

East Palestine Train Derailment and Controlled Burn: Environmental Data Independent Studies Review



Introduction and Purpose

On February 3, 2023, a Norfolk Southern freight train derailed in East Palestine, Ohio. Twenty rail cars contained hazardous materials. These materials included vinyl chloride, ethylene glycol, ethylhexyl acrylate, butyl acrylate and isobutylene. Vinyl chloride in the derailed rail cars was considered unstable and potentially explosive. Rather than let an explosion happen, Norfolk Southern decided to do a controlled burn release of the vinyl chloride.

The derailed train caused a cascade of activities. Federal and state agencies began extensive environmental monitoring, including sampling and monitoring of air, drinking water, surface water, sediment, groundwater and soil. Other studies monitored and assessed potential chemical exposures for residents and responders.

U.S. EPA made its Technical Assistance Services for Communities (TASC) program available to support the village of East Palestine. In coordination with East Palestine officials, TASC prepared the East Palestine Train Derailment and Controlled Burn: Environmental Data Review Report. The report came out in October 2023. It describes the types of environmental data gathered by federal, state and local government agencies to understand the contamination released during the train derailment and subsequent controlled burn accomplished as of August 1, 2023. It also summarizes assessment of chemical exposure (ACE) studies focused on public health. TASC compiled as much data as possible from publicly available resources for the report.



The report *did not* encompass studies completed by other independent entities such as area universities. This review summarizes the studies – completed and ongoing – conducted by these entities.^{1, 2}

The Importance of Additional Research and Monitoring

The purpose of environmental monitoring in and around East Palestine is to determine the type, amount and location of contamination, and possible human health impacts related to the release of the spilled materials and fallout from the controlled burn. Federal, state and local government agencies, including U.S. EPA, took the lead by monitoring media of concern to the community (air, soil, surface water and sediment). In addition, agencies associated with understanding the derailment impacts on human health assessed possible health impacts on area residents and emergency responders by completing several ACE studies. These agency-generated monitoring efforts were made publicly available. They are described in TASC's October 2023 Environmental Data Review Report and Report Update covering August 2023 through April 2024.



The community and area universities recognized the need for gathering and understanding independently generated information. The community reached out to several institutions for their assistance. Public health-related entities such as university researchers supported by the National Institute of Environmental Health Sciences (NIEHS) also designed studies to evaluate health impacts in the community. These independent efforts include research studies as well as assistance programs. The studies focus on questions such as “what are the health effects caused by the train derailment-related chemical exposure?” The assistance programs include support from university staff to help with answering questions raised by the community and media. This review provides a summary of the findings of these additional independent studies/assistance programs.

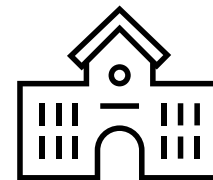
¹ The report, the report summary and the report presentation are available on the village of East Palestine’s Health and Safety webpage (<https://epohio.org/health-safety/>).

² U.S. EPA’s TASC program provided the East Palestine Train Derailment and Controlled Burn: Environmental Data Review Report and this review. Their contents do not necessarily reflect the policies, actions or positions of U.S. EPA.

Summary of Independent Studies/Assistance Programs

This section describes the completed independent studies/assistance programs not addressed in TASC's October 2023 Environmental Data Review Report and Report Update covering August 2023 through April 2024.

This research effort identified 11 train derailment-related independent studies/assistance programs, all led by or coordinated with university researchers. Summary findings across these efforts are described briefly below.



