



first responder beware®

Staying Safe While Saving Others

Natural Gas Safety for First Responders



- **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**
- **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 leaking underground or in enclosed spaces, natural gas can **migrate** through underground utility conduits.
- **Chemical additives produce the distinctive, rotten-egg or sulfur-like smell of natural gas.**
- **A lit cigarette or a spark from a light switch** is enough to ignite leaking natural gas.
- Natural gas has an **explosive (flammable) concentration range** between about 5% and 15% gas to air.
- At concentrations below **5%** or above **15%**, **natural gas will not burn.**
- **Burning natural gas will not explode.**
- **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 natural 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 1,000 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 Markers

- **High-visibility markers** indicate the general location of natural gas transmission and some distribution pipelines.
- For security purposes, **these markers do not show the exact location**, path or depth of natural 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>. State and local officials may apply to access specific pipeline locations at <https://www.npms.phmsa.dot.gov/ApplyForNPMSAccess.aspx>.



Pipeline Marker

Preventing Natural Gas Ignition

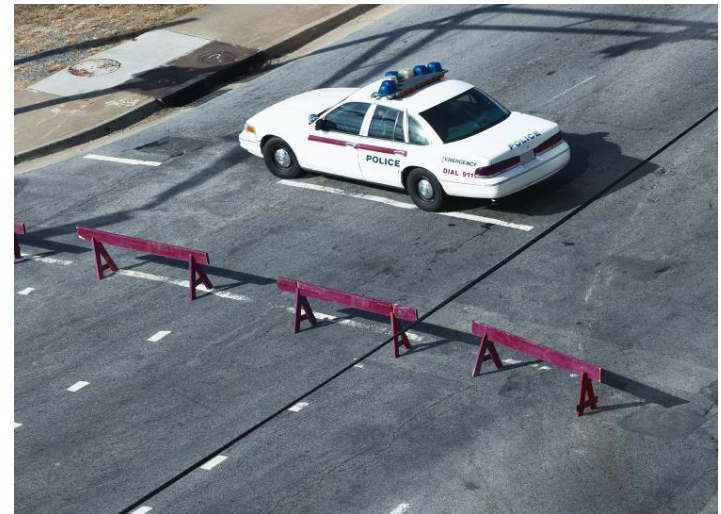
■ **Even a tiny spark from a light switch or phone is enough to ignite accumulated natural gas and cause an explosion.** Avoid turning electrical equipment or devices on or off in the vicinity of a leak:

- **Do not use spark-producing equipment.** Intrinsically safe radios and flashlights should be used for the duration of any incident response.
- **Avoid using doorbells, wall switches, garage door openers and cell phones,** and prevent their use by others.
- **Do not step on doormats.** Friction from your boots could create a spark of static electricity.



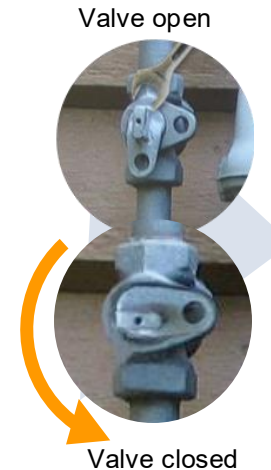
Responding to Natural Gas Emergencies

- When called for a natural gas leak or fire or if you smell natural gas at an incident scene, **assume there is danger.**
- **Contact Dominion Energy**, and wait for them to arrive.
- **Provide the best possible directions** to the location.
- **Park emergency vehicles away and upwind** from the area.
 - Do not park over storm drains or manholes or near potential gas-filled structures.
 - Turn off the vehicle.
- **Evacuate the area immediately.**
Be alert for migrating or accumulating natural gas.



Responding to Natural Gas Emergencies

- **NEVER** attempt to shut off underground natural gas valves or relief valves.
- If a plastic natural gas line is damaged, **DO NOT** attempt to stop the flow of gas by folding the plastic over.
- If the natural gas supply to a structure must be controlled, **notify Dominion Energy personnel.**
- **As a last resort and if it is safe to do so, turn off natural gas at residential meters or appliance supply lines only.**
 - A $\frac{1}{4}$ turn of the valve across the pipe will turn off a meter.
 - 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.
 - Inform Dominion Energy of the precise location of any gas valve you have closed.
- **NEVER** attempt to turn natural gas service back on.



