



**first responder**  
**beware<sup>®</sup>**

**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 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 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	<b>400 to 1,000 psi</b>	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 BHE GT&S natural gas transmission 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>. State and local officials may apply to access specific pipeline locations here also.



BHE GT&S pipeline marker

# Preventing Natural Gas Ignition

- **Even the smallest flame or spark can cause a natural gas 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

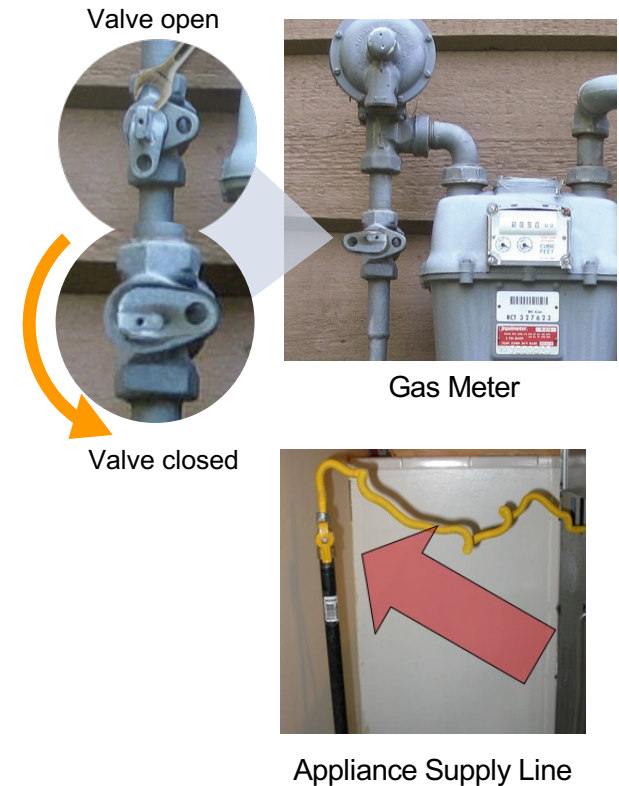
- When called for a gas leak or fire, or if you smell gas at an incident scene, **assume there is danger.**
- Contact the local natural gas utility, and wait for them to arrive. **Contact BHE GT&S if a gas transmission line is involved.**
- **Provide the best possible directions** to the location.
- **Park emergency vehicles** **away and upwind** from the area.
  - Do not park over manholes or storm drains.
- **Evacuate the area immediately.** Be alert for migrating or accumulating gas.





# Responding to Natural Gas Emergencies

- **NEVER** attempt to shut off underground natural gas valves or relief vents.
- If a plastic natural gas line is damaged, **DO NOT** attempt to stop the flow of gas by folding the plastic over.
- Turn off 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 the local gas utility of the precise location of any gas valve you have closed.
- **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.
  - 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 BHE GT&S immediately** to shut off the gas if transmission pipelines are involved.
- **Evacuate the area.**
- **Be alert for migrating gas.** Gas can accumulate in storm drains, construction trenches, buildings and other utility lines.

# Outdoor Natural Gas Leaks

■ The familiar sulfur-like smell of natural gas may fade or not be distinguishable. **Look, listen and smell to detect these signs of an outdoor gas leak:**

- A hissing, whistling or roaring sound
- Dirt blowing into the air from a hole in the ground
- Continuous bubbling in water
- An exposed pipeline after an earthquake, fire, flood or other disaster
- Dead or dying vegetation (in an otherwise moist area) over or near a gas pipeline
- Frozen ground in warm weather
- 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 BHE GT&S immediately if transmission pipelines are involved. Otherwise, immediately notify your local natural gas utility.**
- **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 reignition.**
- **DO NOT** use water to suppress a natural gas fire, because it is ineffective and may flood 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 a natural gas transmission pipeline is involved in an emergency, **contact BHE GT&S.**
- **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 gas at **residential meters or appliance supply lines only**—NEVER at underground valves or relief vents.
- When natural gas is burning, **let it burn and protect area exposures.**

# Contact Information

- In case of emergency, call BHE GT&S at 1-888-264-8240.

Visit [BHEGTS.e-smartresponders.com](https://BHEGTS.e-smartresponders.com) for BHE GT&S's natural gas safety e-learning certification course and other training tools.



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