

FUGITIVE EMISSION
MATERIAL SAFETY DATA SHEET

Section I - Material Identification & Use

Material Name: Hydrogen Sulfide Gas
Synonyms: Sewer Gas, Rotten Egg Gas, H₂S
Chemical Formula: H₂S
Production: Hydrogen sulfide gas is produced as a byproduct of the decay of sulfur containing organic matter (eg. sewage).
Exposure: Exposure to hydrogen sulfide gas is likely to occur in or near sewers, sewage treatment plants, or manure.

Section II - Hazardous Ingredients

<u>Ingredient</u>	<u>Concentration</u>	<u>Cas #</u>	<u>Exposure Limits</u>
Hydrogen Sulfide	variable	7783-06-4	TLV-TWA 10 ppm TLV-STEL 15 ppm (ACGIH)

Section III - Physical Data for Material

Physical State: gas
Odour and Appearance: hydrogen sulfide is a colorless gas which may smell of rotten eggs depending upon its concentration.
Odour Threshold: 0.13 ppm. Beyond 100 ppm the sense of smell is paralysed.
Vapour Pressure: 1875 kPa at 20 degrees C.
Vapour Density: 1.189 (Air = 1)
Evaporation Rate: N/A
Boiling Point: -60.7 degrees C
Freezing Point: -85.5 degrees C
Density: N/A

Section IV - Fire and Explosion Hazard of Material

Flammability: yes
Means of Extinction: Stop flow of gas if possible. Water spray, chemical, "alcohol foam", or carbon dioxide may be used as extinguishing agents.
Special Procedures: When heated to decomposition it emits highly toxic fumes of sulfur.
Upper Explosive Limit: 46% (in air)
Lower Explosive Limit: 4.3% (in air)
Autoignition Temperature: 260 degrees C

Section V - Reactivity Data

Chemical Stability: stable (as a gas)

Incompatibility: Hydrogen sulfide may react violently with oxidizing agents (eg. peroxides, nitrates). Hydrogen sulfide is incompatible with metals and metal oxides.

Reactivity: normally, stable

Hazardous Polymerization: will not occur

Section VI - Toxicological Properties

Route of Entry: Inhalation is the major route of entry. However, eye and skin contact may also have adverse effects.

Effects of Acute (Short-term) Exposure:

Respiratory Effects: At concentrations of 0.13 ppm to 30 ppm, the odour is obvious and unpleasant. At 50 ppm, marks dryness and irritation of the nose and throat occurs. Prolonged exposure may cause a runny nose, cough, hoarseness, shortness of breath, and pneumonia. At 100 to 150 ppm, there is a temporary loss of smell. At 200 to 250 ppm, H₂S causes severe irritation as well as symptoms such as headache, vomiting and dizziness. Prolonged exposure may cause pulmonary edema (build-up of fluid in the lungs). Exposure for 4 to 8 hours can cause death. Concentrations of 300 - 500 ppm cause these same effects sooner and more severely. Death can occur in 1 to 4 hours. At 500 ppm, excitement, headache, dizziness, staggering, unconsciousness and respiratory failure occur in 5 minutes to 1 hour. Death can occur in 30 minutes to 1 hour. Exposures above 500 ppm rapidly cause unconsciousness and death. Severe exposures which do not result in death may cause long-term symptoms such as memory loss, paralysis of facial muscles or nerve tissue damage.

Eye and Skin Irritation: Inflammation and irritation of the eyes can occur at very low airborne concentrations (sometimes less than 10 ppm). Exposure over several hours or days may result in "gas eyes" or "sore eyes" with symptoms of scratchiness, irritation, tearing and burning. Above 50 ppm, there is intense tearing, blurring of vision and pain when looking at light; the victim may see rings around bright lights. Most symptoms disappear when exposure ceases. However, in serious cases the eye may be permanently damaged. Rarely, the gas may irritate the skin.

Effects of Chronic (Long-Term) Exposure:

Health Effects: Currently, the chronic effects of exposure to hydrogen sulfide gas are not known. Long-term exposure to hydrogen sulfide may cause fatigue, headache, dizziness, hoarseness, cough, and irritability. However, these symptoms are not specific to hydrogen sulfide exposure and may be due to other causes.

Carcinogenicity: not known
Teratogenicity: not known
Mutagenicity: not known

Section VII - Preventive Measures

Engineering Controls: General and local ventilation should be used to reduce exposure to hydrogen sulfide gas. Additional engineering controls such as process enclosure, may also be required.

Personal Protective Equipment:

Respiratory: If engineering controls are not effective in controlling exposure to hydrogen sulfide respiratory protection may be required. For concentrations up to 100 ppm use a supplied air respirator (SAR) or self-contained breathing apparatus (SCBA). Up to 250 ppm - supplied air respirator operated in a continuous flow mode. Up to 300 ppm - full facepiece SCBA or full facepiece SAR.

Eyes: a full-facepiece respirator may be required to prevent/reduce eye irritation.

Shoes/Gloves/Clothing: Wear appropriate shoes, gloves and clothing to guard against mechanical hazards.

Leak & Spill Procedures: not likely with hydrogen sulfide gas.

Waste Disposal: N/A

Storage Requirement: N/A

Section VIII - First Aid Measures

Inhalation: Take proper precautions to ensure your own safety before attempting rescue; e.g. wear appropriate protective equipment, use the "buddy" system. Remove source of contamination or move victim to fresh air. If breathing has stopped, trained personnel should begin artificial respiration or, if the heart has stopped, cardiopulmonary resuscitation (CPR) immediately. Oxygen may be beneficial if administered by a person trained in its use, preferably on a physician's advice. Obtain medical attention immediately.

Eye Contact: If irritation occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 minutes. Obtain medical attention immediately.

Skin Contact: Irritation of skin by contact with hydrogen sulfide gas is unlikely.

Ingestion: Ingestion is not a route of entry for hydrogen sulfide gas.

Section IX - Preparation Information

Sources Used:

Canadian Centre for Occupational Health and Safety, CHEMINFO.

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