- Several of these studies overlap or are coordinated among the researchers.
- All the studies focus on addressing community concerns. Most of the studies include community involvement.
- Six of the studies, all funded by NIEHS, are evaluating human health impacts related to train derailment and controlled burn exposure. Case Western Reserve University, Texas A&M University, the University of California, the University of Kent and the University of Pittsburgh direct these studies. Researchers developed the studies through a series of workshops with public health professionals focused on community concerns (www.niehs.nih.gov/research/programs/east_palestine). Researchers coordinate across several of these studies to achieve their goals.
- The East Palestine community-organized independent indoor air monitoring study collected indoor air readings in buildings across the greater East Palestine area. A resident conducted the study with fellow community members and independent research consultants. University of Kentucky researchers support part of the study's air sampling activities. Those researchers are conducting one of the NIEHS-supported studies.
- The University of Illinois Chicago, Cleveland State University and Purdue University put together a team of researchers that conducted a community survey and interviews to understand people's experiences related to water, home and air impacts after the train derailment and controlled burn.
- Purdue University also provided a study/assistance program involving in-field environmental material sampling (soil, surface water and sediment) completed by students and faculty. This research team gave several presentations to the community to describe their efforts and results.
- Two universities (Texas A&M University, through its Superfund Research Center, and Carnegie Mellon University) coordinated to complete a study/assistance program to supplement U.S. EPA's air monitoring and sampling. The universities published their results in 2023.
- Kent University's study/assistance program involved faculty with environmental expertise to review ongoing emergency response activities at the time and provide professional recommendations for ongoing studies. These faculty members conducted several media interviews to assist the community.

Table 1 at the end of this review lists the types of studies and the independent entities involved in these efforts. It includes website links containing information for anyone who would like to get involved or learn more.

Overview of Each Independent Study/Assistance Program

This section describes each study/assistance program. It provides the research or program title, the principal investigator and a summary of the work accomplished (or the goal of the study), as well as each study/assistance program's status. Table 1 provides summary information as well, along with website links.

Healthy Futures Research (NIEHS) Studies

NIEHS sponsors two studies as part of its Health Futures Research program. Case Western Reserve University and Texas A&M University are the lead researchers. They coordinate across the two studies. A summary of each study is below.

Case Western University

- 1) “Healthy Futures Research Study: Linking somatic mutation rate with baseline exposure in East Palestine.” Case Western Reserve University, Cleveland Ohio. Dr. Frederick Ray Schumacher, Associate Professor, Department of Population & Quantitative Health Sciences. case.edu/cancer/community/healthy-futures-research and reporter.nih.gov/search/_dDrxmiihUmy2ZF4tCEuVA/project-details/10819613.



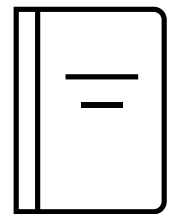
Summary: The Healthy Futures Research Project is seeking participants from the area who dealt with chemical exposure in the aftermath of the train accident. The research team will study the biological impact of chemical exposures on the short- and long-term health of residents by measuring DNA damage. DNA damage may increase the risk of developing health conditions such as cancer and other diseases. The project team will interview residents to understand post-disaster quality of life, risk perceptions and healthcare needs.

Status: Healthy Futures Research is developing a Community Advisory Board (CAB) to guide future participant recruitment and advocacy efforts. The research website provides online questionnaires for participants to submit their exposure and risk profiles for the study. The research team will collect participant biospecimens to assess exposure impact on residents' health and to determine the relationship between their distance from the main exposure area and DNA damage. In addition, the researchers will conduct interviews with residents to identify coping strategies, how disaster shapes risk perception and their access to health-protective resources.

Texas A&M University

- 2) “Responding to Air Pollution in Disasters (RAPID) Air Sampling and Symptom Monitoring in East Palestine, OH.” Texas A&M University. Public Health. Natalie Johnson, Ph.D./Associate Professor – Chair, Interdisciplinary Program in Toxicology. reporter.nih.gov/search/_dDrxmiihUmy2ZF4tCEuVA/project-details/10819836.

Summary: The objective of this project is to apply mobile air sampling strategies with health assessment and communication tools to rapidly describe sustained health risks from volatile organic compound (VOC) exposure during the cleanup and recovery phases of the train derailment. The key assumption of this project is that VOCs may vary in areas of East Palestine based on the location of phases of the cleanup and recovery. Mobile air sampling data, combined with resident self-reported symptom information, will help identify localized hotspots of contamination. This study will determine the location of VOCs over time as cleanup efforts continue, interpret the resulting VOC data to determine risk and collect health data using community surveys. The surveys will identify chemical and non-chemical stressors, addressing physical and mental health and unique chemical sensitivities.



