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first responder beware®

Staying safe while protecting 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, fires and explosions.

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 has an **explosive (flammable) concentration range** between about 5% and 15% gas to air.
  - At concentrations below 5% gas, the mixture is too lean and will not burn.
  - At concentrations above 15% gas, the mixture is too rich to burn.
- **Burning natural gas will not explode.**
- **Liquefied gases have different properties** than 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.
- **A chemical additive called mercaptan produces the familiar sulfur-like smell of natural gas.**
- **A lit cigarette** is enough to ignite natural gas.

The natural gas delivery system

- **There are three types of lines in BGE's natural gas network: transmission, distribution and service lines.**

LINE TYPE	Transmission Pipelines	Distribution Lines (Mains)	Service Lines
SIZE (diameter)	Up to 30 inches	3/4 inch to 48 inches	Varies
PRESSURE	200 to 720 psi	Varies	Varies
OPERATED BY	Intrastate gas transmission companies and local natural gas 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; areas marked with transmission pipeline markers		

The natural gas delivery system

- **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.**

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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 leaking gas:
  - **Do not use any phones, electric switches, doorbells, thermostats or appliance controls.** Prevent their use by others.
  - **Do not step on doormats**. Friction from your boots could generate a spark of static electricity.
  - Use only **intrinsically** safe (Class 1, Division 1) flashlights and radios for the duration of the incident response.

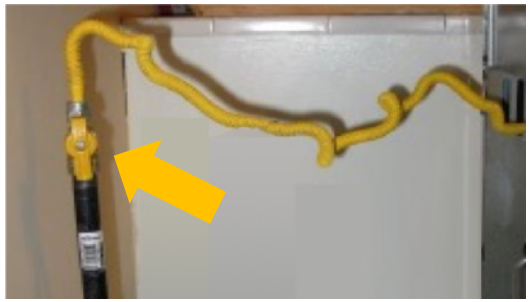
Responding to natural gas emergencies

- When called for a gas leak or fire or if you smell gas at an incident scene, **assume there's danger.**
- **Contact BGE immediately.**
- **Provide the best possible directions** to the location.
- **Evacuate the area** while you wait for BGE personnel to arrive.
- **Park emergency vehicles away and upwind** from the area.
  - **Do not park over manholes or storm drains.**
  - **Do not set out roadway flares.** They could ignite the gas.

Responding to natural gas emergencies

- **If you can do so safely, turn off gas only at meters or appliance supply lines—NEVER at underground valves or relief vents and NEVER unchain or unlock a meter valve to close it.**
  - After a service meter valve or appliance supply line has been closed, do not open it under any circumstances. Only utility personnel may restore gas service.
  - Inform BGE of any valve you have closed and its precise location.
- **Do NOT attempt to stop the flow of gas on a struck gas line.** Never attempt to bend, pinch or crimp a ruptured plastic gas line.

Location of valves for meter (above) and appliance supply line (below)

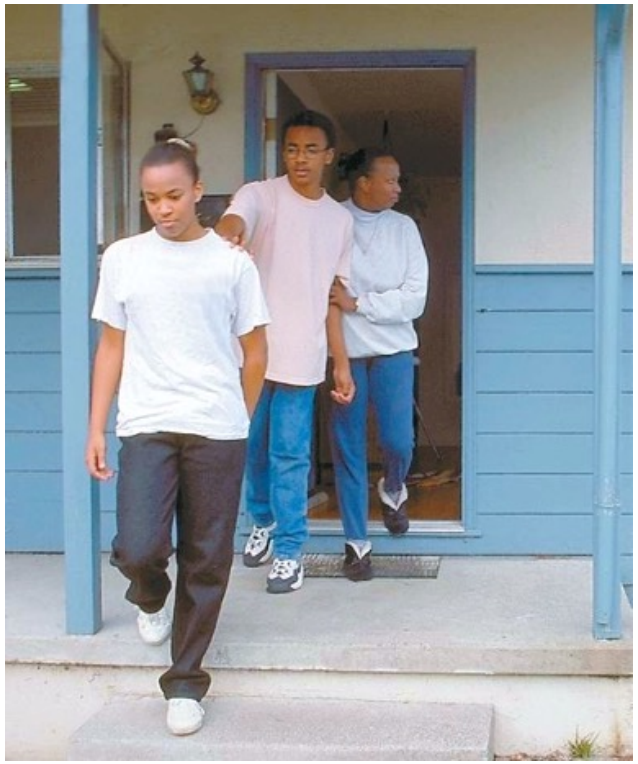


Indoor natural gas leaks

- Indoor gas leaks can result from **malfunctioning gas-fed appliances.**
- **Use extreme** caution when ventilating a building with a natural gas concentration above 15%:
  - As the gas dissipates and the concentration decreases, it will enter the explosive range.
  - All ignition sources must be removed before ventilation proceeds.
  - Ventilate structures from the top to the bottom.
  - Never ventilate structures while people 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
  - Confusion
  - Blurred vision
  - Blue lips or skin
  - Loss of consciousness
- **Get victims outdoors immediately and seek medical attention.**



Outdoor natural gas leaks

- Outdoor natural gas leaks can be caused by **construction-related pipeline damage, cracks due to extreme weather, pipe corrosion or failure of joints** on cast iron piping.
- **Contact BGE immediately** to shut off the gas.
- **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

- In addition to the familiar sulfur-like smell, other indicators of an outdoor leak include:
  - **Dirt being blown into the air**
  - **Dead vegetation** in an otherwise green area
  - **A dry spot** in an otherwise moist area
  - **Fire coming from the ground** or appearing to burn above the ground
  - **Water bubbling or being blown into the air**
  - **Roaring, blowing or hissing sounds**
  - **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 BGE immediately.**
- **Evacuate the area** and protect exposures.
- **Do not park emergency vehicles over manholes** or 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, as it is ineffective and dangerous.**
  - Spraying water into gas lines can flood gas piping, knocking out pilot lights and leading to a serious gas accumulation problem downstream.
  - Use a fog spray to cool and protect combustible exposures.
- **If the fire does not pose a threat to life or property, let it burn.**

Natural gas safety review

- **Prevent ignition** of natural gas.
- When natural gas is involved or suspected in an emergency, **contact BGE immediately.**
- **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.
- Turn off natural gas service at **meters or appliance supply lines only.**
- **Do NOT attempt to stop the flow of gas on a struck gas line.**
- When natural gas is burning, **let it burn and protect area exposures.**

Contact Information

- In case of emergency, call BGE at **800.685.0123**.
- For additional information, visit BGE's website at **BGE.COM/FirstResponder**.

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Thank you