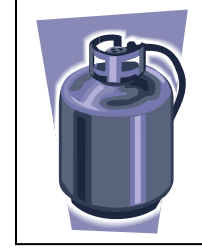




Propane and Natural Gas Safety



If you smell Propane or Natural Gas leave area immediately and call 911

U.S. fire departments responded to an estimated annual average of 2,110 home* structure fires in which natural gas was the type of material first ignited and 1,170 in which material ignited was LP-Gas (propane) in 2003-2007. Estimates are derived from the U.S. Fire Administration National Fire Incident Reporting System (NFIRS) Version 5.0 and NFPA's annual fire department experience survey.

What is propane?

Propane is produced as a by-product of two other processes: natural gas processing and petroleum refining. Propane is a three-carbon alkane, normally a gas, but compressible to a transportable liquid. It is commonly used as a fuel for engines, oxy-gas torches, barbecues, portable stoves and residential central heating. Propane is heavier than air (1.5 times as dense). In its raw state, propane sinks and pools at the floor. Liquid propane will flash to a vapor at atmospheric pressure and appears white due to moisture condensing from the air.

Why does it stink?

In its natural state, propane is odorless.

As a safety precaution, an odorant called Ethyl Mercaptan is added so any presence of propane may be easily detected. And while most of us are able to detect even the slightest propane odor, some people are unable to.

Propane cylinder overfilling prevention devices (OPD)

An Overfilling Prevention Device (OPD) is a safety device incorporated into the filling valve of a propane cylinder (i.e., those used on gas grills, RVs, etc.). The device shuts off the flow of gas to a cylinder after 80% capacity has been reached. This limits the potential for release of gas when the cylinder is heated, averting a fire or possible injury.

Facts & Figures

- As of April 1, 2002, OPDs are required on all propane cylinders between 4 and 40 pounds propane capacity, per the [1998 edition of NFPA 58, Liquefied Petroleum Gas Code](#). Cylinders of this size manufactured after September 30, 1998, were required to have an OPD. A typical gas grill cylinder holds about 20 pounds of propane.
- Propane cylinders with OPDs can be identified by a triangular hand-wheel. Some earlier model cylinders were produced with a round hand-wheel but "OPD" is stamped on the brass valve body.

- After April 1, 2002, propane cylinders not equipped with an OPD must be retrofitted with the device before refilling can occur or properly disposed of and replaced with an OPD-equipped cylinder.
- Many propane dealers will retrofit older cylinders with an OPD. As there is a charge for this, it may be more economical to replace the entire cylinder, especially if it is rusty. In many parts of the U.S., exchange cylinder racks can be used to swap an empty cylinder without an OPD for a full cylinder equipped with an OPD, for a nominal fee, eliminating the need to dispose of the cylinder or to have it retrofitted.
- Dispose of propane cylinders safely. Questions about safe disposal should be answered by local fire departments, hazardous waste collection sites, or propane refillers.
- The [2001 edition of NFPA 58](#) modified requirements to exempt horizontal cylinders manufactured before October 1, 1998, from requiring OPDs. Also exempt are cylinders used for industrial trucks, industrial welding and cutting gases (these cylinders must be labeled with their use).

Propane Safety

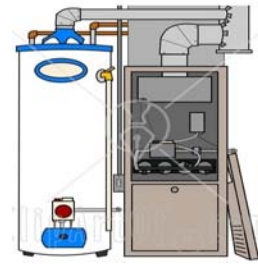
- Handle any propane-powered equipment cautiously and always follow the manufacturer's instructions. Cylinder tanks for equipment such as stoves and ovens must be located outside of the home.
- Never operate a propane-powered gas grill inside the home.
- Have propane gas equipment inspected periodically by a professional for possible leaks or malfunctioning parts.
- Carefully follow the manufacturer's instructions when lighting a pilot.
- If you smell a strong odor of gas, leave the area immediately and call the fire department from outside the home.
- Propane is 270 times more compact as a liquid than as a gas. If you reverse that, propane will expand 270 times if it changes from a liquid to a gas. One liter of liquid propane will expand to 270 liters of vapor.

Is propane an environmentally safe fuel?

