CCPS 20 YEARS
CENTER FOR CHEMICAL PROCESS SAFETY
An AIChE Industry Technology Alliance

Process Safety Beacon

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Messages for Manufacturing Personnel

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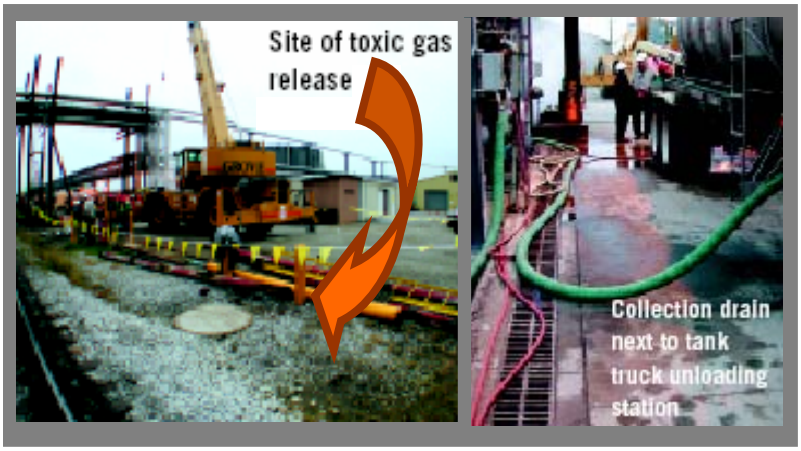
Toxic Reaction in Sewer is Fatal



This accident investigated by and pictures provided by the U.S. Chemical Safety and Hazard Investigation Board. Visit their site at http://www.csb.gov

Here's What Happened

Several construction employees working near a collection pit were overcome with hydrogen sulfide gas. The gas was released nearby when sodium hydrosulfide was accidentally mixed with sulfuric acid. Three workers collapsed almost immediately and three others tried to rescue them. Two of those rescuers also collapsed. In all, ten workers were exposed to the toxic gas. Two died and eight others were injured.

How Did This Happen ?

Fifteen trucks of sodium hydrosulfide (NaSH) had been delivered to the facility in the previous 24 hours. Each truck is believed to have spilled about 5 gallons (19 liters) in to the collection pit. Construction employees were working in the area and needed to enter the collection pit. Operations drained the pit into what was believed to be the wastewater system. Instead, the pit drained in to a sewer line where sulfuric acid was present in quantities sufficient to react with the NaSH.

As soon as the two chemicals mixed, they reacted and toxic hydrogen sulfide gas was released. The toxic gas escaped from the sewer system through the seal of a fiberglass manhole cover near the workers.

PSID Members see Free Search: Hydrogen sulfide; truck loading; truck unloading; sewer systems

What You Can Do

- Use disposal systems only for the chemicals they are designed to handle. Recognize that trenches, sewers, and other disposal systems contain a variety of chemicals which can generate toxic gas or cause heat to be liberated if non-compatible materials are mixed.
- Understand the expected reactions for accidentally mixing chemicals normally present at your site. Take special precautions for any reactions that produce toxic gas or liberate heat. If you have an interaction matrix, take time to understand it! Other hazardous gases that might easily be generated in a sewer include chlorine, sulfur dioxide, and carbon dioxide. Recognize that some toxic gases dull your sense of smell so you may have to react quickly.
- Some disposal systems are designed to be sealed. Promptly report any leaks and missing seals to supervision for maintenance.
- Know your role in an emergency. ***NEVER*** try to rescue someone if you do not have the proper life saving rescue equipment and training.

Disposal Systems Can Become Dangerous Reactors !

The Beacon is usually available in Arabic, Chinese, Dutch, English, French, German, Hebrew, Hindi, Italian, Portuguese, and Spanish