

Chemical Release at MGPI Industries

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<https://www.csb.gov/mgpi-processing-inc-toxic-chemical-release/>

Activity

The MGPI Processing plant down in Atchison, Kansas produces distilled spirits and specialty wheat proteins and starches. The plant often receives shipments of sulfuric acid for their processes. On October 21, 2016 the plant received and was unloading a shipment from their supplier. The driver was brought to a locked loading area. The operator who escorted the driver unlocked the gate to the fill lines and also unlocked the sulfuric acid fill line.

Hazards

The Safety Data Sheet for sulfuric acid notes the hazards of this material including:

- May be corrosive to metals
- Causes severe skin burns and eye damage
- Causes serious eye damage

When sulfuric acid is mixed with sodium hypochlorite, it forms chlorine gas and the hazards of this gas stated in the Safety Data Sheet include:

- May cause or intensify fire; oxidizer
- Contains gas under pressure; may explode if heated
- Causes severe skin burns and eye damage
- Fatal if inhaled
- Very toxic to aquatic life
- Corrosive to the respiratory tract



Preventative Actions and Safeguards

Properly and clearly label the loading stations, especially lines in close proximity to one another.

Contingency Action/ Mitigating Actions

Have a clear chemical unloading procedure and proper training for both the drivers and operators.

Initiating Event

The operator did not notice the sodium hypochlorite line was already unlocked before he resumed his work. The release happened when the driver hooked up the sulfuric acid to the sodium hypochlorite line and was mistakably unloaded from a tanker truck in the plant's fixed sodium hypochlorite tank. The wrong line connection is due to the lack of clear labeling of the two lines that are 18 inches apart from one another. These two materials combined and reacted to form toxic chlorine gas.

Incident

The reaction created a dense green cloud, which traveled into the community. The toxic release led to a shelter in place order for the thousands of residents in Atchison. At least 140 members of the community had to seek medical attention.

Lessons Learned

Facilities should evaluate their chemical unloading equipment and processes, and apply safeguards to reduce the chance of an incident happening. Plants should examine their transfer and process equipment and determine if the proper emergency shutdown systems, alarms, and interlocks are installed. Facilities should also be in communication with their distributors to ensure they both are clear of the unloading procedures and responsibilities.