First Responder Beware®

Natural Gas Safety for First Responders

Staying safe while saving others

Smell Gas. Act Fast.

Click on each slide to advance.

nationalgrid

Natural gas safety for first responders

nationalgrid

- 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

nationalgrid

- 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

nationalgrid

Natural gas is lighter than air.

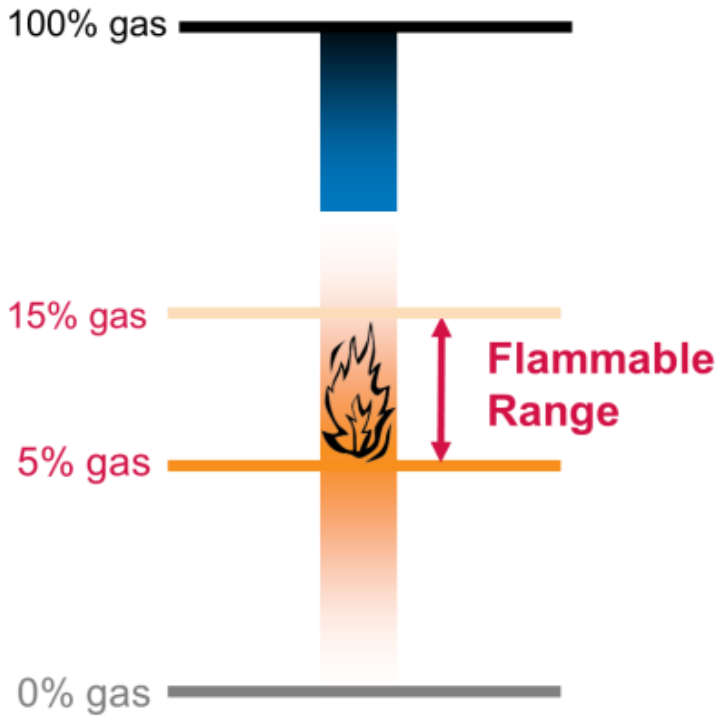
- It will follow the path of least resistance and will travel upward through any available space.
- When underground or in enclosed spaces, natural gas will move laterally, or **“migrate.”**

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

- 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

nationalgrid

- **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

- **High-visibility markers** indicate the appropriate 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.
- **National Grid's markers are usually freestanding;** in urban areas, they may also be found on utility poles.
- **You can also locate gas transmission pipelines** in your area by registering with the National Pipeline Mapping System (NPMS) at **https://www.npms.phmsa.dot.gov**.

Preventing natural gas ignition

nationalgrid

Even a tiny spark from a light switch or phone is enough to ignite accumulated natural gas and cause an 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 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 National Grid 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

nationalgrid

- ***NEVER* attempt to open or close underground pipeline valves or relief valves.**
- **If you have been trained to do so, shut off gas ONLY at aboveground meter valves or appliance supply lines.**
  - A gas valve is closed when the valve lug is perpendicular, or crosswise, to the gas pipe.
  - Inform National Grid of any valve you have closed and its precise location.
- **After the service valve has been closed, *DO NOT* open it under any circumstances.**

Indoor gas leak response

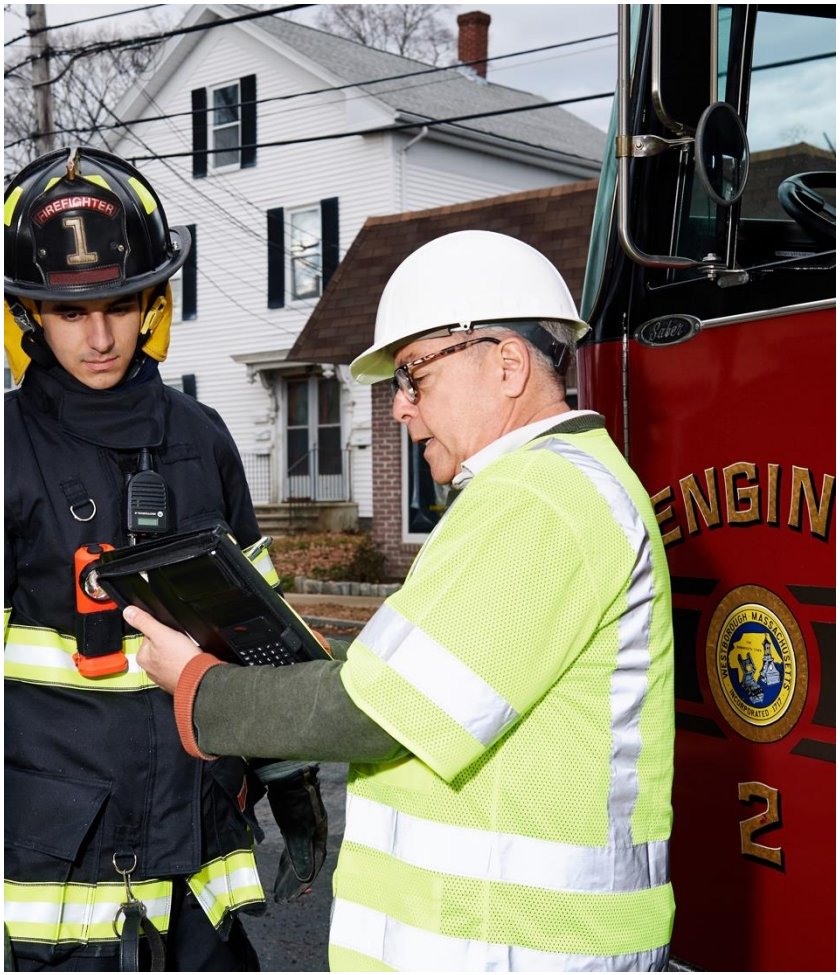
nationalgrid

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 National Grid 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

nationalgrid

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

- Outdoor natural gas leaks can be caused by **construction-related damage, cracks due to extreme weather or pipe corrosion.**
- **Contact National Grid immediately** to shut off the gas.
- **Evacuate the area.**
- **Be alert for migrating gas.** Gas can accumulate in storm drains, utility lines, buildings and other enclosed spaces.

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

Outdoor gas leak response

nationalgrid

- **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) and storm drains.
- **Evacuate *at least* 330 feet in all directions.** Large leaks may require downwind evacuation for at least 1/2 mile.

Natural gas fire response

- 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

- ***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 National Grid 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 National Grid 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.

Thank you for your attention.

nationalgrid