Hydrogen Sulfide Safety



Key Takeaways:

– Learning and understanding the properties of hydrogen sulfide
– Seeing how hydrogen sulfide is created, where it occurs, and in which industries it is used
– Comprehending the methods used to detect, monitor and warn of hydrogen sulfide
– Realizing the hazards, physical and health wise, of hydrogen sulfide
– Learning the appropriate responses to hydrogen sulfide exposures and emergencies

Course Description

Between 2001 and 2010, hydrogen sulfide killed 60 workers.

Hydrogen sulfide, or H2S, is a chemical compound that is an extremely hazardous gas that smells like rotten eggs. The gas is colorless and incredibly dangerous when high concentrations are inhaled. As well, hydrogen sulfide is highly flammable and explodes easily near lit matches, cigarettes, and other sources of spark or heat.

Where is hydrogen sulfide gas (H2S) used? H2S is present in confined spaces at or below ground level because it is a naturally occurring hazard. The Occupational Safety & Health Administration (OSHA) states, “Hydrogen sulfide also occurs naturally in sewers, manure pits, well water, oil and gas wells, and volcanoes. Because it is heavier than air, hydrogen sulfide can collect in low-lying and enclosed spaces, such as manholes, sewers, and underground telephone vaults. Its presence makes work in confined spaces potentially very dangerous.” Miners and other personnel involved in energy production, like the oil and gas sector, are most at risk for over exposure because these industries are also commonly associated with the dangers of confined spaces.

Despite being only a little irritating at lower concentrations, hydrogen sulfide exposure can be fatal. Inhalation is the most likely and dangerous exposure of hydrogen sulfide gas; however, skin contant can also be dangerous. Skin contact can lead frostbite or burns.

How can you reduce the risk of hydrogen sulfide gas? Using mechanical means, engineering controls, to control the hazard at its source is the preferred way

to protect against hazards. Engineering controls should eliminate hazards completely, when possible. Typically, the primary engineering control used to eliminate hazardous gases is a ventilation system that removes the gas from the work space and makes the area safe for occupancy. In the case that a hazard cannot be eliminated using engineering controls, administrative controls are added to the hazard-control strategy. For illustration, administrative controls can be company rules and procedures put in place to protect the health and safety of the everyone. When engineering and administrative controls are impossible or are not fully effective, you may be required to use personal protective equipment (PPE). To protect against hydrogen sulfide, use about respiratory equipment, eye protection and special gloves and clothing if skin contact is possible. If there is possible skin contact, gloves and clothing need to be made from a material that cannot be permeated or degraded by hydrogen sulfide and that insulates to prevent body tissue from freezing. Often, hydrogen sulfide affects the eyes. When someone’s eyes become red or irritated because of exposure to hydrogen sulfide, you should first check if they are wearing contact lenses and remove them at once. Proceed to rinse the eyes with regular, clean water for no less than 15 minutes, opening the eyelids as you rinse. Afterwards, seek immediate medical attention. When someone is exposed to hydrogen sulfide through the skin, wash the skin immediately with water. Any contaminated clothing and shoes is flammable. In order to decrease the risk of static discharge and ignition, soak contaminated articles of clothing thoroughly while they are still being worn. Afterwards, remove them immediately and wash the skin below thoroughly with water before seeking medical attention. Although you may encounter emergencies similar to the above, hazardous exposure to hydrogen sulfide is nearly always through inhalation. Usually, extreme inhalation exposure happens when a worker is unaware of the danger and enters an area with toxic amounts of hydrogen sulfide that cause them to collapse. Breathing can change very quickly, therefore it is critical to get the person fresh air. In the case a co-worker collapsed in an environment where hydrogen sulfide could be present, call 911 or other emergency medical responders. Get the person to fresh air. If it happens that breathing stops AND you are trained, begin CPR using universal precautions. Promptly transfer the person to a medical facility.