

Hydrogen Sulfide Safety

Hydrogen sulfide is a colorless, flammable, extremely hazardous gas with a “rotten egg” smell. It occurs naturally in crude petroleum and natural gas and can be produced by the breakdown of organic matter and human/animal wastes (e.g., sewage). It is heavier than air and can collect in low-lying and enclosed, poorly ventilated areas such as basements, manholes, sewer lines and underground telephone/electrical vaults. It is a chemical asphyxiant that interferes with oxygen utilization and the central nervous system.

DETECTION BY SMELL

- Can be smelled at low levels, but with continuous low-level exposure or at higher concentrations you lose your ability to smell the gas even though it is still present.
- At high concentrations your ability to smell the gas can be lost instantly.
- **DO NOT** depend on your sense of smell for indicating the continuing presence of this gas or for warning of hazardous concentrations.

HEALTH EFFECTS

Health effects vary with how long and at what level you are exposed. Asthmatics may be at greater risk.

- 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).

BEFORE ENTERING AREAS WITH POSSIBLE HYDROGEN SULFIDE

- The air needs to be tested for the presence and concentration of hydrogen sulfide by a qualified person using test equipment. This individual also determines if fire/explosion precautions are necessary.
- If gas is present, the space should be ventilated.
- If the gas cannot be removed, use appropriate respiratory protection and any other necessary personal protective equipment (PPE), rescue and



communication equipment. Atmospheres containing high concentrations (greater than 100 ppm) are considered immediately dangerous to life and health (IDLH) and a self-contained breathing apparatus (SCBA) is required.

IF HYDROGEN SULFIDE IS PRESENT:

- Use detection equipment when working in an area where there is a possibility of H₂S gas, especially in enclosed or below grade areas such as holes, trenches, & reserve pits.
- Maintain and calibrate detection equipment per manufacturer’s specifications.
- Do not enter an H₂S area without proper training and authorization.
- In Immediately Dangerous to Life and Health atmospheres a standby person(s) with suitable Self Contained Breathing Apparatus (SCBA) must be available for purposes of rescue.
- **Never attempt to rescue an H₂S victim without a SCBA.**
- Employees working in H₂S areas are required to be properly “fit tested”.
- All H₂S exposure victims should be treated by a physician before returning to work.
- In the event of a H₂S emergency, all personnel should follow the site emergency plan.
- H₂S areas, facilities, pipelines, and/or flowlines should be properly identified with signage.

