

first responder beware®

Staying Safe While Protecting Others
Natural Gas Safety for First Responders



PPL companies

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 Overview

- Properties of Natural Gas
- The Natural Gas Delivery System
- Pipeline Locations
- Pipeline Reliability
- Hazard Prevention and Preparedness
- Preventing Natural Gas Ignition
- Responding to Natural Gas Emergencies
- Indoor Natural Gas Leaks
- Carbon Monoxide
- Outdoor Natural Gas Leaks
- Natural Gas Fires
- Additional Information

Properties of Natural Gas

- **Natural gas is lighter than air.**
 - It will follow the path of least resistance, and will travel upward through any available space.
 - 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 **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 | 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 Locations



- **High-visibility markers** indicate the general location of LG&E's 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>.

Pipeline Reliability

Pipelines are a key part of our nation's energy infrastructure and an efficient, safe and reliable means of transporting natural gas.

- **Their design, construction, operation and maintenance are extensively regulated** by federal and state agencies.
- To ensure gas is delivered safely and reliably, **LG&E continually tests, inspects and repairs their natural gas pipelines and monitors them 24/7 for potential leaks.**
- **Keeping pipelines secure and safe from accidental or intentional damage is everyone's responsibility.**



Hazard Prevention and Preparedness

- Natural gas pipeline leaks can be caused by corrosion and material defects; however, **the vast majority of leaks occur due to accidental damage** from excavation, construction or farming activities.
- **To prevent pipeline damage, LG&E educates excavators and the public** about digging safely near gas pipelines, and they participate in the Kentucky 811 “Call Before You Dig” service.
- **LG&E has an Integrity Management Program for identifying, assessing and managing risks to natural gas pipelines.** For an overview of LG&E’s IMP, please visit their website at **lge-ku.com**.
- **Federal regulations require all natural gas utilities to have an emergency response plan for natural gas pipeline incidents.** To request a copy of LG&E’s emergency response plan for your jurisdiction, contact **safety.info@lge-ku.com** or dial **502-627-2087**.

Preventing Natural Gas Ignition

- **Even the smallest flame or spark can ignite leaking natural gas and cause a fire or explosion.** Avoid turning electrical equipment or devices on or off in the vicinity of a leak.
- **Use intrinsically safe radios and flashlights (Class 1, Division 1)** 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.** Do not step on doormats.



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 LG&E immediately. Please note: The company is not responsible for any gas lines in Virginia.**
- **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 LG&E natural gas valves or relief vents.
- If it is safe to do so, 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.
 - Inform utility personnel of any gas valve you have closed and its precise location.
- **NEVER** attempt to turn gas service back on.

VALVE OPEN



VALVE CLOSED



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, and from the outside.**
 - **Never ventilate structures with occupants or 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.**



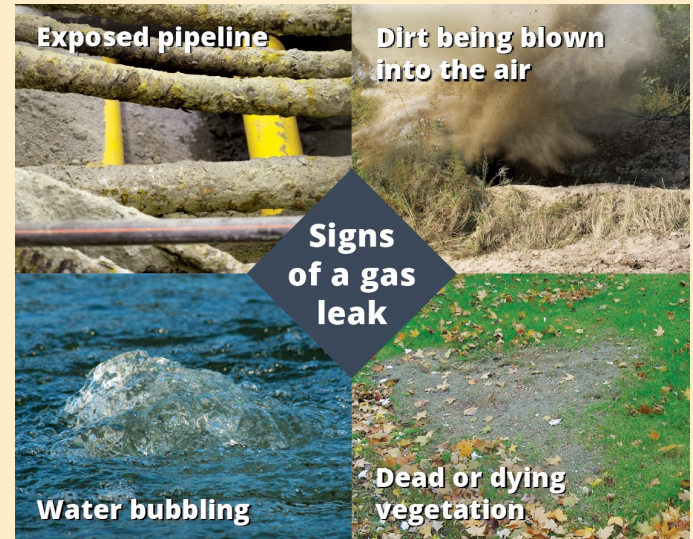
Outdoor Natural Gas Leaks

- Outdoor natural gas leaks are most commonly caused by **construction-related damage, cracks due to extreme weather, or pipe corrosion.**
- **Contact LG&E 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.



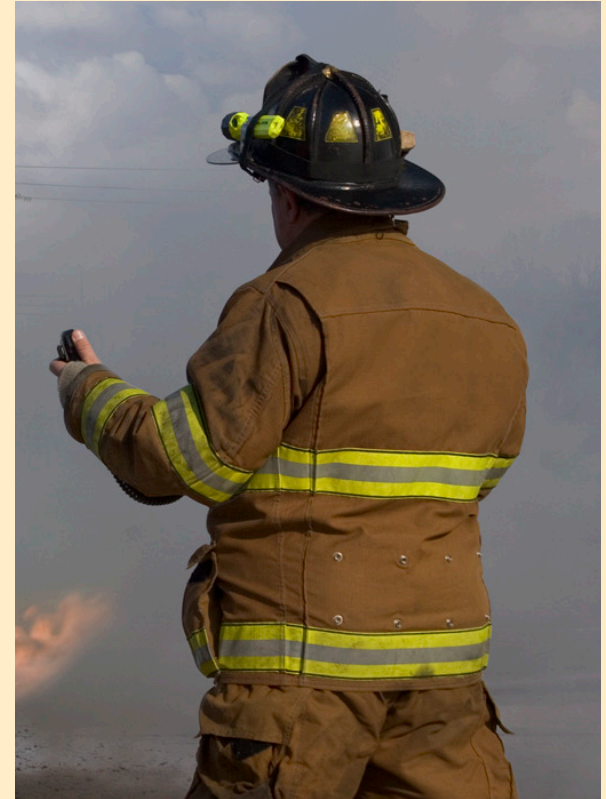
Outdoor Natural Gas Leaks

- In addition to the familiar sulfur-like smell, other indicators of an outdoor gas leak include:
 - **Continuous bubbling in water.**
 - **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.**
 - **Dirt blowing into the air from a hole in the ground.** Depending on the pressure, the force of the dirt or water will vary.
 - **A damaged connection to a gas appliance.**
 - **An exposed pipeline after an earthquake, fire, flood or other disaster.**



Natural Gas Fires

- When responding to a fire involving natural gas, **your best and safest course of action is to let it burn.**
- **Call LG&E 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. Utility personnel and the incident commander will tell you how to proceed.
 - **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 LG&E**.
- **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.**
- **Do not use water to suppress a natural gas fire.** It is not effective and may introduce water into gas mains.

For Additional Information

- In case of a natural gas emergency, call LG&E at **800-331-7370**
- For additional information, visit:
 - **lge-ku.e-smartresponders.com**
 - **<https://www.phmsa.dot.gov>**
- LG&E is available upon request to assist with drills and exercises to prevent and prepare for natural gas emergencies. Contact them at **safety.info@lge-ku.com** or dial **502-627-2087**.

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Thank You

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