

Georgia-Pacific Corp. Hydrogen Sulfide Poisoning

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<https://www.csb.gov/georgia-pacific-corp-hydrogen-sulfide-poisoning/>

Activity

Georgia-Pacific Naheola pulp and paper mill in Pennington, Alabama receives shipments of sodium hydrosulfide for their process. The unloading station at the facility comprises of a large concrete pad, which is sloped to a collection drain. Located next to the pad and collection drain was a shallow concrete pit, which contained unloading pumps and piping. The pit was used to collect rainwater, condensate, and the occasional spilled chemicals from unloading. The drain valve from the pit to the acid sewer was locked close due to environmental concerns. On January 15-16th, construction workers were working on a construction project at the mill in the vicinity of the unloading station, where multiple chemicals were being unloaded and one of those chemicals was sodium hydrosulfide.

Hazard

The Safety Data Sheet for hydrogen sulfide notes the hazards of this material including:

- Extremely flammable gas.
- May form explosive mixtures with air.
- Contains gas under pressure; may explode if heated.
- Fatal if inhaled.
- May cause respiratory irritation.
- Very toxic to aquatic life.
- Extended exposure to gas reduces the ability to smell sulfides.

Preventative Actions and Safeguards

Ensure proper unloading procedures are being used.

Contingency Plan/ Mitigating Actions

Have proper emergency responses in place.

Initiating Event

The construction workers were working in or near the pit, which on the day of the incident contained liquid. It was typical for about 5 gallons of sodium hydrosulfide to accumulate in the pit during unloading of a tank truck. Fifteen tank trucks of sodium hydrosulfide were unloaded 24 hours prior to the incident. The pit contained liquid, mostly water but also some sodium hydrosulfide because of the high volume of unloading done in the last day. Trying to avoid the workers from having to stand in a pit filled with liquid, an operator opened a valve to drain the pit for five minutes, and then the valve was close and relocked. Three more tank trucks arrived holding more sodium hydrosulfide. While unloading the trucks ended up spilling about 5 gallons of the chemical.

Incident

Sulfuric acid was being added to the acid sewer in order to control the pH downstream. The sodium hydrosulfide in the pit which drained to the sewer and reacted with the sulfuric acid that was being added. In a five minute span of the chemicals reacting, an invisible cloud of hydrogen sulfide gas leaked through the gap in the seal of a man way into the area where the workers were working. Two of the contractor workers died while eight others were injured due to hydrogen sulfide exposure.

Lessons Learned

Key lessons learned are that safety programs should be in place for addressing reactive chemical hazards in all parts of the process and plant including the sewer systems. Also safe handling of sodium hydrosulfide should be addressed and fixed while also ensuring the proper emergency response plan is in place.

