

RISK CONTROL

UNDERSTANDING NATURAL GAS IN RESIDENTIAL SETTINGS: RISKS, USAGE, AND SAFETY TIPS

Natural gas is a versatile and widely used energy source in residential settings. It's primarily composed of methane and is a popular choice for heating, cooking, and powering various appliances.

While natural gas offers numerous benefits, it also carries inherent risks. This resource aims to provide an overview of natural gas, its common uses in residential settings, and essential safety tips for housing organizations and property managers to ensure the safe use of this energy source.

What is natural gas?

Natural gas is a [fossil fuel formed deep beneath the Earth's surface](#) through the decomposition of organic matter over millions of years. It's extracted from underground reservoirs and then processed to remove impurities, leaving behind mostly methane.

Natural gas is colorless and odorless. However, an odorant is added before distribution to make it easily detectable, as methane is highly flammable. Natural gas is an efficient energy source, releasing substantial heat when burned.

Common residential uses

Natural gas is vital in many residential applications, making it an essential energy source for millions of households. Here are its common uses:

- **Heating:** Natural gas furnaces and boilers are widely used for space heating, providing a reliable and efficient way to maintain comfortable indoor temperatures during cold weather. Some homes have natural gas fireplaces, which provide a convenient source of warmth and ambiance. Gas water heaters are prevalent due to their quick recovery time and cost-effectiveness, ensuring a continuous hot water supply.
- **Cooking:** Natural gas stoves and ovens offer precise temperature control, making them a preferred choice for cooking enthusiasts.
- **Laundry:** Gas dryers are commonly used for faster drying times and energy efficiency.



What to do if a leak is detected

Natural gas is generally considered a safe energy source but is explosive when contained at a certain concentration range.

If a leak is detected, it must be addressed immediately, says Josh White, manager of gas emergency preparedness with Eversource Energy, an energy provider serving gas customers in Connecticut and Massachusetts.

Ensure staff and residents are familiar with the distinctive odor of natural gas, often described as a "rotten egg" smell. If this smell is reported, evacuate the premises immediately and call 911.

"I would advise occupants to move at least 300 feet from the building," White said.

It's critical that occupants leave the building immediately without touching anything, including light switches, telephones, cell phones, doorbells, and other electronic devices.

"The static electricity from a light switch or cell phone is enough to ignite gas at a certain concentration," White said.

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Methane—the primary ingredient in natural gas—is lighter than air, meaning it travels upwards. White advises property owners, managers, and maintenance staff to avoid the urge to investigate the source of a leak by opening a door to the basement or lower level where gas infrastructure is usually located. This can release trapped methane to the upper levels of a building, exposing it to potential ignition sources and altering the oxygen-to-methane ratio enough to create a potentially explosive scenario.

Jeffrey Rheume, a senior gas emergency preparedness specialist with Eversource Energy, said may have the urge to investigate and fix the cause of a building-wide gas leak.

“There needs to be a mindset shift for these folks to call 911 and their local gas company for any suspected gas issue,” Rheume said.

White noted that besides the distinctive odor, gas leaks can be detected by observing bubbles, blowing dust, or mist from a gas line, or hearing an unusual hissing or whistling sound.

“When in doubt, get everyone out and call 911,” White said.

Know the type of gas serving your properties

Methane-based natural gas isn’t the only gas used in residential settings. Other gases, such as propane, are common.

"It's crucial to understand the different properties of these gases. For example, propane is heavier than air, meaning it sinks, unlike methane, which is lighter than air and rises," Rheume said. "It's important to know that if enough gas is trapped at a high enough concentration, it can cause asphyxiation due to displacement of oxygen."

Know what's below when digging

Advise maintenance staff always to call 811—the national call-before-you-dig phone number—at least two business days before breaking ground on any project, no matter the scope.



“Calling 811 will prompt a utility locator to come out to the area and mark the location for underground utility wires, cables, and pipes so you can proceed without causing damage or a potentially dangerous situation,” White said.

