Train Derailment - Sulfur Air Quality Monitoring Activities

What Happened?

On November 22, 2023 a freight train hauling tank cars of molten sulfur and non-hazardous commodities derailed near the town of Livingston, Kentucky. There were 16 cars derailed in total (2 containing molten sulfur). The 2 rail cars containing molten sulfur cars have been breached and have lost some of their contents which were on fire. When molten sulfur burns it is known to release sulfur dioxide.

What is Sulfur?

Sulfur is a flammable, pale yellow substance with a rotten-egg type odor. Sulfur is typically used in pulp, paper manufacturing and other industrial processes.

What is CSX Doing?

CSX Transportation (CSX) is continually monitoring the situation and is working with local and state authorities on a plan to safely remove the remaining tank cars.

CSX has also hired GHD Services Inc. to perform continuous real-time air monitoring at the derailment work area and perimeter, and within the surrounding community. Real-time air monitoring is used to detect the presence of sulfur components in the air. Based on the safety data sheets (SDS) for sulfur, the following were identified as air monitoring components: Hydrogen sulfide (H_2S), sulfur dioxide (SO_2), flammability as the percentage of the lower explosive limit (%LEL), and oxygen (O_2).

How is GHD Monitoring the Air?

Stationary meters are continuously conducting remotely-monitored real-time air monitoring data from four monitoring locations around the perimeter of the derailment area. Handheld meters are being used by industrial hygienists to collect real-time air monitoring data throughout the work zones, at the work area perimeter, and within the surrounding community.

What is an Industrial Hygienist?

Scientists and engineers committed to protecting the health and safety of people in the workplace and the community.

Equipment Explained:

Honeywell Systems AreaRAEs
Stationary air quality monitors equipped with sensors specific for H_2S, SO_2, O_2, and %LEL.

Honeywell Systems MultiRAEs
Handheld air quality monitors equipped with sensors specific for H_2S, SO_2, O_2, and %LEL.

Commitment to Continued Air Quality Monitoring

GHD Services Inc. will continue air monitoring activities at the derailment, perimeter and surrounding area as work progresses. Air monitoring results will continue to be shared with regulators, and other stakeholders.

Important Facts about Sulfur Dioxide

- At room temperature sulfur dioxide is a nonflammable, colorless gas.
- Sulfur dioxide has good odor warning properties, meaning it will be detected at levels lower than levels which would be potentially toxic.
- Its strong, pungent odor and irritating properties usually provide adequate warning of its presence.
- The primary route of exposure to sulfur dioxide is inhalation.
- Sulfur dioxide exerts toxicity by causing irritation and adverse effects at the site of contact.
- Inhalation exposure to low concentrations of sulfur dioxide can cause constriction of airways, wheezing, shortness of breath, chest tightness, sneezing and coughing, and sore throat.
- Adverse effects due to short term exposures to low levels of sulfur dioxide generally subside post exposure.

For toxicological questions, please call
1-888-479-6583
CSX 24/7 outreach hotline
1-800-805-9840