



Colorado Springs Utilities

*It's how we're all connected*

**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 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.**
- ❑ **Even the smallest flame or spark** can ignite leaking 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.

	Transmission Pipelines	Main Lines (Distribution Lines)	Service Lines
<b>SIZE (diameter)</b>	up to 4 feet	3/4 to 20 inches	5/8 to 2 inch
<b>PRESSURE</b>	<b>400 to 1,000 psi</b>	less than 150 psi	same as main lines
<b>OPERATED BY</b>	interstate or intrastate pipeline companies or local utilities	local natural gas utilities	local natural gas utilities
<b>LOCATION INFORMATION</b> 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

- **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.**

# Pipeline Locations

- ❑ **High-visibility markers** indicate the general location of Colorado Springs Utilities' 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

- ❑ **Avoid turning electrical equipment or devices on or off in the vicinity of a leak.** Even the smallest flame or spark can ignite leaking natural gas and cause an explosion.
- ❑ **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:** Do not step on doormats, rub hands or shuffle feet.



# 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 Colorado Springs Utilities.** Provide clear directions and a clear path to the incident site.
- ❑ **Immediately evacuate** the area.
- ❑ **Be alert for migrating gas.**
- ❑ **Secure the area to prevent others from entering.** Reroute traffic if necessary.
- ❑ **Park emergency vehicles *away and upwind*. Do NOT park:**
  - Over manholes or storm drains
  - Under overhead utility lines





# Responding to Natural Gas Emergencies

- ❑ **NEVER** handle relief valves or underground natural gas pipeline valves.
- ❑ Turn off gas **ONLY** at an aboveground gas meter service line or appliance supply line if you can do so safely.
  - A 1/4 turn of a gas meter valve will shut off the gas service.
  - Use the same technique at an appliance supply line.
- ❑ **NEVER** attempt to turn gas service back on.
- ❑ Inform **Colorado Springs Utilities** of any gas service line or appliance supply line valve that has been shut off.



Closed gas meter valve



# 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

## ❑ Understand carbon monoxide (CO) leaks:

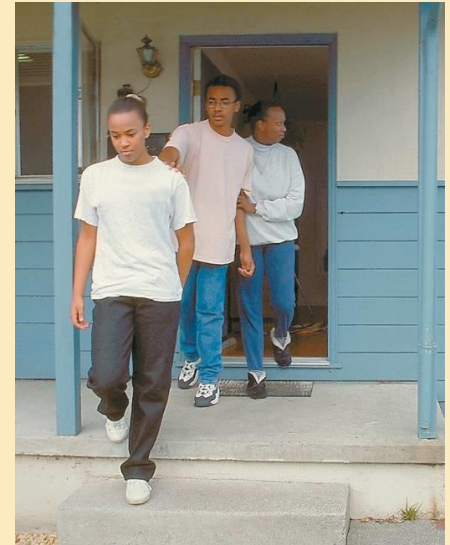
- CO has no color, odor or taste.
- CO leaks are frequently caused when fuel-burning appliances malfunction or are used without adequate ventilation.

## ❑ 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

## ❑ OSHA standards prohibit worker exposure to more than 50 parts of CO gas per million parts of air averaged during an 8-hour time period.

## ❑ Get victims outdoors immediately, and seek medical attention for them.



# 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 Colorado Springs Utilities 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, buildings and other utility lines.





# Outdoor Natural Gas Leaks

## □ Use your senses of sight, hearing and smell to detect a gas leak.

Be alert for these warning signs:

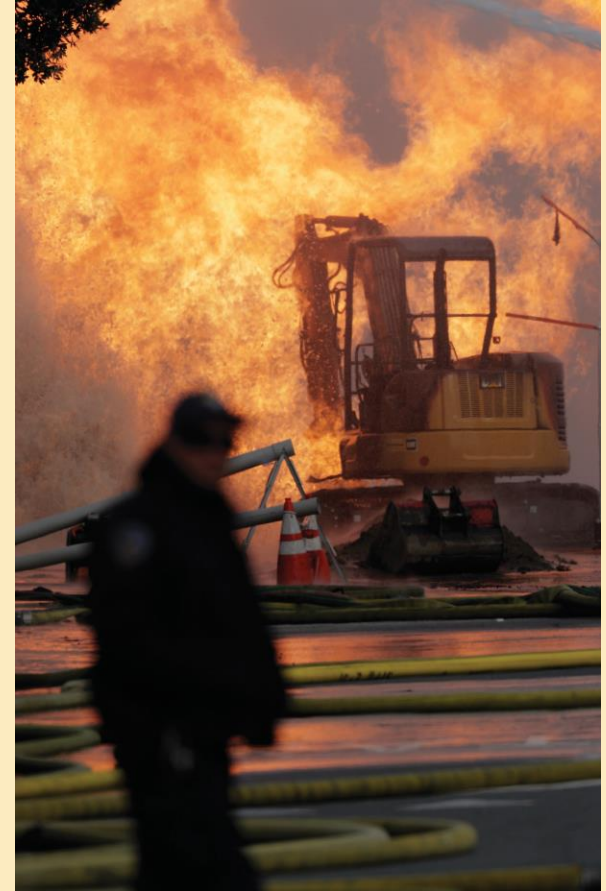
- The distinctive, sulfur-like odor of natural gas
- A hissing, whistling or roaring sound
- Dirt spraying or blowing into the air
- Continuous bubbling in water
- Dead or dying vegetation (in an otherwise moist area) over or near a pipeline
- A damaged connection to a gas appliance
- An exposed pipeline after an earthquake, a fire, a 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 Colorado Springs Utilities at 719-448-4800 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.
- ❑ **You may 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 Colorado Springs Utilities.**
- ❑ **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.**

# Additional Information

- ❑ In case of a natural gas emergency, call Colorado Springs Utilities at 719-448-4800.
- ❑ For additional information on gas pipeline safety, please visit these websites:
  - [csu.org/firstrespondersafety](https://csu.org/firstrespondersafety)
  - <https://www.phmsa.dot.gov>
- ❑ Colorado Springs Utilities has a program for managing risks to natural gas pipelines. For an overview of their gas distribution integrity management program, visit [csu.org/Pages/UndergroundDamagePreventionSafetyProgram.aspx](https://csu.org/Pages/UndergroundDamagePreventionSafetyProgram.aspx).



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**Thank You**