- Propane, one of the cleanest burning fuels available, is the clear choice for our environment. Propane burns cleaner than gasoline and other fossil fuels. It emits lower levels of carbon dioxide and particulates; it also doesn't produce sulfur dioxide, a primary cause of the greenhouse effect. Propane is non-toxic and vaporizes quickly, so it won't contaminate soil or groundwater.
- Propane is also a natural by-product of the gas refining process and in plentiful supply there's enough propane to meet America's needs in the 21st century. Most of the propane used in the United States is produced right here. All these factors make propane one of the most versatile fuels you can find.



NATURAL GAS



What is natural Gas?

- It is a gas consisting primarily of methane. It is found associated with other fossil fuels, in coal beds, as methane clathrates, and is created by methanogenic organisms in marshes, bogs, and landfills. It is an important fuel source, a major feedstock for fertilizers, and a potent greenhouse gas.
- Before natural gas can be used as a fuel, it must undergo extensive processing to remove almost all materials other than methane. The by-products of that processing include ethane, propane, butanes, pentanes, and higher molecular weight hydrocarbons, elemental sulfur, carbon dioxide, water vapor, and sometimes helium and nitrogen.

Why does it smell?

In its natural state, natural gas is odorless.

As a safety precaution, an odorant called Mercaptan is added so any presence of natural gas is easily detected, and gives natural gas that funny sulfur-like or rotten egg odor.

How is natural gas stored?

It is most commonly held in inventory underground under pressure in three types of facilities. These are: (1) depleted reservoirs in oil and/or gas fields, (2) aquifers, and (3) salt cavern formations. Natural gas is also stored in liquid form in above-ground tanks.

Facts and Figures

- There are over a million miles of gas pipelines laid, needed to meet the energy needs of the US alone.
- Natural gas was used for the first time in the US in 1816, to light street lights in Baltimore.
- Over 90% of the natural gas requirements of the US are fulfilled from deposits found in the country itself.
- More than 62% of homes in the country rely on natural gas to run stoves, water heaters, furnaces and other home appliances.
- Natural gas is lighter than air.
- Natural gas was discovered many centuries ago as there is proof of its use in ancient Greece and Persia.
- Natural gas can be converted into the liquid state and then is called Liquid natural gas has (LNG).
- LNG is made when natural gas becomes liquid and for this its volume must be reduced 615 times which can be done by cooling natural gas to a temperature of minus 260 F.
- Lighter than air natural gas (methane) should not be confused with liquefied petroleum gas. This gas is more commonly called L.P., bottle gas, propane, butane, and various

other trade names. Liquefied petroleum gases are all heavier than air and will collect in low places when not confined.

Natural Gas Safety

If you smell a natural gas odor:

- Do not use any devices that might create a spark, such as light switches, phones, flashlights or electric appliances, including computers. A spark could ignite the gas.
- Immediately have everyone leave the house, and call 911 and report the emergency.
- Keep everyone away from the building until given the “all clear” from a gas company employee.
- Remember: Never try to find the leak yourself.
- Never store anything near a gas appliance that might interfere with normal appliance airflow.
- Never store or use flammable products in the same room as or near any gas or heat-producing appliances. Flammable products include gasoline, spray paints, solvents, insecticides, adhesives, foggers, varnish, cleaning products and other pressurized containers. This will reduce the risk of flammable vapors being ignited by the main burner flame found in all gas appliances or the pilot flame found in many gas appliances.
- If you are planning to dig on your property call and request to have your underground utilities marked. Homeowners or excavators can call MISS DIG at **800-482-7171** or **811** 24 hours a day, seven days a week.

Is propane an environmentally safe fuel?

- Natural gas is the cleanest of all the fossil fuels.
- Natural gas is cleaner fuel than coal and petroleum because it contains less carbon and therefore has cleaner burning and also has smaller amounts of sulfur.
- The U.S. Environmental Protection Agency calls natural gas the cleanest alternative transportation fuel commercially available today. Converting one waste truck from diesel to natural gas is the pollution-reduction equivalent of removing 325 cars from the road (AGL Resources).
- Natural gas is a safe and reliable fuel if used correctly.

References

Eau Claire Energy Cooperative

Wikipedia http://en.wikipedia.org/wiki/Main_Page



National Fire Protection Association

The authority on fire, electrical, and building safety

<http://www.nfpa.org/index.asp>]



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