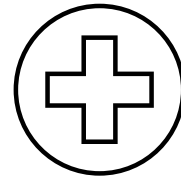
Status: Unknown. An upcoming National Institutes of Health (NIH) workshop will likely provide an update (Ohio Rural Health Association Webinar, August 14, 2024).

East Palestine Toxin Health Effects Study (NIEHS)

University of California

- 3) “Uncovering the Short-Term Public Health Impact of Toxin Release in East Palestine, Ohio: Outcomes and Effect Modifiers” University of California, San Diego. Dr. Beatrice A. Golomb, Professor of Medicine. www.golombresearchgroup.org/#intro and reporter.nih.gov/search/F3Snssgm10W0M6NLpc_aIQ/project-details/10854406.

Summary: The East Palestine (Ohio) Toxin Health Effects Study aims to gather information from residents in East Palestine and the surrounding area, which may be essential for documenting a tie (when present) between train derailment exposures and the emergence of new health problems. The study includes optional blood tests and sample archiving, optional wristbands for toxin exposure assessments, and online surveys to document past, current and future health outcomes. This study will use previous lessons learned from other human exposures to mixed toxins to identify short-term health impacts. This information will be used to help understand the health dangers of the derailment-related chemicals to proactively assist with any potential future human exposure of a similar nature.



Status: Researchers continue to request that residents in East Palestine and the surrounding area complete an online survey and participate in follow-up surveys to track future health outcomes.

East Palestine Train Derailment Health Tracking Study (NIEHS)

University of Kentucky

- 4) “East Palestine Train Derailment Health Tracking Study.” University of Kentucky, College of Public Health. Erin N. Haynes, Dr.P.H./M.S., Professor and Chair of the Department of Epidemiology and Environmental Health. cph.uky.edu/research/projects/east-palestine-train-derailment-health-tracking-study.



Summary: This study tracks the long-term health of all participants. Health conditions and symptoms will be mapped to look for “hot spots” and trends over time. This project will target effective communication for East Palestine and surrounding community residents. It will: 1) examine experiences/concerns, health symptoms, psychosocial/traumatic stress, emotional wellbeing, trust networks and environmental health understanding by residents; and 2) enhance communication among the scientific research community, agencies and the East Palestine community.

Status: Researchers shared initial results at the Public Health Research and Surveillance Priorities from the East Palestine Train Derailment Workshop in November 2023. The survey reported high rates of respiratory, neurological (nervous system-related), dermal (skin-related) and gastrointestinal symptoms as well as indicators of stress and post-traumatic stress disorder (PTSD) attributed to the derailment. To watch the recording of Dr. Haynes presenting these findings, visit the NationalAcademies.org website at www.nationalacademies.org/event/40970_11-2023_public-health-research-and-surveillance-priorities-from-the-east-palestine-ohio-train-derailment-a-workshop. In addition, the University of Kentucky, as part of its independent health-based research, collected several air samples from participants of the community-based indoor air study described below (Study #7).

The study is ongoing. Researchers regularly provide results to the community. The research team encourages everyone in the community who is 18 years and older to participate. Figure 1 (right) shows the target study area.

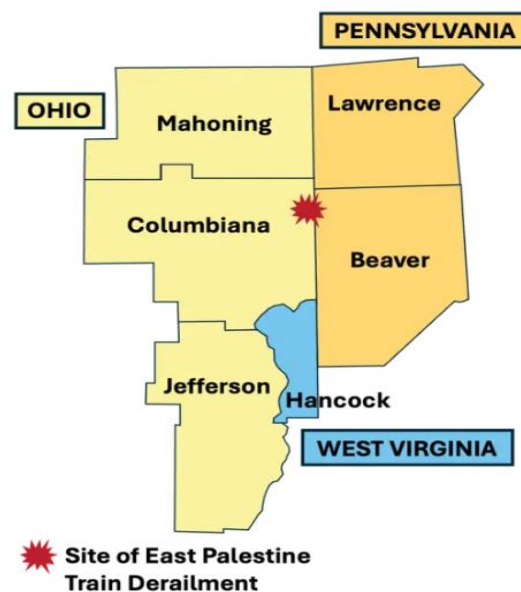
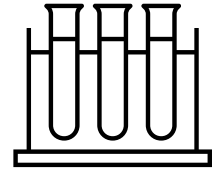


Figure 1. Map of the target study area. Participation is open to residents of the counties shown.

