of results.

For example, vinyl chloride and its metabolites can be detected in blood or urine, but they have a short half-life and may be undetectable after a few days following the initial acute exposure.

Mental Health Considerations

It is not uncommon for individuals to experience [stress and anxiety](#) after a traumatic incident such as a major environmental disaster. Healthcare providers are encouraged to discuss [resources](#) with patients to help them cope.

Pennsylvania Department of Health and DEP are periodically updating answers to [Frequently Asked Questions](#) regarding the train derailment.

Individuals interested in receiving further PA-HANs are encouraged to register at <https://www.health.pa.gov/topics/prep/PA-HAN/Pages/HAN.aspx>.

If you have questions about this guidance, please call your local health department or **1-877-PA-HEALTH (1-877-724-3258)**.

Categories of Health Alert messages:

Health Alert: conveys the highest level of importance; warrants immediate action or attention.

Health Advisory: provides important information for a specific incident or situation; may not require immediate action.

Health Update: provides updated information regarding an incident or situation; unlikely to require immediate action.

This information is current as of March 3, 2023 but may be modified in the future.
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