What You Need to Know About Natural Gas Detectors

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Natural gas is an energy source that is commonly used in homes for cooking, heating, and water heating. It is primarily composed of methane. (Methane is a highly flammable chemical compound consisting of one carbon atom surrounded by four hydrogen atoms.) Although it only happens rarely, a natural gas leak can sometimes occur inside the home. A natural gas leak can be dangerous because it increases the risk of fire or explosion. Your local gas company works hard to provide adequate warning in the event of a gas leak. Because methane—and therefore, natural gas—does not have any odor, the gas company adds a warning "rotten-egg" smell (mercaptan or a similar sulfur-based compound) that can be easily detected by most people. However, people who have a diminished sense of smell may not be able to rely upon this safety mechanism. If you have a concern about your ability to smell the additive that signals a gas leak, you need to see a physician and use a different safety signal. A gas detector can be an important tool to help protect you and your family.

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Things to consider when selecting a natural gas detector

Natural gas detector units vary greatly in price, features, and ease of installation. Some of them must be professionally installed and may be connected to your home security system. Other brands resemble smoke detectors and are easy for you to install. Regardless of which detector you choose, certain facts are important:

- **Alarm activation**
  It is important that the natural gas detector will not be set off by other elements in your home, such as cigarette smoke or humidity level. Many detectors will respond to other dangerous chemicals in addition to natural gas, such as propane (LP).

- **Lower Explosive Limit**
  The Lower Explosive Limit (LEL) is the lowest amount of gas that will cause an explosion. Gas detectors vary in the level of gas that will set off an alarm (for example, 15% of the LEL, 20% of the LEL, etc.). Detectors that sense lower levels of gas will warn you more quickly of the presence of natural gas than detectors that sense higher levels.

- **Location of detector**
  The distance between your gas detector and the potential sources of a gas leak is important. Gas detectors are similar to smoke detectors, in that they need to be installed in a location where their audible warning is likely to be heard and where the material of concern—natural gas—is likely to accumulate, such as a basement. The installation instructions for your gas detector will assist you in identifying appropriate locations in which to install your detector. If you have multiple sources of natural gas in your home, you might need two gas detectors or one detector with dual sensors. This is especially true if the gas sources are spaced far apart.

- **Type of alarm**
  Some gas detectors use both a light and a sound to alert you to a gas leak. Some use only a sound. Regardless of which type of alarm you prefer, you should make sure that you will be alerted from any area of your home. An alarm that you can't see or hear will not help you.

- **Gas detector maintenance**
  Most gas detectors are either battery-operated, or have a battery back-up system for a 110-volt electrical power supply. Often, there is a “test” button on the gas detector that will allow you to make sure that the detector’s alarm and batteries are working properly. Remember to check the batteries and the alarm regularly. Some gas detectors will warn you if there is a power loss or other malfunction. Read the manufacturer’s instructions carefully so that you know how and when to test your detector to make sure it is working properly.

  Gas detectors use sensors to find out if there are dangerous levels of natural gas nearby. Like batteries, sensors can wear out. When purchasing a gas detector, ask about the average life of the sensor. Also ask if there is a warning to indicate when the sensor needs replacing. You also may want to know whether the sensor can be replaced if it wears out.

  Some types of gas detectors must be calibrated in order to continue functioning properly. Calibration is the method by which an instrument is fine-tuned to provide accurate
measurements. Ask if the gas detector model that you are buying will require this service. If the answer is "yes," find out how often you need to have it checked, and ask for the name of the firm that can perform the calibration.

What to do if your gas detector alerts you to a natural gas leak

1. Leave the house immediately.
2. **DO NOT** make calls from your home. Phones are capable of producing a spark, which could start a fire or explosion. Contact your local gas utility company or call 911 from a phone outside and away from your home.
3. **DO NOT** light a match or other combustible material. Likewise, **DO NOT** turn any light switches on or off, and **DO NOT** plug or unplug electrical appliances such as a television or vacuum cleaner. These activities also can produce a spark that could start a fire or explosion.
4. Do not re-enter the house until the gas company finds the source of the leak and corrects it.

Medical complications/symptoms
Exposure to low levels of natural gas is not harmful to your health. However, if a gas leak is severe, the amount of oxygen available for breathing could be dramatically reduced, which can lead to asphyxia. Symptoms of asphyxia include:

- dizziness
- fatigue
- nausea
- headache
- irregular breathing

Exposure to extremely high levels of natural gas can cause loss of consciousness or even death.

Treatments
An individual exposed to natural gas asphyxia needs to get fresh air immediately and medical attention as soon as possible. If the person is unconscious and not breathing, move him or her to a location where there is fresh air and administer mouth-to-mouth resuscitation until help arrives.

Problems associated with the elderly
Smell sensitivity begins to decrease in the seventh decade of life. A large segment of the elderly population has difficulty detecting mercaptan, the foul-smelling chemical added as a warning agent to natural gas. For individuals with a diminished sense of smell and taste, natural gas detectors provide an early warning before gas builds to dangerous levels.

Sources of natural gas
- Leaks from gas appliances, heating systems, and water heaters
- Leaks from interior natural gas piping systems
- Migration of natural gas indoors from leaks in outdoor piping systems

Where can I find more information?
NIDCD maintains a directory of organizations that can answer questions and provide printed or electronic information on smell disorders. Please see the list of organizations at [www.nidcd.nih.gov/directory](http://www.nidcd.nih.gov/directory).

Use the following keywords to help you search for organizations that are relevant to smell disorders:

- Smell and Taste

For more information, additional addresses and phone numbers, or a printed list of organizations, contact:

**NIDCD Information Clearinghouse**
1 Communication Avenue
Bethesda, MD 20892-3456
Toll-free Voice: (800) 241-1044
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