

Hydrogen Sulfide (H₂S)

Answers to Frequently Asked Questions

What is hydrogen sulfide?

Hydrogen sulfide (hi-dro-jen sull-fyde), also written H₂S, is a colorless chemical gas that smells like rotten eggs. H₂S is also called sewer gas or swamp gas.

How does hydrogen sulfide get into the environment?

H₂S can be created by nature or it can be created by manmade activities. In nature, H₂S gas comes from volcanoes, natural gas, sulfur springs, marshes, and swamps. Humans and animals also naturally produce H₂S in their waste.

Some manmade activities that create H₂S include sewage treatment and using sewers to store waste, and keeping livestock and storing manure in tanks. H₂S can also be created from food processing activities, paper mills, leather making, and petroleum refineries.

H₂S gas may be created at Construction, Demolition, and Debris (CD&D) landfills. One material often found in CD&D landfills is drywall (gypsum). When the drywall is underground where it is damp with no oxygen, sulfur bacteria eat the gypsum. These bacteria produce H₂S gas as waste.

How does hydrogen sulfide get into my body?

Your body makes a small amount of H₂S naturally. The bacteria in your mouth and intestines produce H₂S gas. These levels are not harmful to you.

H₂S gas enters your body when you breathe it in. You may be exposed to higher levels of H₂S if you live near an industry, landfill, or farm that produces H₂S, if you are exposed to sewer gas, or if you live near a swamp.

Remember that if you can smell H₂S, you are breathing it into your lungs. Most people can smell very low levels of H₂S.

Can hydrogen sulfide make me sick?

Yes, hydrogen sulfide can cause health problems. Whether you get sick depends on:

- How much you were exposed to (dose).
- How long you were exposed (duration).
- How often you were exposed (frequency).
- General health, age, and lifestyle. Pregnant women, babies and young children, the elderly, and people with chronic (on-going) health problems are more at risk.

People who have chronic (on-going) lung problems like asthma, bronchitis, emphysema, and COPD may be more likely to get sick from H₂S.

People who work in certain industries, like public utilities and sewage, paper mills, and natural gas drilling, may be exposed to more H₂S than most people. They are more likely to get sick if they often work in closed-in spaces that contain high levels of H₂S with no fresh air.

It is important to remember that even though you may be able to smell H₂S, it does not mean you will have health problems because of it.



Hydrogen sulfide gas can be created in sewers when bacteria break down human waste. If a sewer is uncovered, you may smell a bad odor. (Image source: 123RF Stock Photos)

What health problems can hydrogen sulfide cause?

You are not likely to have health effects from a normal level of H₂S in your environment, especially if you are a healthy person with no chronic health problems.

If you are exposed to very high levels of H₂S gas in the air, you may have acute (sudden) effects that include eye irritation, nose and throat irritation, headaches, feeling tired, memory problems, and balance problems.

If you are exposed to very high levels of H₂S for a long time, or if you are trapped in a small space with a high level of H₂S, you can have difficulty breathing even if you don't have a chronic lung disease. You may pass out if you don't get fresh air.

For people who have chronic conditions like lung disease or heart disease, high levels of H₂S can make their health problems worse. H₂S can trigger asthma attacks and difficulty breathing in people with asthma.

Does hydrogen sulfide cause cancer?

No, H₂S is not known to cause cancer.

How does hydrogen sulfide affect children?

Children can have the same health problems from H₂S as adults. Children with asthma or other lung and heart diseases can have their conditions aggravated by high levels of H₂S.



High levels of H₂S can be dangerous for people with lung conditions like asthma, COPD, and bronchitis.

(Image source: Alamy)

Is there a medical test to show if I have been exposed to hydrogen sulfide?

Yes. H₂S and its byproducts (chemicals created when your body breaks down H₂S) can be measured in your blood and urine. These chemicals leave your body quickly, so the test must be performed quickly after you believe you were exposed.

Keep in mind that these tests can only show if you have H₂S in your body. It cannot show where the H₂S came from or whether you will get sick from it.

How do I protect myself from high levels of hydrogen sulfide?

If you live near a source of high levels of H₂S like a factory, landfill, farm, or swamp, try to go to an area where you cannot smell the H₂S gas. If the odor is strong outside, go inside and close your doors and windows, and close your fresh air intake on your air conditioner. If the odor is strong inside, try going outside. If the odor is strong both outside and inside, consider temporarily moving yourself and your family from the area until the smell goes away.

Always be sure that people with chronic diseases have access to their medication, such as a rescue inhaler. If you or a family member has a chronic lung or heart condition and they are exposed to high levels of H₂S, watch closely to make sure they don't have any health problems.

Resources

Agency for Toxic Substances and Disease Registry (ATSDR). 2016. Toxicological profile for hydrogen sulfide. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

Ohio Department of Health
Bureau of Environmental Health and Radiation Protection
Health Assessment Section
246 N. High Street
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