

Staying safe while  
protecting others



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**First Responder Beware®**

**Natural Gas Safety for  
First Responders**

*Click on each slide to advance.*



**To report emergencies, call 911 and  
Rhode Island Energy immediately.**

Natural gas emergencies: 1-800-640-1595

Always call 911 if you suspect a gas leak!

**Smell Gas. Act Fast. Call 911.**

# Natural gas safety for first responders



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- 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



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- Properties of natural gas
- The natural gas delivery system
- Preventing natural gas ignition
- Responding to natural gas emergencies
- Indoor natural gas leaks
- Carbon monoxide poisoning
- Outdoor natural gas leaks
- Natural gas fires





# Properties of natural gas



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## 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, natural gas will move laterally or migrate.

## Natural gas is odorless. The addition of mercaptan produces the familiar sulfur-like smell.

- You may not always be able to smell mercaptan, so never rely on your nose alone to detect a gas leak. Monitor the atmosphere with your department's approved and calibrated air-monitoring equipment.



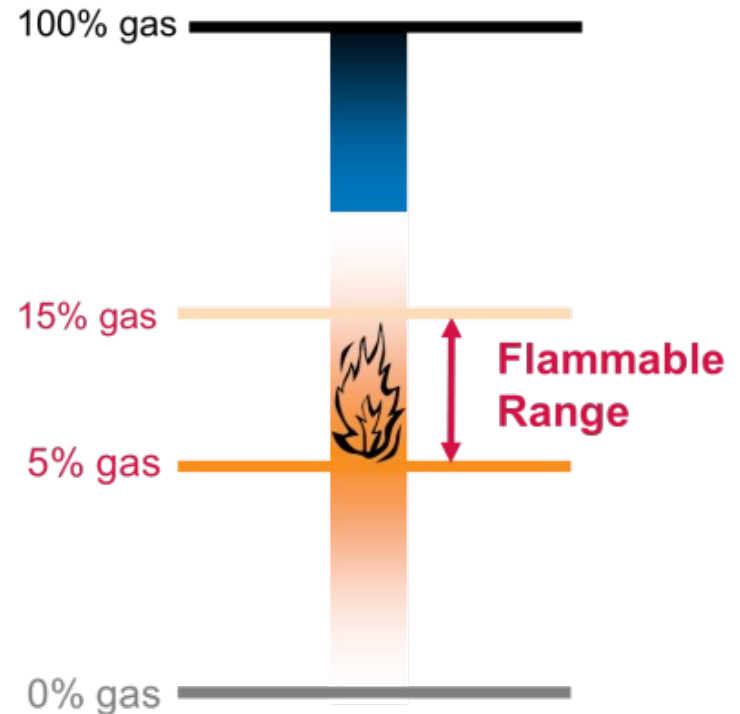


# Properties of natural gas



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- Natural gas is **highly flammable**.
- Natural gas will **burn when the gas-to-air ratio is between about 5% and 15%**.
  - At concentrations **below 5% or above 15%**, **natural gas will not burn**.
- **Liquefied gases, such as propane, have different properties** than natural gas.