Gas Meter



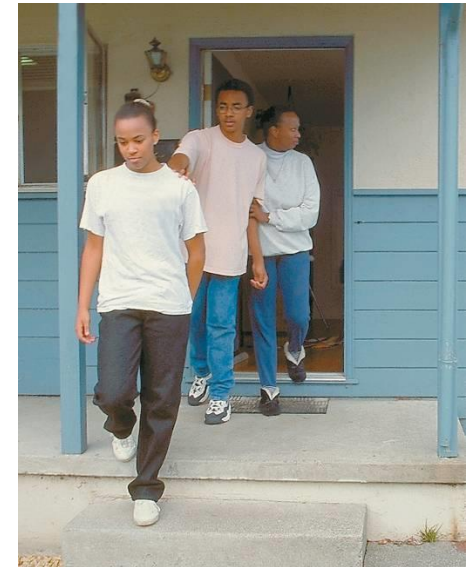
Appliance Supply Line

Indoor Natural Gas Leaks

- Indoor natural gas leaks can result from **malfunctioning gas-fed appliances**.
- **DO NOT** open windows until you are certain the natural gas supply has been shut off.
 - Ventilate structures from top to bottom.
 - **Never** ventilate structures while personnel are 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

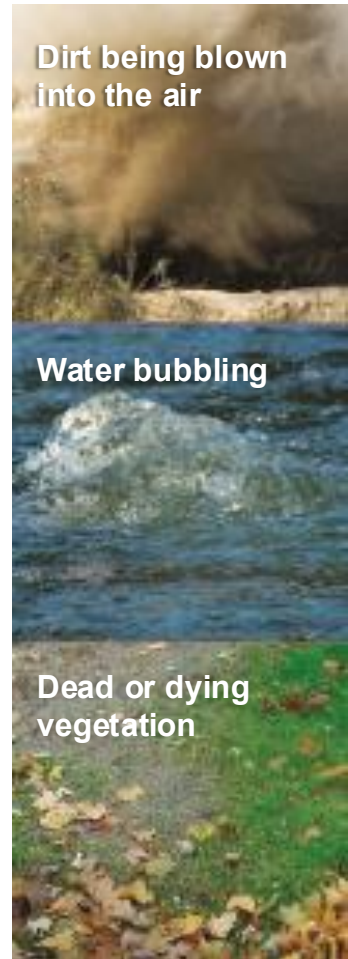


- **Outdoor natural gas leaks can be caused by** excavation-related damage, cracks due to extreme weather or pipe corrosion.
- **Contact Dominion Energy immediately** to shut off the natural gas.
- **Evacuate the area.**
- **Be alert for migrating natural gas.** Natural gas can accumulate in storm drains, buildings and other utility lines.

Outdoor Natural Gas Leaks

- A distinctive, rotten-egg or sulfur-like smell of natural gas may fade or not be distinguishable. **Look, listen and smell to detect these signs of an outdoor natural gas leak:**

- A hissing, whistling or roaring sound
- Dirt blowing into the air from a hole in the ground
- Continuous bubbling in water
- Dead or dying vegetation (in an otherwise moist area) over or near a gas pipeline
- Frozen ground in warm weather



Natural Gas Fires



- When responding to a fire involving natural gas, **do NOT attempt to extinguish the fire unless lives are in danger.**
- **Call Dominion Energy 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 natural gas supply only if you can safely access the meter.**
- Once the natural gas supply is off, **remain alert for natural gas migration and possible reignition.**
- **DO NOT** use water to suppress a natural gas fire, because it is ineffective and may flood natural gas piping.
 - A fog spray can be used to cool and protect combustible exposures.



Natural Gas Safety Review

- **Prevent ignition** of leaking natural gas.
- When natural gas is involved in an emergency, **contact Dominion Energy.**
- **Park emergency vehicles** **away and upwind** from the area of a natural gas emergency.
- **Evacuate the area** and be alert for migrating or accumulating natural gas.
- **Do not ventilate natural gas until the supply is off** and all personnel are out of the structure.
- Turn off natural gas at **residential meters or appliance supply lines only**—NEVER operate system valves (above or below ground), including relief valves.
- When natural gas is burning, **do NOT attempt to extinguish it unless lives are in danger.** Protect area exposures.

Contact Information

- In case of emergency, call Dominion Energy at 800-815-0083.
- Visit firstresponder.domsafety.com for Dominion Energy's natural gas safety e-learning certification course and other training tools.



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