University of Kentucky | College of Public Health
Epidemiology & Environmental Health

East Palestine Health Tracking Study - Indoor Air Sampling Pilot Study

What is the purpose of the study? We collaborated with an indoor air quality study led by Misti Allison, an East Palestine resident, using indoor air monitors (Carrier Air Quality Monitor) provided by The Way Station. The Carrier Air Quality Monitors provide a Total Volatile Organic Compound (TVOC) value. This project was conducted to provide the ability to measure specific VOCs.

What did the study involve? We used a small air sampler (SKC ULTRA Passive Sampler 690-105) in 31 buildings, mostly homes, that had consistently high TVOC readings from the Carrier device or if the resident had concerns. Sampling was conducted for one week in September 2023 (15 buildings) and a separate week in April 2024 (16 buildings). Air samples were analyzed by Wayne State University's CLEAR Laboratory.

What did we find among participants in the pilot study?

Overall, the VOCs levels found in this study are similar to levels found in indoor air across the US.

BTEX (Benzene, Toluene, Ethylbenzene, Xylene) is a group of common hazardous VOCs that are found in gasoline/diesel, vehicle exhaust, cigarette smoke, and solvents. Short-term exposure to elevated levels of BTEX is associated with skin/eye/nose irritation, rashes, dizziness, fatigue, and headaches. BTEX can be found in most US indoor air at levels below the US EPA's Reference Concentration (RfC), the level at which long term exposure to the chemical could result in health concerns.

- In September 2023, two locations had levels of BTEX that were higher than expected. One of these was a garage. The other was found to have normal levels when re-tested in April 2024.

Butyl acrylate and **2-ethylhexyl acrylate** were chemicals on the railcars that derailed. Butyl acrylate and 2-ethylhexyl acrylate are not typically measured or found in US indoor air.

- In September 2023, butyl acrylate or 2-ethylhexyl acrylate was detected at three locations, but the level was too low to accurately measure. In April 2024, no acrylates were detected.

Tetrachloroethylene (PCE) and **Trichloroethylene** (TCE) are chemicals found in solvents, including cleaning agents and dry cleaning. Tetrachloroethylene (PCE) and Trichloroethylene (TCE) can be found in about half of US buildings.

- For each test date, one location had a level of Tetrachloroethylene (PCE) above the US EPA's Reference Concentration (RfC), the level at which long term exposure to the chemical could result in health concerns. The location with a high level in September 2023 had a normal level when re-tested in April 2024. The site with a high level in April 2024 is being re-tested.

Where can I learn more about VOCs and their health effects? The ATSDR website has information about VOCs and their health effects. https://www.atsdr.cdc.gov/toxprofiledocs/index.html. The page includes many chemicals, so you will need to identify the chemical of interest and then select the link for ToxFAQs in the middle of the page. Butyl acrylate and 2-ethylhexyl acrylate are not provided on the ATSDR website.

Who should I contact if I have questions?
Please contact Dr. Erin Haynes by phone at 859-562-2119 or email Erin.Haynes@uky.edu with questions.