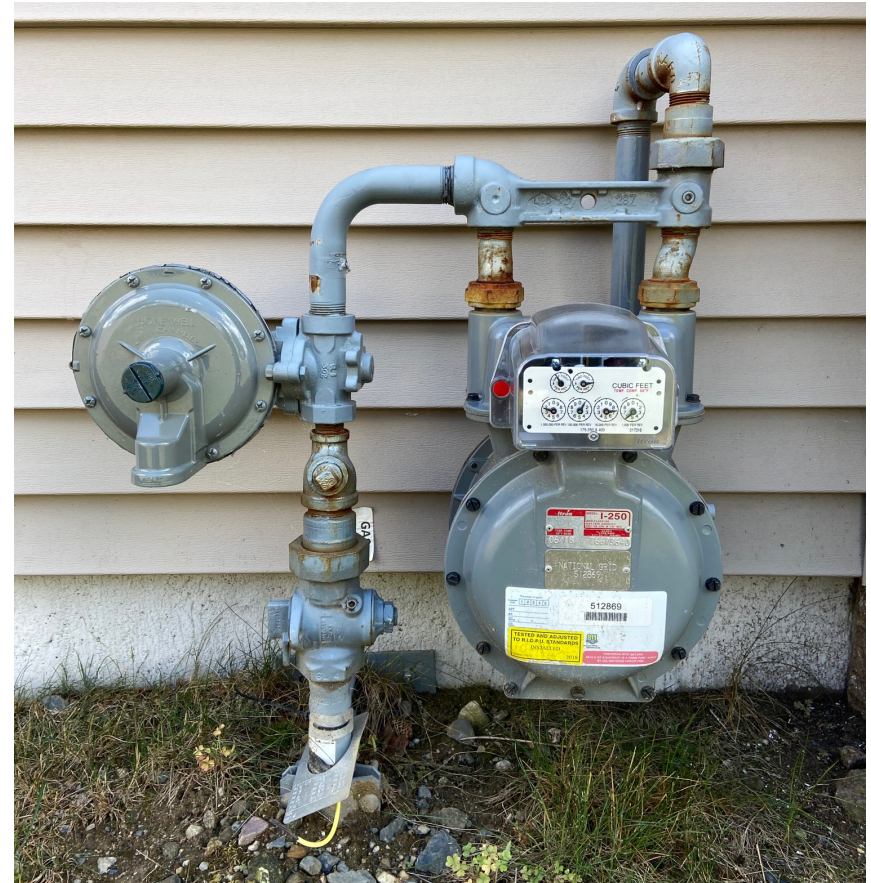
# The natural gas delivery system



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- **Natural gas travels through three types of pipelines** on its way from the wellhead to individual service laterals:
  - Gathering pipelines
  - Transmission lines
  - Distribution mains
- **Service laterals carry natural gas from distribution mains to customers' gas meters.**
- In general, **the closer natural gas gets to the end user, the smaller the pipeline and the lower the pressure.**



*Single-unit residential meter*

# Transmission pipeline markers



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- **High-visibility markers** indicate the approximate location of transmission pipelines in rights-of-way.
- **These markers include the pipeline company's name**, the type of product carried and an emergency phone number.
- You can also find the general location of gas transmission pipelines in your area on the National Pipeline Mapping System (NPMS) website at <https://www.npms.phmsa.dot.gov>.



*Rhode Island Energy pipeline marker.*



# Preventing natural gas ignition



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

**Notify Rhode Island Energy through your dispatcher as soon as practicable for all gas emergencies, and take these precautions:**

- Approach cautiously and stay upwind.
- Park safely away from collapse zones and manholes.
- Secure the perimeter.
- Evacuate **330 feet** in all directions.
- Stay out of manholes and sewers.
- Eliminate ignition sources.
- Use full SCBA and PPE.
- Monitor the atmosphere.

