



Hydrogen Sulfide: Frequently Asked Questions

What is hydrogen sulfide (H₂S)?

Hydrogen sulfide (H₂S) is a type of gas that occurs in nature. Certain industries also produce it. H₂S smells like rotten eggs. It has no color. H₂S is heavier than air, so it stays low to the ground. Some people can smell it in air at levels as low as 0.6 parts per billion (ppb).

How do landfills make H₂S?

The U.S. Environmental Protection Agency (EPA) has found that:

- Landfills make H₂S gas when certain debris such as sheetrock or drywall rots.
- H₂S levels near landfills change a lot throughout the day. Levels are usually highest at night or early in the morning, when there is less wind to mix the gas with air.
- H₂S levels tend to go down as you get further away from a landfill.

What happens to H₂S when it enters the environment?

- It is a gas that spreads into the air.
- In air, it can change into sulfur dioxide and sulfates.

How do people come into contact with H₂S?

- People who live near places that create H₂S can breathe it. These places include landfills, sewage treatment plants, natural gas plants, tanneries, swamps, and tide flats.
- In most cases, people are outside when they breathe H₂S when it mixes with outdoor air.

How can H₂S affect my health?

Studies suggest that the respiratory system (the body's airways, including the nose, throat, and sinuses) is one of the most likely parts of the body to suffer ill effects from contact with H₂S. Another system H₂S can affect at much higher levels is the central nervous system (including the brain and spinal cord).

People living near landfills are often concerned that the odors coming from a landfill will make them sick. At low levels, it is hard to tell whether it is the chemical itself or the related odors that make people feel ill. In most cases, health effects fade when people can no longer smell the odor.

Breathing low to moderate levels of H₂S may irritate the eyes, nose, or throat. Persons with asthma may find it harder to breathe. At higher levels, H₂S may also sometimes cause headaches, poor memory, tiredness, and balance problems.

How likely is H₂S to cause cancer?

Medical studies have not shown a link between H₂S and cancer in humans. Studies on the likelihood of H₂S causing cancer in animals are ongoing.

The U.S. Department of Health and Human Services (DHHS) and the International Agency for Research on Cancer (IARC) have not classified H₂S as to its ability to cause cancer. To date, EPA has not found enough data to show a link between cancer and H₂S.

How does H₂S affect children?

There is little information about how H₂S affects children. Studies have not yet shown if children are more sensitive to it than adults.

To date, research has also not yet shown if H₂S causes birth defects in people. Animal studies seem to show that low levels of H₂S during pregnancy do not cause birth defects.

Is there a medical test to show if someone has inhaled H₂S?

Tests can measure H₂S and its breakdown products (metabolites) in blood and urine. However, these tests are rarely useful because finding H₂S or its products in the body cannot predict the likelihood of health effects. Also since H₂S leaves the body fairly quickly, tests must occur within hours after breathing it.

Does the federal government have guidelines to protect human health?

Yes, but only for workers exposed to H₂S on their jobs. Both the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH) regulate H₂S for workers in certain industries and conditions at risk for exposure to high concentrations (over 10,000 ppb).

What are outdoor environmental odors?

Outdoor environmental odors are substances around you that you can smell more when you are outside. In some cases, you can still smell them even when you are indoors if your windows are open. Sometimes people may react to certain odor-causing chemicals before they reach harmful levels. Those odors can be a nuisance. They can bother someone by causing short-term symptoms such as a headache. They may make someone feel sick to their stomach.

Just because something smells bad, doesn't mean that it is harmful to inhale. Some dangerous chemicals have a mild odor (such as gasoline). Many toxic substances (such as carbon monoxide) do not have any odor at all.

Symptoms vary based on how sensitive a person is to an odor. In most cases, symptoms will depend on the following factors:

- What type of substance is in the air that you are breathing?
- How much of the substance is in the air (concentration)?
- How often you are breathing it (frequency)?
- How long a period of time are you breathing it (duration)?
- How old is the person who smells the odor?
- How healthy is the person who smells the odor?

In general, the most common symptoms are:

- Headaches
- Stuffy nose (nasal congestion)
- Eyes, nose, and throat irritation
- Hoarseness, sore throat
- Cough
- Chest tightness
- Shortness of breath
- Wheezing
- Heart tremors (palpitations)
- Nausea
- Drowsiness
- Depression

These symptoms usually occur at the time of exposure. How intense the symptoms are will depend on the type of chemical creating the odor, the amount of the odor in air, and how often and how long exposure lasts. Most symptoms end within a short time after the odor disappears or the exposure to the odor ends. In addition to physical symptoms, unpleasant odors can decrease a person's sense of well-being and their ability to enjoy daily life.

For more information about hydrogen sulfide, please call: 1-877-798-2772 (toll free)