East Palestine Train Derailment Health Studies at the University of Pittsburgh (NIEHS)

University of Pittsburgh (First Study)

The University of Pittsburgh leads two studies. The lead researchers coordinate and both studies include community involvement.



- 5) “Profiling the Post-accident Exposome in East Palestine.” University of Pittsburgh at Pittsburgh, Dr. Peng Gao, Assistant Professor, School of Public Health – Environmental and Occupational Health. reporter.nih.gov/search/Yk-WiZOHVkSshldFR6MqoA/project-details/10819726 and www.sph.pitt.edu/east-palestine-train-derailment-health-studies-university-pittsburgh.

Summary: This study will characterize how contaminants move in the environment and the exposure and human health risk related to the derailment chemical releases. It will collect 75 soil, water and sediment samples from impacted areas. Samples will be analyzed for chemicals associated with the chemical release and controlled burn. These chemicals include dioxins, furans, chlorinated furans, polycyclic aromatic hydrocarbons, chlorinated polycyclic aromatic hydrocarbons and polychlorinated biphenyls. The study will evaluate results to identify any byproducts created. It will also evaluate potential human health risks associated with exposure to the tested chemicals.

What is the exposome?

Success in mapping the human genome has fostered the complementary concept of the “exposome”. The exposome can be defined as the measure of all the exposures of an individual in a lifetime and how those exposures relate to health. An individual’s exposure begins before birth and includes insults from environmental and occupational sources (from the Centers for Disease Control and Prevention website):

archive.cdc.gov/www.cdc.gov/niosh/topics/exposome/default.html.

Status: Unknown. The upcoming NIH workshop will likely provide an update (Ohio Rural Health Association Webinar, August 14, 2024, Zoom Registration is required:

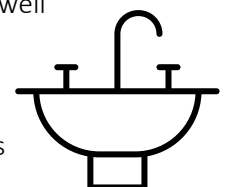
us06web.zoom.us/meeting/register/tZYof-utqDwoGtbzL9RmDeyXIsGC1RVmAj3H#/registration).

University of Pittsburgh (Second Study)

- 6) “East Palestine Community-Engaged Environmental Exposure, Health Data, and Biospecimen Bank.” University of Pittsburgh at Pittsburgh, Department of Medicine. Dr. Juliane I Beier, Assistant Professor of Medicine. reporter.nih.gov/search/_dDrxmiihUmy2ZF4tCEuVA/project-details/10819705.

Summary: This study emphasizes the timeliness needed to capture human and environmental impacts from the train derailment given the volatile nature of the contaminants and the high level of stress in the community. It uses a citizen science approach, engaging the community from start to finish. The study’s objectives are:

- Embed a community-engaged approach from start to finish by using citizen science approaches where community members will collect environmental samples, biospecimens and health data related to the train derailment.
- Describe environmental exposure and risks related to vinyl chloride and polyfluoroalkyl substances with the collection of surface water, sediment and soil samples from outdoor areas, as well as air and well water samples from homes. Researchers will use the gathered data to determine and predict how the contamination traveled through the environment and area homes.
- Collect samples of blood and urine from community members to determine potential liver damage and to provide a “biomarker” database from which the researchers can follow trends related to contaminant exposure over time.

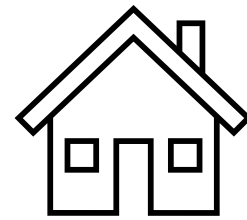


Status: Unknown. The upcoming NIH workshop will likely provide an update (Ohio Rural Health Association Webinar, August 14, 2024).

East Palestine Indoor Air Monitoring Community Study

The East Palestine Community and the University of Kentucky

- 7) East Palestine Indoor Air Monitoring Community Study. Misti Allison, resident. www.youtube.com/watch?v=0Zv_052_048.



