

## What is landfill gas?

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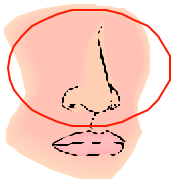
Gases are formed in a landfill when buried wastes decompose (breakdown by bacteria) or volatilize (change from a liquid or solid to a vapor). These bacterial and chemical processes create gases that are unlikely to pose any serious health hazards, but they may cause odors that some people find unpleasant.

## What do I smell?

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The most common type of landfill is the municipal solid waste facility, which accepts household and non-hazardous commercial and industrial waste. It typically contains 60% organic material, such as food and paper. Because organic material tends to produce a great deal of gas, municipal solid waste landfills have the potential to produce odors.

Sulfides and ammonia are the most common sources of odor in landfill gas. Sulfides produce a strong, rotten-egg smell that humans can detect even at very low concentrations. Ammonia produces a pungent odor that many people are familiar with because it is often used in household cleaning products. Both are normally present in the air, regardless of the presence of a landfill.



The Nose

## Is landfill gas hazardous to my health?

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Landfill gas may cause temporary discomfort, but it is not likely to cause permanent health effects. At extremely high concentrations, humans may experience eye irritation, headaches, nausea, and soreness of the nose and throat. People with respiratory ailments such as asthma are especially sensitive to these effects. However, these temporary conditions are reversed as soon as the gases are reduced or eliminated.

There is another group of chemicals, called non-methane organic compounds (NMOCs), which may be present in the air near a landfill, though they are not likely to reach harmful levels. NMOCs may occur naturally, or be formed by chemical processes. There is concern that long-term exposure to high levels of NMOCs could lead to health problems, but health studies have been largely inconclusive. Currently, there is not enough information about the impacts that lifestyle choices, such as tobacco use, may have on compounding the health effects from exposure to landfill gases.

Many people find the odors emitted from a landfill to be unpleasant. Although these odors are undesirable, no medical attention is usually required. Landfill odors may cause temporary symptoms such as nausea and headache, but their effect on the comfort of individuals is difficult to evaluate, because different individuals may react differently to the same type and intensity of odor.



## What other hazards are associated with landfill gas?

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The migration of landfill gas creates health and safety concerns when the gas enters buildings and other confined areas. Under these circumstances, landfill gas may contribute to the following hazards:

- ◆ **EXPLOSION HAZARD**  
Gases may form an explosive mixture when combined with air in specific proportions. Methane (odorless), is the only gas likely to be produced in high enough concentrations to pose any real explosion hazard. However, methane is only explosive when diluted to concentrations between 5% and 15%. There also must be an ignition source for an explosion to occur.
- ◆ **ASPHYXIATION HAZARD**  
Asphyxiation occurs if there is not enough oxygen in the air to breathe. If landfill gases collect in a confined space, they have the potential to create an oxygen-deficient environment. Carbon dioxide is the gas most likely to create an asphyxiation hazard. Symptoms of asphyxiation include headache, increased breathing and heart rate, and dizziness. These symptoms are reversed when exposure is eliminated.

## Are there regulations to protect me?

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Before 1979, landfills had few or no controls to protect human health and the environment. Today, landfills are subject to strict regulation under federal laws that help protect people from the hazards and health issues associated with landfill gas.

### ◆ Resource Conservation and Recovery Act (RCRA)

RCRA has given the federal government the power to regulate the location, construction, and operation of landfills. Though there are no specific requirements for the control of landfill gas emissions, it requires that methane, one of the major constituents of landfill gas, be regularly monitored at the perimeter of a landfill. If methane concentrations exceed a safe level, RCRA requires the landfill operators to report this to state authorities and to take action to correct the problem and reduce explosion hazards.

### ◆ New Source Performance Standards and Emission Guidelines

To protect public health, the U.S. Environmental Protection Agency requires landfills that produce a certain amount of NMOCs to install gas collection systems that reduce emissions by 98%. This rule will achieve significant reductions in emissions of air toxics such as benzene, carbon tetrachloride, and chloroform.

## FOR MORE INFORMATION

**Georgia Department of Human Resources**

**Division of Public Health**

**Chemical Hazards Program  
(404) 657-6534**

[www.health.state.ga.us/programs/hazards](http://www.health.state.ga.us/programs/hazards)

**Georgia Department of Natural Resources**

**Environmental Protection Division  
(404) 362-2550**

[www.dnr.state.ga.us/dnr/environ](http://www.dnr.state.ga.us/dnr/environ)

**EPA Office of Solid Waste  
[www.epa.gov/epaoswer/osw](http://www.epa.gov/epaoswer/osw)**

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## LANDFILL GASES AND ODORS



**DIVISION OF PUBLIC HEALTH**

**Environmental Health and Injury Prevention Branch**



**Georgia Department of Human Resources**