

## **Lessons From Public Health Response Needs During and After Industrial Disasters 2/09/23**

Industrial disasters affect site workers, first responders, other workers and resident populations. These impacts are broad and may include death, injury and disability, physical and mental illness and home displacement. Industrial disasters can also impact recovery and clean-up workers as well as continue to impact the health of residents from residual contamination after the major incident has subsided.

In response to the East Palestine, Ohio train derailment that resulted in the burning of cargo containing vinyl chloride, ethylhexyl acrylate, ethylene glycol monobutyl, butyl acrylate and isobutylene – all petrochemical products – for days, the Breathe Project thought it important to present best practices related to a public health response associated with industrial disasters.

Below are the lessons learned regarding response needs abstracted from existing literature and guidance documents focused on public health response needs associated with industrial disasters and incidents. These lessons are not meant to be comprehensive nor to substitute official guidance. Rather the lessons below are intended to support reflections on the immediate needs confronting the East Palestine, Ohio train derailment disaster and critical elements for enhanced emergency preparedness in Pennsylvania.

Additional resources are outlined at the end of this document.

---

### **# 1: Know who was there**

Critical for any follow-up associated with an industrial disaster is to account for who was present during and after the event. Rostering and credentialing recommendations are available from the [Emergency Responder Health Monitoring System](#), which was developed by the National Institute of Occupational Safety and Health in the USA after 9/11. The tracking system needs to be inclusive of impacted workers, volunteers and residents during and immediately after the accident (including cleanup/recovery workers).

#### **Questions:**

- ***Has such a population inventory taken place in East Palestine, Ohio and surrounding impacted communities?***

- ***Who in Pa. would be tasked with such responsibility should a disaster occur here and are procedures in place?***

## **#2: Have public health experts provide input to the disaster response**

The full spectrum of public health expertise (physicians, epidemiologists, environmental health professionals, industrial hygienists, informatics experts) should be involved in a rapid hazard assessment of the scope of the disaster and determine public health outcome priorities, including public health (both physical and psychological) and environmental assessments.

### **Questions:**

- ***Has a public health impact team been deployed in East Palestine, Ohio?***
- ***Does Pa. have such a professional public health community engaged and ready to be deployed should a disaster occur here?***

## **#3: Take care of those in close proximity: health monitoring and surveillance**

Monitoring and continued health surveillance of an industrial disaster's acute and chronic health effects is necessary. Health monitoring and surveillance are two different but complementary methods to protect the health and safety all persons directly or indirectly involved in an industrial disaster.

- Monitoring is the ongoing and systematic collection, analysis, interpretation and dissemination of data *related to an individual* incident responder's injury and illness status. This allows for the evaluation of the occurrence of an exposure, determination of the level of exposure that may have been experienced and assessment of how that exposure is affecting health.
- Surveillance is the ongoing and systematic collection, analysis, interpretation and dissemination of illness and injury data *related to the impacted population as a whole*. This allows for the tracking of health status (illness and injury) trends within the defined population impacted by the incident. A mechanism to allow tracking should be an integral part of the response to any event.

Health monitoring and surveillance requires many components, including:

- structured data collection (into continually maintained databases) on the physical and mental health outcomes and progression over the lifetime of the affected;
- detailed exposure assessment (both environmental exposure measurements and biological measurements of the affected populations);
- adequate physical and mental health treatment and support needs to be accessible and provided;

- risk communication must be coordinated between governmental authorities, scientific experts and social scientists.

**Questions:**

- ***Have physicians serving the East Palestine, Ohio community and beyond been briefed about the health symptoms and outcomes that could be expected from exposure to combustion emissions and releases from the train derailment disaster? For example, the assessment of lung function from possible exposures to phosgene or hydrogen chloride; or monitoring for chloracne from possible exposures to dioxins created as byproducts of the combustion of vinyl chloride. Are there systems in place for ongoing surveillance?***
- ***Does the state have a team of occupational/environmental medical experts ready to provide the necessary health monitoring and continued surveillance after an event? Is the state ready to provide the financial support for such services rather than delaying necessary interventions until such support is committed?***

**#4: Obtain useful environmental exposure information**

Individuals impacted by industrial disasters may be exposed to many different chemical and environmental hazards during the event. Obtaining accurate and useful exposure information is a crucial element for ensuring that exposures are accurately characterized, risk is communicated appropriately and sufficient information is available for making evidence-based decisions to protect people during and after the disaster. Of importance is to acknowledge limitations in exposure/environmental data monitoring systems that were available and active during the time of the disaster and to supplement with additional data collection systems as needed to better understand the range of possible exposures to specific toxicants, given the nature of the event.

**Questions:**

- ***Given that the East Palestine, Ohio train derailment resulted in a complex mixture of pollutants from the combustion of petrochemicals, other train cargo as well as the train car components, was the existing air pollutant monitoring systems in the area sufficient to comprehensively document the resulting array of chemical pollutants? What specific pollutants were not addressed by current air monitoring systems and should be assessed going forward, whether via air monitors or soil monitors considering deposition from the event?***
- ***In Pa., it is important for the public to be clear about what type of pollutants can be assessed by specific types of routine monitoring systems and what is missed.***

**#5. Communicate**

Communication is critical throughout the course of responding to an industrial disaster. The collection of environmental exposure data and individual health and safety monitoring data, along with aggregate surveillance data, are relevant to protecting those impacted both in the short-term and long-term, but it is not an end unto itself. This information must be communicated via channels and champions that have the greatest reach to the range of individuals impacts, including using print and social media, labor unions and other worker centers, churches, schools, community centers, among other organizations and institutions with access to those impacted.

The [Community Assessment for Public Health Emergency Response \(CASPER\)](#) toolkit was designed and developed by the CDC to provide rapid, low-cost, household-based information about an affected community's needs after a disaster, in a helpful format for decision-makers that include personnel from local, state/territorial, regional, or federal public health departments CASPER has been shown to be a useful tool in disaster situations, particularly with regard to the importance of informing communities about available resources, and the provision of services such as debris removal and medications refills.

**Resources:**

- Centers for Disease Control and Prevention resources:
  - [Emergency Responder Health Monitoring System](#)
  - Rostering and Credentialing of Emergency Response and Recovery Workers
  - [Emergency Responder Health Monitoring and Surveillance. National Response Team Technical Assistance](#). 2012.
  - [The Community Assessment for Public Health Emergency Response \(CASPER\)](#)
  
- Useful literature:
  - Lucchini et al., *BMC Public Health* **17**, 46 (2017).  
<https://doi.org/10.1186/s12889-016-3939-3>