Summary: Indoor air monitoring of buildings in the greater East Palestine area took place over the course of a week in September 2023. Resident Misti Allison conducted the study in partnership with fellow community members and independent market research consultants. Fifty commercially available indoor air monitors collected high and low daily readings of total volatile organic compounds (TVOCs) and particulate matter (PM2.5). Information describing the location of the monitoring in relation to the derailment site was included as part of the study analysis. The University of Kentucky also collected air samples from study participants (see Study #4 above).

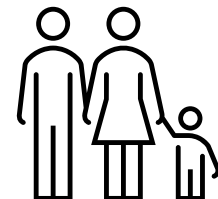
Status: Misti Allison provided a video summary of her research and findings in December 2023. The video is available at www.youtube.com/watch?v=0Zv_052_048.

Community Survey Results, Research Study on Community Experiences Related to Water, Home and Environmental Impacts after the East Palestine Chemical Spill and Fires

University of Illinois Chicago, Cleveland State University and Purdue University

- 8) Community Survey Results. Dr. Lauryn Spearing, Mr. Joseph Toland, Dr. Andrew Whelton and Dr. Clayton Wukich. sites.google.com/uic.edu/east-palestine-crisis/home.

Summary: A team of researchers funded by the National Science Foundation (NSF) conducted a community survey and interviews to understand people's experiences related to water, home and air impacts after the train derailment. The goal of the research is to identify public attitudes about water, air and soil safety as well as how the crisis has impacted homes and the environment.



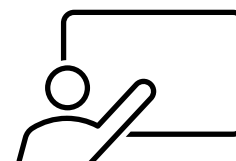
Status: A report summarizes the research at drive.google.com/file/d/1GULZrPE_Ku-BcF7VOUMx56NgAVC8NQ3X/view?usp=sharing. Interview data results will be provided at a later date.

Ohio/Pennsylvania Chemical Spill Public Health Response, Purdue University, Center for Plumbing Safety

Purdue University

- 9) Ohio/Pennsylvania Chemical Spill Public Health Response, Purdue University, Center for Plumbing Safety. Andrew Whelton, Ph.D., Lyles School of Civil Engineering and Division of Environmental and Ecological Engineering. engineering.purdue.edu/PlumbingSafety/project/OH-chemical-spill.

Summary: In response to requests from East Palestine residents, the Purdue University Center for Plumbing Safety led a volunteer response team to help community members better understand key public health and safety questions. The volunteer response team includes experts in environmental and civil engineering, soil science, environmental chemistry, atmospheric science, geosciences and agriculture, among other disciplines. The team posts information about its efforts and discoveries on its website (see above). The team has compiled available information on the website and has provided several presentations to the East Palestine community.



A summary of the volunteer response team's efforts (as of May 7, 2023) is on the team's website and provided below:

- Conducted five on-site field investigations.
- Interviewed residents to understand chemical exposures and impacts.

- Conducted air, surface water, drinking water, soil and surface sampling in the impacted area.
- Reviewed air, water and soil testing results from a Norfolk Southern contractor and pointed out deficiencies to U.S. EPA for correction.
- Provided U.S. EPA with recommendations on how oversights that sometimes placed public safety at risk could be corrected. These topics included air testing, private well testing, communications and chemical exposures during aeration.
- Requested information on Centers for Disease Control and Prevention (CDC) worker illnesses that occurred during their on-site investigation in February and March.
- Provided recommendations to the Occupational Safety and Health Administration (OSHA) for improving worker safety (before confirmation of reports of government agency illnesses).
- Made recommendations to the governors of Ohio and Pennsylvania and the Pennsylvania Senate about actions needed to thoroughly identify contamination and remove health risks from the communities.
- Submitted public comments and testimony to the U.S. Senate, the U.S. House of Representatives and Commonwealth of Pennsylvania Senate hearings about the disaster.
- Provided and offered disaster response and recovery technical advice to the governors of Ohio and Pennsylvania, U.S. EPA, the White House, the Columbiana County Health Department, the Village of East Palestine, local schools, businesses, residents, community groups and NIH.
- Helped external research teams better understand the issues and bring their expertise to the impacted area to support scientific response and recovery.
- Shared discoveries in real time with residents, community groups, government agencies, universities and other organizations of interest to inform decision-making.

