

first responder beware®

Staying Safe While Protecting Others

Natural Gas Safety for First Responders



An  Essential Utilities Company

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Firefighters, police, and EMTs are typically first on the scene in an emergency and face the greatest risk from natural gas leaks and fires.

Understanding the potential dangers, and dealing with them correctly, makes everyone safer.

This program is designed to supplement, not replace, your department's standard operating procedures (SOPs).

Natural Gas Safety Basics

- **Properties of Natural Gas**
- **The Natural Gas Delivery System**
- **Pipeline Locations**
- **Preventing Natural Gas Ignition**
- **Responding to Natural Gas Emergencies**
- **Indoor Natural Gas Leaks**
- **Outdoor Natural Gas Leaks**
- **Natural Gas Fires**

Properties of Natural Gas

- **Natural gas is lighter than air.**
 - It will follow the path of least resistance and will rise.
 - When underground or in enclosed spaces, gas will move laterally or **migrate**.
- **Chemical additives produce the familiar sulfur-like smell of natural gas.**
- **A lit cigarette** is enough to ignite natural gas.
- Natural gas will only ignite when the volume of gas in air is **between 5% and 15%**.
 - At concentrations below about 5% or above 15% volume in air, **natural gas will not burn**.
- **Burning natural gas will not explode.**
- **Natural gas is nontoxic**, but can displace oxygen in confined spaces, creating an asphyxiation hazard.
- **Liquefied gases have different properties** than natural gas.

The Natural Gas Delivery System

- There are three types of lines in the natural gas network.
- Natural gas in transmission pipelines may not yet be odorized, especially in areas of low population density.
- Between service lines and individual structures are service meters.
 - Different structures use different types of meters.
- The size of a pipe is **NOT** a reliable indicator of the gas pressure.



Single-unit residential meter

| LINE TYPE | Transmission Pipelines | Main Lines (Distribution Lines) | Service Lines |
|--|---|------------------------------------|-----------------------------|
| SIZE (diameter) | up to 4 feet | 2 to 20 inches | ¼ inch to 1 inch |
| PRESSURE | 400 to 1000 psi | less than 100 psi | same as main lines |
| OPERATED BY | interstate or intrastate pipeline companies or local utilities | local natural gas utilities | local natural gas utilities |
| LOCATION INFORMATION Note: Landscaping and/or erosion can change depth of lines. | “right-of-way” corridors; marked with transmission line markers | about 2 feet below ground | up to 2 feet below ground |

Pipeline Locations

- **High-visibility markers** indicate the general location of Peoples' natural gas transmission and some distribution pipelines.
- For security purposes, **these markers do not show the exact location**, path, or depth of gas pipelines in the area.
- **If you notice any type of suspicious activity near a pipeline marker**, call the number listed on the marker to report it. Call this number as well if you notice a damaged marker.
- The approximate locations of natural gas transmission pipelines are available on the National Pipeline Mapping System (NPMS) website: <https://www.npms.phmsa.dot.gov>.



Preventing Natural Gas Ignition

- **Even the smallest flame or spark can ignite leaking natural gas and cause an explosion.** Avoid turning electrical equipment or devices on or off in the vicinity of a leak.
- **Use intrinsically safe radios and flashlights** for the duration of any incident response.
- **Do not use doorbells, light switches, garage door openers or other electrical devices,** and prevent their use by others.
- **Take steps to eliminate sources of static electricity.**



Responding to Natural Gas Emergencies

- When called for a gas leak or fire, or if you smell gas at an incident scene, **assume there's danger.**
- **Contact Peoples,** and wait for them to arrive.
- **Provide the best possible directions** to the location.
- **Evacuate the area.**
- **Park emergency vehicles**
away and upwind from
the area.
 - Do not park over manholes or storm drains.



Responding to Natural Gas Emergencies

- **NEVER** attempt to shut off underground natural gas valves or relief vents.
- Turn off gas at meters or appliance supply lines only.
 - A ¼ turn of a gas meter valve will shut off the gas service.
 - Use the same procedure at an appliance supply line.
 - Tie and label the meter or appliance supply line to let others know it has been shut off.
- **NEVER** attempt to turn gas service back on.



Indoor Natural Gas Leaks

- Indoor gas leaks can result from **malfunctioning gas-fed appliances**.
- **DO NOT open windows** until you are certain the gas supply has been shut off and ignition sources have been eliminated.
 - **Ventilate structures from top to bottom.**
 - **Never ventilate structures with personnel inside.**

Carbon Monoxide

- **Understanding carbon monoxide (CO) leaks:**
 - CO has no color, odor, or taste.
 - CO leaks are frequently caused when fuel-burning appliances malfunction or are used without adequate ventilation.
- **CO poisoning can look like a common illness, but is deadly if untreated.** Know the signs:
 - Flu-like symptoms
 - Loss of consciousness
 - Lips and skin turn blue
- **Get victims outdoors immediately and seek medical attention.**



Outdoor Natural Gas Leaks

- Outdoor natural gas leaks are most commonly caused by **construction-related damage, cracks due to extreme weather, or pipe corrosion.**
- **Contact Peoples immediately** to shut off the gas.
- **Evacuate the area immediately. Establish a restricted area.**
- **Be alert for migrating gas.** Gas can accumulate in storm drains, construction trenches, buildings, and other utility lines.



Outdoor Natural Gas Leaks

- In addition to the familiar sulfur-like smell, other indicators of an outdoor leak include:
 - **A hissing, whistling, or roaring sound.** The sound could range anywhere from a low hiss to a loud roar.
 - **Dead or dying vegetation (in an otherwise moist area) over or near a pipeline.**
 - **Continuous bubbling in water.**
 - **Dirt or water being thrown into the air.** Depending on the pressure, the force of the dirt or water will vary.
 - **An exposed pipeline after an earthquake, fire, flood, or other disaster.**
 - **A damaged connection to a gas appliance.**



Natural Gas Fires

- When responding to a fire involving natural gas, **your best and safest course of action is to let it burn.**
- **Call Peoples immediately.**
- **Evacuate the area** and protect exposures.
- **Do not park emergency vehicles under overhead utility lines.**



Natural Gas Fires

- For structure fires, **shut off the gas supply only if you can safely access the meter.**
- Once the gas supply is off, **remain alert for gas migration and possible re-ignition.**
- **DO NOT** use water to suppress a natural gas fire; it is ineffective and may introduce water into gas mains.
 - Use a fog spray to cool and protect combustible exposures.



Natural Gas Safety Review

- **Prevent ignition** of natural gas.
- When natural gas is involved in an emergency, **contact Peoples.**
- **Park emergency vehicles away and upwind** from the area of a natural gas emergency.
- **Evacuate the** area and be alert for migrating or accumulating gas.
- **Do not ventilate natural gas until the supply is off** and all personnel are out of the structure.
- **Turn off natural gas service at meters or appliance supply lines only.**
- When natural gas is burning, **let it burn and protect area exposures.**

Contact Information

- In case of a natural gas emergency, call Peoples: **1.800.400.4271**
- For additional information, visit Peoples's websites:
 - **peoples-gas.com/PipelineSafety.aspx**
 - **peoples-gas.e-smartresponders.com**

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Thank You



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