

Hydrogen Sulphide (H₂S)



What is hydrogen sulphide (H₂S)?

Hydrogen sulphide (H₂S) is a colorless gas that smells like rotten eggs. At very high levels, hydrogen sulphide can be flammable.

Where does hydrogen sulphide come from?

Hydrogen sulphide forms naturally when bacteria break down organic matter in low-oxygen conditions. It occurs in gas wells, swamps, sulphur springs, and groundwater, and is also found near sewage systems, animal farms, refineries, and wastewater treatment plants.

How would a person be exposed to hydrogen sulphide?

Hydrogen sulphide is part of the natural environment; the general population will have likely had some exposure to hydrogen sulphide. The release of hydrogen sulphide from a specific source does not always lead to human exposure. You can only be exposed to the gas when you come into direct contact with it by breathing it in, eating or drinking something contaminated with it, or when it touches your skin. Any absorbed hydrogen sulphide does not accumulate in the body as it is rapidly metabolized in the liver and excreted in the urine. Hydrogen sulphide usually breaks down in the air and therefore exposure is only likely to continue if there is an ongoing source.

How is hydrogen sulphide detected?

Most people can detect hydrogen sulphide at very low concentrations (0.0005 ppm – 0.3 ppm). However, smell is not a reliable indicator of its level in the air because your sense of smell becomes impaired at higher concentrations (~100 ppm). While health risks at these levels are minimal, persistent odours can cause temporary symptoms such as headaches, nausea, stress, sleep disturbances, or difficulty concentrating from unpleasant odours. These odour-related effects can impact quality of life, leading to stress or changes in routine, such as avoiding outdoor activities. These effects are temporary and typically resolve once the odour is gone, with no need for medical intervention.

What are the short term risks of hydrogen sulphide?

Exposure to high concentrations (10-100 ppm) of hydrogen sulphide may cause:

- Irritation to the eyes, nose, or throat
- Trouble breathing for those with asthma
- Headaches
- Poor memory
- Fatigue
- Dizziness

Brief exposures to very high concentrations of hydrogen sulphide (greater than 500 ppm) can cause troubled breathing or loss of consciousness. In most cases, people regain consciousness without lasting effects.

However, some may experience permanent or long-term effects such as headaches, poor attention span, memory issues, and impaired motor function. At extremely high concentrations, death is possible due to respiratory paralysis.

Does long term exposure to low levels of hydrogen sulphide pose long-term health risks?

Exposures to low hydrogen sulphide concentrations (0.1 parts per million) are not associated with acute or dangerous health effects. However, some studies have shown that long-term exposures to low levels (ranging from 0.001 to 0.1 parts per million) may cause odour discomfort, and temporary symptoms such as irritation, headaches, respiratory discomfort, or sleep disturbances. These effects are generally mild and reversible, and the available evidence does not show a clear link to long-term health impacts. Symptoms typically resolve once the odour event or exposure ends, however, people with underlying health conditions, such as asthma, may be more susceptible.

What do I do if I suspect a hydrogen sulphide gas leak?

Near your home, call:

- GEPH at 519-900-9600
- Spills Action Centre of the Ministry of Environment at 416-325-3000 or 1-800-268-6060 (toll-free)

Inside your home, call 9-1-1.