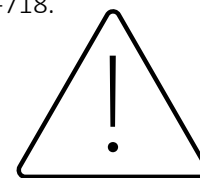
Status: The volunteer response team provides information on its website (engineering.purdue.edu/PlumbingSafety/project/OH-chemical-spill) and updates it regularly. Please share any questions with Professor Andrew Whelton (awhelton@purdue.edu).

Center for Atmospheric Particle Studies, Air Quality and Climate

Texas A&M University Superfund Research Center/Carnegie Mellon University

- 10) "Air Pollutant Patterns and Human Health Risk following the East Palestine, Ohio, Train Derailment." Center for Atmospheric Particle Studies, Air Quality and Climate (CAPS). Oladayo Oladeji, Mariana Saitas, Toriq Mustapha, Natalie M. Johnson, Weihsueh A. Chiu, Ivan Rusyn, Allen L. Robinson and Albert A. Presto. Environmental Science & Technology Letters, Volume 10, Issue 8, August 8, 2023. Pages 618-718. pubs.acs.org/doi/epdf/10.1021/acs.estlett.3c00324.

Summary: Independent data collection by Texas A&M University's Superfund Research Center and Carnegie Mellon University corroborated U.S. EPA's findings on air quality in East Palestine. To complement U.S. EPA's stationary air monitoring in East Palestine, the researchers conducted mobile air quality sampling on February 20 and February 21, 2023. Results from the mobile air monitoring indicated that average concentrations of benzene, toluene, xylenes and vinyl chloride were below minimal risk levels protective of human health. These results coincide with U.S. EPA results. Levels of acrolein were high relative to those of other volatile organic compounds, with map-based analyses showing levels in East Palestine up to six times higher than what would typically be expected in the area had there not been the train derailment and controlled burn. Non-targeted analyses identified levels of more unique compounds above what would be expected, with some compounds showing patterns like that of acrolein and other compounds showing distinct hot spots. Conclusions from this initial study recommended follow-up mobile air quality monitoring to describe long-term exposure and risk levels.



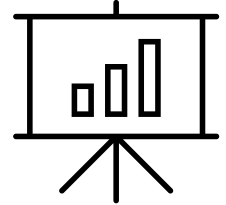
Status: The results of this monitoring have been published in:

Air Pollutant Patterns and Human Health Risk following the East Palestine, Ohio, Train Derailment. Oladayo Oladeji, Mariana Saitas, Toriq Mustapha, Natalie M. Johnson, Weihsueh A. Chiu, Ivan Rusyn, Allen L. Robinson, and Albert A. Presto. Environmental Science & Technology Letters 2023 10 (8), 680-685. DOI: 10.1021/acs.estlett.3c00324.

Kent State Experts Weigh in on Aftermath of East Palestine Train Derailment

- 11) Kent State Experts Weigh in on Aftermath of East Palestine Train Derailment.
www.kent.edu/today/news/kent-state-experts-weigh-aftermath-east-palestine-train-derailment.

Summary: East Palestine, Ohio, is about 50 miles southeast of the city of Kent. Media outlets contacted Kent State University faculty members to lend their expert opinions and insight on cleanup work, air monitoring and water testing. Faculty who conducted media interviews include Dr. David Kaplan, professor in the Department of Geography and director of the Environmental Studies Program, and Dr. Kuldeep Singh, Ph.D., assistant professor in the Department of Earth Sciences. Both professors emphasized the need to continue monitoring to ensure safe conditions for area residents. Media coverage with the Kent State experts in 2023 includes:



- February 9: Is the air safe? EPA releases East Palestine air monitoring data (WFMJ-TV).
- February 13: Independent experts discuss potential long-term health risks from controlled burn (WFMJ-TV).
- February 14: East Palestine: Expert examines cleanup plan, offers insight, concerns (WFMJ-TV).
- February 18: Professor: Oily sheen on East Palestine Creek behaving like vinyl chloride (Akron Beacon Journal).
- February 20: Experts react to dioxin concerns in East Palestine after senators call on EPA for tests (WFMJ-TV)
- February 22: Did the train derailment in East Palestine affect its water supply? Experts say more testing is needed (ABC News).
- March 1: Outside experts say citizens should stay away from East Palestine creeks as cleanup continues (WFMJ-TV).
- March 2: East Palestine bombarded by media in wake of derailment (The East Liverpool Review).
- March 8: Watchdog Report: Independent experts point to gaps in water testing in East Palestine (WFMJ-TV).