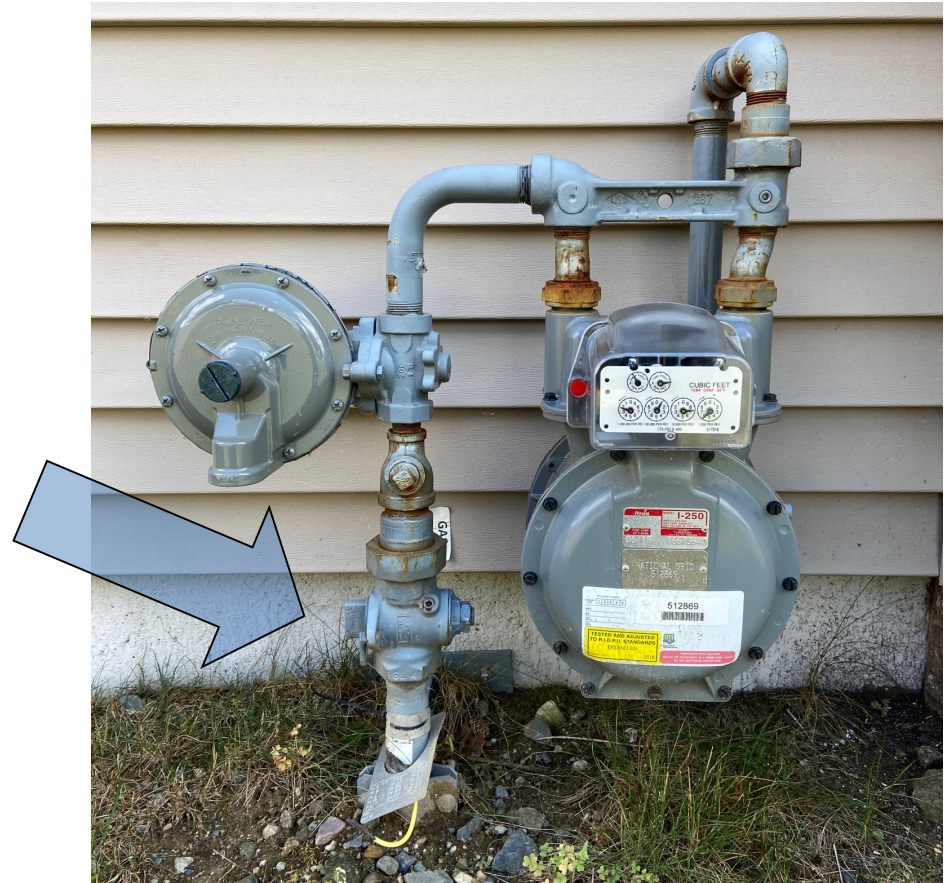


# Responding to natural gas emergencies



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- **NEVER** attempt to open or close underground pipeline valves.
- **First responders who have been trained to do so may turn off gas at aboveground meter valves or appliance supply lines.**
  - A quarter turn to the right will turn off a meter. Use the same procedure at an appliance supply line.
  - Inform Rhode Island Energy of any valve you have closed and its precise location.
- **After the service valve has been closed, DO NOT open it under any circumstances.**



*Single-unit residential meter*



# Indoor gas leak response



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**Natural gas leaks inside buildings present a significant hazard. Take these precautions:**

- Have a charged hand line with fog nozzle ready.
- **DO NOT** use spark-producing equipment.
- Evacuate *at least* **330 feet** in all directions.

**Coordinate with Rhode Island Energy before ventilating.**

- **Remove all ignition sources.** Ventilate structures from the top down.
- **Use extreme caution when ventilating a building with a gas concentration above 15%.** As gas disperses, concentrations will pass through the flammable range.



# Carbon monoxide



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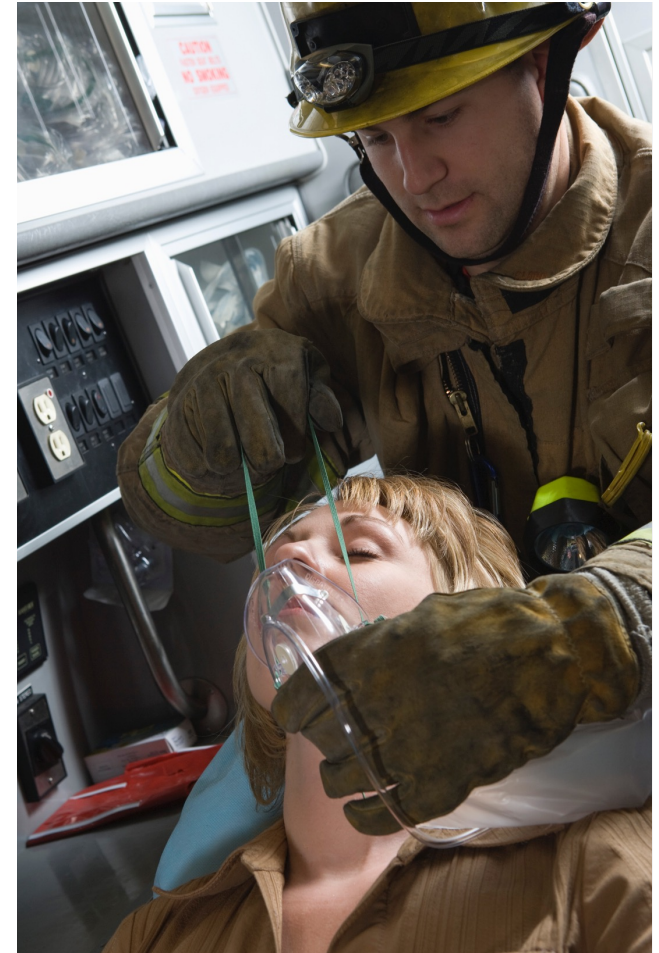
## Understanding carbon monoxide (CO) leaks

