Hydrogen Sulfide Meeting Kit

HYDROGEN SULFIDE SAFETY TALK

H2S gas is a chemical compound that stands for hydrogen sulfide carbonyl sulfide gas. It is a colorless gas and is commonly recognized by its distinct rotten egg smell. H2S gas is also widely referred to as sewer gas, sour gas, stink damp, or hydro sulphuric acid. H2S gas is extremely poisonous to humans, corrosive, and very flammable. When it burns, H2S gas emits another deadly gas: sulfur dioxide, which has similar symptoms and outcomes to H2S gas exposure. Unfortunately, year after year workers are incidentally exposed to H2S gas, many of who suffer detrimental consequences since an unsafe amount can kill a worker in under 10 seconds.

CHARACTERISTICS OF HYDROGEN SULFIDE

H2S gas is heavier than air and often collects in low areas such as basements, vaults, or pits. While the gas has the smell of rotten eggs at low concentrations, your sense of smell is affected at higher concentrations and should not be relied on. When hydrogen sulfide is burned it releases toxic gases and vapors such sulfur dioxide. Concentrations as low as 2 to 5 parts per million (ppm) can start to cause health issues if workers are exposed to the gas for an extended period of time.

HAZARDS/HEALTH EFFECTS OF HYDROGEN SULFIDE

- Low concentrations – irritation of eyes, nose, throat, or respiratory system; effects can be delayed.
- Moderate concentrations – more severe eye and respiratory effects, headache, dizziness, nausea, coughing, vomiting and difficulty breathing.
- High concentrations – shock, convulsions, unable to breathe, coma, death; effects can be extremely rapid (within a few breaths).

Take away

Hydrogen sulfide is a chemical asphyxiate that interferes with oxygen and the central nervous system.

PROTECTION AGAINST HYDROGEN SULFIDE

Engineering Controls

There are several ways you can protect against exposure to hydrogen sulfide. One is by using engineering controls such as ventilation systems that remove gas from work spaces. Since hydrogen sulfide is highly flammable, the ventilation system must be explosive-proof.

Administrative Controls

Another safety measure is to employ administrative controls. Administrative controls can come in the form of company rules for entering, exiting and working in spaces where hydrogen sulfide gas is present. Safety training and gas level testing are also effective administration controls.

Personal Protective Equipment

A third way to prevent health problems caused by hydrogen sulfide exposure is to use personal protective equipment (PPE). PPE for hydrogen sulfide includes full-face air purifying respirators (APR) for gas amounts up to 100 ppm, and self-contained breathing apparatuses (SCBA) or supplied air lines for gas amounts reaching 100 ppm or higher. If direct skin contact with hydrogen sulfide is possible, workers must wear protective gloves and clothing made from material that cannot be permeated or degraded by the substance.

SAFE WORK PRACTICES FOR HYDROGEN SULFIDE HAZARDS

- Employers should always clearly mark areas where H2S gas may be present. All workers should be trained on H2S gas and what processes in their work areas produce this gas.
- Any low lying areas or confined spaces should always be tested before any work begins for toxic gases including H2S. Some facilities should have permanent fixed alarm systems to alert workers if there is increased amount of H2S gas in their areas.
- If gas testing shows that H2S gas is present and cannot be fully removed, then proper continuous ventilation needs to be done to make the work area safe.
- For concentrations less than 100ppm a full-face respirator should be used in conjunction with the appropriate air purifying cartridge to protect the worker.
- A concentration over 100ppm is considered immediately dangerous to life and health. These environments should be avoided. If it is absolutely necessary to enter to complete work, then an air supplying or air on demand system needs to be used.

FINAL WORD

Hydrogen sulfide almost always occurs as a colorless gas, and exposure happens most often through inhalation. Although hydrogen sulfide can be detected by its rotten egg scent, odor should not be used to confirm its presence since we lose our ability to distinguish an odor after prolonged exposure, and if the concentration is high enough we won’t be able to smell hydrogen sulfide at all.