Status: The most recent Kent State media release came out on March 8, 2023.

Summary of the Independent Studies/Assistance Programs

- University researchers are completing six studies that focus on human health impacts from the train derailment. Many of these studies are coordinated and involve community participants.
- East Palestine community members completed a local study of indoor air monitoring. Results continue to be coordinated with university researchers.
- The University of Illinois Chicago and others reported a survey of community experiences related to water, home and environmental impacts. This report will be updated by data gathered from community interviews.
- Purdue University provided on-the-ground sampling and studies of the derailment impacts. Their website is continually maintained to provide information to the public.
- The air monitoring by Texas A&M University and Carnegie Mellon University supplemented the air monitoring/sampling completed by U.S. EPA and was ultimately published. Results indicated that U.S. EPA's air quality information was defensible and robust.
- Kent State faculty provided their expertise through a series of media interviews in response to community requests to help better understand emergency response procedures.



Summary and Next Steps



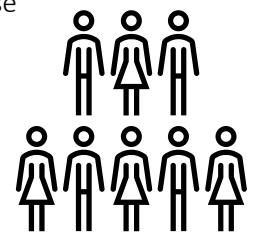
TASC has assisted with the review and understanding of investigative studies accomplished in response to the train derailment. The sequence of studies completed follow a standard path of investigative methods typically taken in response to an emergency. The initial studies involve sampling and monitoring of environmental materials impacted by a chemical release (spill and controlled burn). Follow-on steps involve monitoring of impacts on human health once the chemical release is better understood. The initial studies describe the chemical release in detail; the follow-on studies help determine possible impacts on human health. The entities involved in these studies are typically associated with federal, state and local agencies responsible for addressing an emergency response.

Independent researchers often lend assistance by conducting studies of unique value based on their proximity to the train derailment (local universities) and capabilities (e.g., university-led CAPS air quality monitoring to supplement standard air monitoring procedures completed by U.S. EPA and state agencies). Furthermore, emergency response can lend funding opportunities (for example, from NSF and NIEHS) for qualified researchers to develop studies that learn from the emergency. These studies ultimately help understand the impacts of the train derailment more thoroughly and contribute to a better understanding of how similar emergencies (in the future) can be addressed.

Most of these efforts are ongoing. All these independent research efforts are focused on serving community interests. Researchers started several of these efforts early in the emergency response timeline to capture real-time conditions of community concerns (study #8), supplement air quality monitoring (studies #7 and 10), provide professional recommendations on ongoing sampling and data interpretation (studies #9 and 11), and to collect and analyze samples of impacted environmental materials (all studies where applicable).








Later, as emergency response actions continued, independent researchers began to identify community concerns related to human health impacts (studies #1 through #7). Public health entities collaborated to identify studies to assist community understanding of possible human health impacts and other human health concerns, such as possible exposure to contaminants in indoor air (study #7).



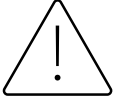

This review compiles the independent research efforts that are accessible online. TASC reviewed these studies and found that they all serve community interests and use sound scientific approaches. The methods and resulting data are not typically publicly available or may be published later. However, certain studies involving community participation (collection of surveys or samples) do provide comprehensive study information and results to the individual participants. More studies may be available or ongoing. If the community is aware of more studies beyond the studies listed below, please notify TASC point of contact (Karmen King (kking@skeo.com)).



In total, this review lists 11 independent research efforts that study topics of concern or provide support to the community. Most of these research efforts request community involvement. Involvement is the most important and likely method for people in the community to stay informed and understand the information. TASC recommends that people engage with all research efforts to learn more and that, if possible, they assist researchers to help provide key community perspectives.

