Regional Poison Center Clinical Guidance Document
Richmond Plastics Plant Fire

Background: On April 11, 2023, a fire started within a plastic recycling company located in Richmond, Indiana, near the Ohio border. The Indiana and Central Ohio Poison Centers, Wayne County Health Department, EPA, CDC, and other local, state, and federal agencies are working together to provide guidance regarding decontamination, treatment, and minimize risk of exposure to toxins released by the fire. This document contains information and guidance for healthcare professionals about the potential health impact of this fire.

Agents: Smoke and particulate matter (PM), hydrogen cyanide, benzene, chlorine, naphthalene, carbon monoxide, asbestos.

Mechanism of Action: Clinical effects depend on variables such as duration, intensity (dose / amount of chemical exposure), and route of exposure, as well as medical comorbidities. Some of the chemicals act as ocular, dermal, respiratory, and/or mucous membrane irritants. Smoke and/or particulate matter inhalation and chemical exposures may exacerbate underlying respiratory diseases such as asthma or emphysema. Benzene and asbestos are carcinogens, but the cancers it causes (e.g., acute nonlymphocytic leukemia and acute myelogenous leukemia (benzene), lung cancer and mesothelioma(asbestos)) have typically been observed in people chronically exposed to very high concentrations over a long period.

Symptoms: Serious or long-term adverse health events from these substances are usually related to high-level or chronic exposure, e.g., in an occupational setting. Many early symptoms may have been related to smoke and/or particulate matter inhalation and stress reactions related to being involved in, or close to, an environmental incident. Patients may have experienced ocular, dermal, respiratory, and/or mucous membrane irritation. Symptoms of acute naphthalene exposure may have included nausea, vomiting, and abdominal pain. Exposure to high concentrations of benzene, naphthalene, and other chemicals may have caused acute dizziness, malaise, headache, fatigue, or respiratory symptoms such as shortness of breath, cough, or wheezing.

Management:

- Assess exposures and discuss with regional poison center or local public health authorities.
- Conduct a general physical examination, with particular attention to systems related to patient symptoms or concerns.
- Carefully assess the contributions of stress to the patient's symptoms, whether causative, contributory, associated, or unrelated, and provide helpful resources.
- Use supportive therapy based on the patient's presenting complaints. For example, inhaled beta agonists may be helpful for shortness of breath and wheezing.
- Based on clinical assessment, consider laboratory testing and imaging studies if indicated.

Testing Considerations

Clinicians should exercise clinical judgment and consult with regional toxicology experts for additional medical and patient management advice.

It is reasonable to evaluate measures of end organ effect (e.g., LFTs, kidney function, CBC), particularly if there is a history of significant exposure or if a patient's symptoms suggest further workup is needed.

Many factors influence whether laboratory testing or biomonitoring will prove useful for community members facing possible environmental exposures, such as:

- route and duration of exposure
- how long the chemicals stay in the body, and
- the ability of the instruments to accurately measure the chemicals

Biomarkers of exposure will likely be undetectable or very low at this point and would thus have low utility for clinical management. For example, benzene and its metabolites can be detected in breath, blood, or urine, but they have a short half-life and may be undetectable after a few days following acute exposure. Naphthalene and related compounds can be detected in blood, urine, and stool, but cannot determine the amount of naphthalene exposure or whether an individual will develop harmful effects. Specialized toxicological testing for these chemicals in this situation may **NOT** be clinically useful due to:

- lack of sensitivity and specificity
- long turnaround times
- difficulty with interpretation
- lack of population reference values
- inability to rule out exposure or guide clinical management

There is no specific diagnostic test available for smoke and particulate matter exposure. Diagnostic testing for carbon monoxide and hydrogen cyanide is collected immediately following a significant acute exposure in a patient but will be undetectable at this time and will not aid in clinical management.

Additional event-specific resources are available for consultation:

- **Poison Help Line (Indiana and Central Ohio Poison Centers): 1-800-222-1222**
- **Community Help Line: 765-973-9300**
  - For questions about the evacuation zone, shelter, supplies, air and soil quality, and other general topics
- **Public Health**
  - Wayne County Health Department 765-973-9245
  - Ohio Department of Health 614-466-3543
- **EPA Cleanup Information and Debris Removal 765-973-9300**
- **Center for Disease Control 1-770-488-7100**
- **Environmental Protection Agency (EPA) Hotline**: **1-866-361-0526** (8a-8p)
- **Indiana State Board of Animal Health: 317-544-2400**
  Division of Animal Health, Ohio Department of Agriculture: 1-614-728-6220
  - For questions about animal health

Updates to this document will be made as more information becomes available. [Version 1 – 4.16.2023].