Hydrogen Sulfide

General Description

Synonyms: Sulfuretted hydrogen; Hydrosulfuric acid; Hepatic gas; H₂S

OSHA IMIS Code Number: 1480

Chemical Abstracts Service (CAS) Registry Number: 7783-06-4

NIOSH, Registry of Toxic Effects (RTECS) Identification Number: MX1225000

Department of Transportation Regulation Number (49 CFR 172.101) and Guide: 1053 117

NIOSH Pocket Guide to Chemical Hazards, Hydrogen Sulfide: chemical description, physical properties, potentially hazardous incompatibilities, and more.

Exposure Limits

OSHA Permissible Exposure Limit (PEL):

- General Industry: 29 CFR 1910.1000 Z-2 Table -- Exposures shall not exceed 20 ppm (ceiling) with the following exception: if no other measurable exposure occurs during the 8-hour work shift, exposures may exceed 20 ppm, but not more than 50 ppm (peak), for a single time period up to 10 minutes.

- Construction Industry: 29 CFR 1926.55 Appendix A -- 10 ppm, 15 mg/m³ TWA

- Maritime: 29 CFR 1915.1000 Table Z-Shipyards -- 10 ppm, 15 mg/m³ TWA

American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV):

- 1 ppm, 1.4 mg/m³ TWA; 5 ppm, 7.0 mg/m³ STEL

National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL):

- 10 ppm, 15 mg/m³ Ceiling (10 Minutes)

Health Factors

NIOSH Immediately Dangerous To Life or Health Concentration (IDLH): 100 ppm

Potential symptoms: Apnea; coma; convulsions; irritated eyes, conjunctivitis pain, lacrimation, photophobia, corneal vesiculation; respiratory system irritation; dizziness; headaches; fatigue; insomnia; GI disturbances

Health Effects: Acute systemic toxicity (HE4); CNS effects (HE7) Irritation-Eye, (Conjunctivitis), Lungs---Moderate (HE15)

Affected organs: Respiratory system, eyes

Monitoring Methods used by OSHA

Laboratory Sampling/Analytical Method:

- sampling media: Special sampling tube containing an uncoated glass fiber filter, followed by a Na₂CO₃ coated glass fiber filter, followed by two beds of AgNO₃ coated silica gel (200/200 mg)
- maximum volume: 12 Liters
- maximum flow rate: 0.05 L/min TWA
- maximum volume: 7.5 Liters
- maximum flow rate: 0.5 L/min Ceiling
- maximum volume: 5 Liters
- maximum flow rate: 0.5 L/min Peak
- current analytical method: Ion Chromatography; IC/Cond
- method reference: OSHA Analytical Method (OSHA 1008)
- method classification: Fully Validated

note: The sampling pump must be capable of maintaining a constant flow of 0.5 L/min with a back pressure of approximately 20 inches of water.

note: OSHA personnel can obtain samplers from SLTC.

On-Site Sampling Techniques/Methods:
Device: Detector Tube
Manufacturer: Dräger
Model/Type: Hydrogen Sulphide 1/d, order no. 81 01831
Sampling Information: 1/10 strokes
Upper Measurement Limit: 200 ppm
Detection Limit: Approximately 0.5 ppm
Overall Uncertainty: Approximately 25%
Method Reference: On-site air secondary (SEI Certified)

Device: Detector Tube
Manufacturer: Gastec
Model/Type: 4L
Sampling Information: 0.5 to 10 strokes
Upper Measurement Limit: 120 ppm
Detection Limit: 0.1 ppm
Overall Uncertainty: 8% for 2.5 to 60 ppm
Method Reference: On-site air secondary (SEI Certified)

Device: Detector Tube
Manufacturer: Matheson-Kitagawa
Model/Type: 8014-120SD
Sampling Information: 0.5/1 strokes
Upper Measurement Limit: 60 ppm
Detection Limit: Approximately 0.5 ppm
Overall Uncertainty: Unknown
Method Reference: On-site air secondary (SEI Certified)

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