In most situations, a broken gas line in the open air isn’t life-threatening, as the methane will escape into the atmosphere. However, there are potential complications, [especially in the winter months](#) when frost, snow, and ice cover the ground, Rheume noted.

“These conditions prevent the gas from escaping vertically, and it can find its way into a building through a crack in the foundation,” he said.

Gas concerns related to flooding

Flooding is [a red flag for gas utility providers](#) because of the impact it can have on gas infrastructure and customer appliances.

"When we start seeing the potential for flood conditions, we change our operations and stage crews in flood-prone areas," White said. "If we expect heavy flooding, we may shut off gas service to an area for safety."

Flooding in a building may cause natural gas lines to shift, possibly resulting in a gas leak or an outage of the pilot light, which could allow natural gas into the building. In addition, rising flood waters inside can cause appliances to shift, possibly resulting in a leak. Inspect flooded areas for damage and signs of a gas leak after flooding occurs. After a flood, call your utility provider to have your gas infrastructure thoroughly inspected.



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Gas safety tips for housing organizations

Gas safety is of paramount importance for housing organizations. This section provides crucial tips and guidelines to prevent gas leaks and ensure resident safety.

- **Address leaks immediately:** Make reports of gas leaks a priority work order. Report any gas leaks to 911 immediately.
- **Regular maintenance:** Schedule annual inspections and maintenance for gas appliances by a licensed technician to check for leaks, blockages, or faulty components. Keep track of the ages of gas appliances to budget appropriately for new ones.

Tip: Engage with your gas supplier to ensure an inspected and well-maintained gas line infrastructure. Leave all maintenance and repairs to gas professionals.

- **Protect gas infrastructure:** Use pylons to protect gas mains and meters from vehicles.

Case study: A driver struck an unprotected gas meter outside a building insured by HAI Group, resulting in an explosion and fire damage to the property. The driver was killed, and 13 out of 20 units were heavily damaged, costing just over \$2 million to repair.

- **Avoid open flames:** Keep open flames, such as candles and matches, away from gas appliances.
- **Clear the area:** To prevent fires, keep flammable materials and clutter away from gas appliances.
- **Ventilation:** Ensure proper ventilation for gas appliances. Blocked vents can lead to a buildup of carbon monoxide (CO).

Tip: Ventilation issues are common in the winter when snow and ice can block exhaust vents. Ensure snow and ice buildup is promptly cleared from exhaust vents to prevent CO issues.

- **Install carbon monoxide detectors:** Place CO detectors in critical areas of units, especially near bedrooms and gas appliances, to monitor CO levels. CO is a colorless, odorless [gas that can be produced by faulty gas appliances](#) and poses a serious health risk. Symptoms of this carbon monoxide poisoning include headaches, dizziness, confusion, drowsiness, nausea, and loss of consciousness.

CO requirements in HUD-assisted housing: The U.S. Department of Housing and Urban Development (HUD) requires the [installation of CO detectors in HUD-assisted housing units](#) containing fuel-burning appliances or an attached private garage.

- **Educate residents:** Teach residents about natural gas safety procedures and emergency protocols.

- o Residents should be advised never to use a gas appliance if it's damaged or leaking.
- o Gas ovens and range tops should never be used as space heaters. Using a gas appliance in the wrong way can cause CO issues.
- o Residents should never hang clothing or anything else from gas pipes. The added weight can weaken or break joints or fittings, resulting in a gas leak.

- **Gas shut-off:** Train employees on the location of gas meters and how to shut off the gas supply in non-emergency situations. In an emergency, employees should not attempt to shut off the gas, and should instead evacuate the building and call 911.

Bottom line: If a gas leak is suspected, evacuate immediately and call 911

Natural gas is a valuable resource in residential settings but requires careful handling and awareness of potential risks. By following the safety tips outlined in this resource and staying vigilant, housing organizations can enjoy the benefits of natural gas while ensuring the safety of their properties, residents, and employees.

Contact our Risk Control Services Team

for more resources and answers to your housing organization's risk-related questions.

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