

Fact Sheet: Hydrogen Sulfide from Landfills

How might I be exposed to hydrogen sulfide from a landfill?

Hydrogen sulfide is a flammable, colorless gas with a characteristic odor of rotten eggs. It is heavier than air and is commonly known as hydrosulfuric acid, sewer gas, and stink damp. Hydrogen sulfide occurs both naturally and from industrial processes. Hydrogen sulfide can be released from landfills and people living near landfills may be exposed to it by breathing it in.



How can hydrogen sulfide affect my health?

Exposure to low concentrations within the range of 30 parts of hydrogen sulfide in one billion parts of air (ppb) may cause irritation to the eyes, nose, or throat. It may also cause difficulty breathing for some individuals with respiratory problems, such as asthmatics.

DOH uses the Minimal Risk Levels (MRLs) developed by the federal Agency for Toxic Substances and Disease Registry (ATSDR) to assess the possibility of non-cancer health effects. An MRL is an estimate of the daily human exposure to a hazardous substance, at or below which, that substance is unlikely to pose a measurable risk of adverse, non-cancer health effects. These particular values have many safety factors built in and the actual levels where health effects would be observed are much higher.

The acute MRL, which represents short time periods of exposure (less than 15 days), is 70 ppb. Per the study that established this acute MRL, it should be noted that the actual level where health effects (respiratory problems and headaches) were observed was 2,000 ppb.

The intermediate MRL is defined for exposure periods of 15 to 365 days. The intermediate MRL for hydrogen sulfide is 20 ppb. Per the study evaluating nasal passage damage that established this measure, there were no adverse health effects observed at 460 ppb.

No health effects have been found in humans exposed to typical environmental background concentrations of hydrogen sulfide (0.11–0.33 ppb).

Can I still have symptoms at levels below those identified for when individuals may experience health effects?

People can still experience symptoms when exposed to hydrogen sulfide levels that are lower than the Minimal Risk Levels. Reactions to the odor itself may trigger symptoms such as nausea, vomiting, sleep disturbance, loss of appetite, and headache. Many people may smell hydrogen sulfide distinctly at 10 ppb and may experience symptoms at this level due to the odor itself. There are some people who may be more sensitive to hydrogen sulfide odors and can smell it at even lower levels (as low as 0.5 ppb).

How likely is hydrogen sulfide to cause cancer?

Hydrogen sulfide has not been shown to cause cancer in humans, and its possible ability to cause cancer in animals has not been studied thoroughly. The Department of Health and Human Services (DHHS), the International Agency for Research on Cancer (IARC), and the Environmental Protection Agency (EPA) have not classified hydrogen sulfide for carcinogenicity.

Is there a medical test for hydrogen sulfide exposure?

Hydrogen sulfide can be measured in exhaled air, but samples must be taken within 2 hours after exposure to be useful. A more reliable test to determine if you have been exposed to hydrogen sulfide is the measurement of thiosulfate levels in urine. This test must be done within 12 hours of exposure. Both tests require special equipment, which is not routinely available in a doctor's office. Samples can be sent to a special laboratory for the tests. These tests can tell whether you have been exposed to hydrogen sulfide, but they cannot determine exactly how much hydrogen sulfide you have been exposed to or whether harmful effects will occur.

Who should I talk to if I am concerned about my health or my child's health?

You should begin by discussing your concerns with your physician or your child's pediatrician. There are clinics that specialize in environmental health problems that your primary care provider may want to contact.

For adults: The Environmental and Occupational Health Clinical Center in Piscataway, NJ sees adults who have been exposed to contaminants occupationally or environmentally. They can be reached at (848) 445-0123.

For children: Pediatricians can contact the Mt. Sinai Medical Center's Pediatric Environmental Health Specialty Unit at (866) 265-6201.

For general questions: Contact the New Jersey Department of Health, Consumer, Environmental and Occupational Health Service at (609) 826-4984.