- **CO is a colorless, odorless, poisonous gas.**
- **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
- Nausea/confusion/slow breathing
- Loss of consciousness

**Make sure victims get fresh air and seek medical attention immediately.**



# Outdoor gas leaks



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- Outdoor natural gas leaks can be caused by **construction-related damage, cracks due to extreme weather or pipe corrosion.**
- **Contact Rhode Island Energy 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 gas leak indicators

**In addition to the familiar sulfur-like smell, other indicators of an outdoor leak include:**

- 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 pipeline
- A damaged connection to a gas appliance
- An exposed pipeline after a disaster

*Natural gas pipelines may be orange, black or yellow.*



# Outdoor gas leak response



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- **Evacuate at least 330 feet in all directions.** Large leaks may require downwind evacuation for *at least a half-mile*.
- **Have a charged hand line with fog nozzle ready for use.**
  - In the event of a fire, a fog spray may be used to cool combustible exposures, assist with rescue and extinguish flames not originating from a gas pipe.
- **Use a CGI to identify the general area of the leak.**
  - Check for gas migrating into nearby buildings (especially basements), storm drains and construction trenches.



# Natural gas fire response



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- When responding to a fire involving natural gas, **your best and safest course of action is to let it burn.**
  - Burning natural gas will not cause an explosion.
- **Allow the gas to burn until the source can be turned off.** When the gas supply is depleted, the fire will extinguish itself.
- **Evacuate the area** and protect exposures.





# Natural gas fire response



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- **DO NOT use water to suppress a natural gas fire.**
  - Use a hand line with fog nozzle to cool exposures and to extinguish open flames not originating from a gas pipe.
  - Avoid spraying water at the point where natural gas is being released.
- **Shut off gas ONLY at the service valve before the meter or the appliance supply line.**
- **Once gas is off, remain alert for gas migration and possible re-ignition.**



# Natural gas safety review

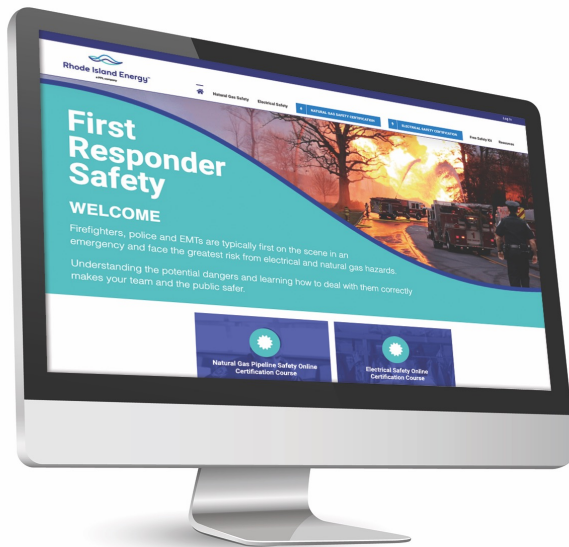


- **Prevent ignition** of natural gas. Eliminate spark hazards at the scene of a gas leak, and use intrinsically safe equipment.
- When natural gas is involved in an emergency, **notify Rhode Island Energy through your dispatcher as soon as practicable.**
- **Park emergency vehicles** upwind and away from collapse zones and manholes.
- **Evacuate the area** and be alert for migrating or accumulating gas.
- **Coordinate with Rhode Island Energy before ventilating.** Remove all ignition sources, and ventilate from the top down.
- NEVER attempt to open or close **underground pipeline valves.**
- When natural gas is burning, **let it burn and protect area exposures.** Remember, water is not effective for extinguishing gas fires.



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# Thank you for your attention.



Visit Rhode Island Energy's website at [rienergy.e-smartresponders.com](http://rienergy.e-smartresponders.com) for additional information and to earn a Certificate of Completion in our natural gas safety course.



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