

## Hydrogen Sulphide

### Definition of causal agent

Hydrogen sulphide (H<sub>2</sub>S) is produced in geological active areas or in the process of anaerobic decomposition of organic substances. It is a colourless, flammable gas with a pungent odour of rotten eggs. In high concentrations it can rapidly paralyse the sense of smell. It is heavier than air and displaces oxygen.

#### *Main occupational uses and sources of exposure:*

Geothermal and fossil fuel energy extraction, petrol industry, farming (stirring of manure, opening of vessels), sewage (sugar producing), sludge workers, fish processors, roofers (handling with heated tar and asphalt), viscose industry, pulp and paper manufacturing waste water canals, cemetery workers (tombs), knacker's yards.

### Toxic effects

#### *1. Acute and subacute effects*

At low concentrations irritant effects predominate as airway irritation and stinging of eyes (keratoconjunctivitis, punctate corneal erosion). At high concentrations for prolonged periods, bronchopneumonia and pulmonary oedema may occur with signs of central nervous system disturbances: headache, vertigo, dizziness, nausea and vomiting.

High exposure leads to sudden unconsciousness and death by respiratory paralysis. Short inhalation periods may be sufficient depending on the level of exposure.

#### *Exposure criteria:*

*Minimum intensity of exposure:* Occupational exposure confirmed by history and if possible, by workplace air monitoring:

#### Guide values:

- |  |                                     |
|--|-------------------------------------|
| • Odour threshold:                                 | 0.01 mg/m <sup>3</sup> (0.8 ppm)    |
| • Bronchial constriction in asthmatic individuals: | 2.8 mg/m <sup>3</sup> (2 ppm)       |
| • Increased eye complaints:                        | 5.0 mg/m <sup>3</sup> (3.6 ppm)     |
| • Fatigue, headache, dizziness:                    | 28 mg/m <sup>3</sup> (20 ppm)       |
| • Olfactory paralysis:                             | > 140 mg/m <sup>3</sup> (> 100 ppm) |
| • Respiratory distress:                            | > 560 mg/m <sup>3</sup> (> 400 ppm) |
| • Death:   | > 700 mg/m <sup>3</sup> (> 500 ppm) |

*Minimum duration of exposure:* A few seconds to a few hours, depending on the intensity of exposure

*Maximum latent period:* A few minutes

#### *2. Chronic effects*

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Gastrointestinal and neurological effects have been described in case reports, but there is no good evidence for a causal relationship with H<sub>2</sub>S exposure.