



# Toolbox TALK



## HYDROGEN SULFIDE SAFETY AWARENESS

Hydrogen sulfide is prevalent in natural gas and petroleum. Workers in gas plants, refineries, petrochemical plants, pulp mills, underground mines, sewers, wastewater treatment plants, and asphalt plants are at particularly high risk of exposure.

Hydrogen sulfide is:

- A toxic chemical gas.
- Also known as H<sub>2</sub>S, swamp gas, and meadow gas.
- Formed when organic matter, such as plants, animals, and bacteria, decompose.
- Invisible to the eye.
- Odorless in large quantities because it paralyzes the human sense of smell. In small quantities it smells like rotten eggs.
- Flammable and explodes and burns with a pale blue flame, producing another toxic gas, sulfur dioxide.
- Most concentrated in low-lying areas, so stay on high ground.

Exposure above the permissible exposure limit (PEL), quickly results in loss of consciousness and potentially death. Long-term exposure to lower levels results in H<sub>2</sub>S passing through the lungs and into the bloodstream. If the body cannot oxidize all the inhaled toxin, H<sub>2</sub>S builds up in the blood and the person will eventually asphyxiate.

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Long-term exposure symptoms include:

- Eye irritation
- Dizziness
- Difficulty breathing
- Coughing
- Dryness in nose and throat
- Headache
- Loss of consciousness or death, if left untreated.

Before you start work on an at-risk site, establish an exposure response plan and train all workers. A good response plan will include:

- Immediate self-evacuation from the area.
- Access to an emergency escape hood, which will provide just enough clean, fresh breathing air for escape.
- Knowledge of wind direction (location of windsocks, streamers, or flags).
- Safe briefing areas, assembly points, or muster areas. Establish two predesignated areas, 90 degrees from prevailing winds.

When working on a job site with an H<sub>2</sub>S risk, always ensure detection methods are in place. The following methods are available for detecting H<sub>2</sub>S:

- Portable electronic detectors with an H<sub>2</sub>S sensor set to alarm if the PEL is above 10 PPM.
- Fixed electronic detection systems located remotely in specific or fixed locations that communicate with a central monitoring station, activating an alarm if the PEL is reached.
- Colorimetric tubes.
- Lead acetate impregnated paper tape.

It is best to move to higher ground staying upwind during an H<sub>2</sub>S emergency. If trapped downwind, do not turn upwind and try to escape; instead, try to turn 90 degrees to the wind, move forward, then turn upwind to reach one of the predetermined safe locations. Hydrogen sulfide is easily moved around by the slightest breeze or wind. Always use the buddy system when working in known or suspected H<sub>2</sub>S environments, always keeping your buddy in sight while in the danger zone.

Date:

## ATTENDANCE RECORD

SUPERVISOR:

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CREW MEMBERS PRESENT:

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COMMENTS/FEEDBACK:

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