Table 1. Summaries of East Palestine Independent Study/Assistance Programs

Study/ Assistance Program Reference #	University	Principal Investigator	Study/Assistance Program Title	Website Link
Healthy Futures Research (ongoing studies and assistance programs) healthyfuturesresearch.org				
1 	Case Western Reserve University	Fredrick R. Schumacher, Ph.D., M.P.H.	Healthy Futures Research Study: Linking somatic mutation rate with baseline exposure in East Palestine	reporter.nih.gov/search/dDrxmiihUmy2ZF4tCEuVA/project-details/10819613
2 	Texas A&M University	Natalie Johnson Ph.D., Associate Professor	Responding to air pollution in disasters (RAPID) air sampling and symptom monitoring in East Palestine, OH	reporter.nih.gov/search/mDz9cUh_HkWlaGOcnMOtrg/project-details/10819836
East Palestine Health Effects Study (ongoing study and assistance program) www.golombresearchgroup.org/ep-study				
3 	University of California, San Diego	Beatrice Alexandra Golomb, M.D., Ph.D.	Uncovering the Short-Term Public Health Impact of Toxin Release in East Palestine, Ohio: Outcomes and Effect Modifiers	reporter.nih.gov/search/F3Snssgm10W0M6NLpc_alQ/project-details/10854406
East Palestine Train Derailment Health Tracking Study (ongoing study and assistance program) cph.uky.edu/research/projects/east-palestine-train-derailment-health-tracking-study				
4 	University of Kentucky	Erin N. Haynes, Dr.P.H., M.S.	East Palestine Train Derailment Tracking Study	reporter.nih.gov/search/wEUgC-ghxUqNxMa4Wkyoyw/project-details/10819966
East Palestine Train Derailment Health Studies at the University of Pittsburgh (ongoing studies and assistance programs) www.sph.pitt.edu/east-palestine-train-derailment-health-studies-university-pittsburgh				
5 	University of Pittsburgh	Peng Gao, Ph.D., Associate Professor	Profiling the Post-accident Exposome in East Palestine	reporter.nih.gov/search/Yk-WiZOhVkSshldFR6MqoA/project-details/10819726
6 	University of Pittsburgh	Juliane I. Beier, Ph.D., Assistant Professor of Medicine and Maureen Lichtveld, Dean, Professor.	East Palestine Community-Engaged Environmental Exposure, Health Data, and Biospecimen Bank	reporter.nih.gov/search/1ZqbQda6106WdiQVTMNWqg/project-details/10819705
East Palestine Indoor Air Monitoring Community Study (ongoing study)				
7 	East Palestine community members and University of Kentucky (study #7)	Misty Allison	East Palestine Indoor Air Monitoring Community Study	www.youtube.com/watch?v=0Zv_052_048

Study/ Assistance Program Reference #	University	Principal Investigator	Study/Assistance Program Title	Website Link
University of Illinois Chicago Community Experiences Survey (ongoing study)				
8 	University of Illinois Chicago	Lauryn Spearing, Ph.D.	Community Experiences Survey Report	sites.google.com/uic.edu/east-palestine-crisis/home
Ohio/Pennsylvania Chemical Spill Public Health Response (ongoing studies and assistance program)				
9 	Purdue University, Center for Plumbing Safety	Andrew Whelton, Ph.D.	Not Applicable	engineering.purdue.edu/PlumbingSafety/project/OH-chemical-spill
Air Pollutant Patterns and Human Health Risk following the East Palestine, Ohio, Train Derailment (completed study)				
10 	Texas A&M University Superfund Research Center and Carnegie Mellon University	Oladayo Oladeji, Mariana Saitas, et al.	Air Pollutant Patterns and Human Health Risk following the East Palestine, Ohio, Train Derailment.	pubs.acs.org/doi/epdf/10.1021/acs.estlett.3c00324
Kent State Experts Weigh In on Aftermath of East Palestine Train Derailment (ongoing assistance program): today.tamu.edu/2023/03/06/texas-am-carnegie-mellon-researchers-confirm-epas-finding-on-air-quality-in-east-palestine				
11 	Kent State University	Not Applicable	Not Applicable	www.kent.edu/today/news/kent-state-experts-weigh-aftermath-east-palestine-train-derailment