Protecting our communities, together

Natural gas safety handbook for first responders

spire

As one of the first ones on the scene responding to an emergency, your job is to make sure everyone is safe. At Spire, we have the utmost respect for what you do.

Like any source of energy, natural gas must be handled with care. We want to help you stay safe — while protecting others — by sharing facts about natural gas and the best way to handle a natural gas-related emergency.

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Learning the basics

Before we jump into what to do in case of an emergency, it's helpful to know and understand some of the basics about natural gas and carbon monoxide.

Natural gas

It's non-toxic and non-poisonous, but can cause asphyxiation.

Natural gas can displace oxygen in enclosed spaces, leading to asphyxiation.

It's naturally odorless, so rely on more than your nose.

While we do add a chemical called mercaptan to give natural gas a distinct rotten egg-like smell, it is naturally odorless. We always recommend using a combustible gas indicator (CGI), a handheld device that helps to detect potential gas leaks, if one is available. Always use this tool to check for gas accumulation in nearby buildings, especially basements, sewers and other confined areas.

It's flammable.

Natural gas can create an explosive mixture in the air. There must be between 4.5 and 14.5 percent of natural gas present in the air to support a combustion process.

It produces high radiant heat.

Used to warm homes across America, natural gas does produce high radiant heat. However, it releases little smoke.

It has a high ignition temperature.

The ignition point of natural gas is approximately 1,100 – 1,200° F. This can be reached with pilot lights, flint sparks, matches, sparks from electrical switches, thermostats, static electricity, motors (including automobile engines), electrically operated camera equipment and any type of telephone.

It's lighter than air.

Since natural gas is only 60 percent as heavy as air, it rises and diffuses rapidly when it escapes into an open area. When confined, it tends to displace air from the top downward. So if you're ventilating a room, open windows from the top. And, if you're using a CGI in a confined area, put the sensing device at the highest point, because that's where natural gas will tend to concentrate. Also, use the CGI around openings in the floor when the leak may be below the floor.

Carbon monoxide (CO)

It's invisible.

You can't see, taste or smell CO, but it is a dangerous gas that's produced when any fuel burns improperly. The best defense against CO is to encourage every local resident to have a CO detector.

Toxic levels of CO can come from a number of sources.

CO becomes dangerous when gas equipment is not operating correctly or from a venting system or chimney that becomes blocked.

CO poisoning can be fatal.

When too much CO is released into the air, it can be incredibly dangerous. It can make you dizzy, nauseated, fatigued, short of breath and give you a headache. In extreme cases, exposure to CO can cause loss of consciousness, brain damage and even death.

Detecting a natural gas leak

Here's a look at how you can detect a leak and what actions to take if a leak occurs.

Smell

Because we add the chemical mercaptan to natural gas, when a leak occurs, it's often paired with a rotten egg-like smell.

Sight

Natural gas is colorless. However, blowing dirt, bubbling water, dry spots in moist areas and dead plants surrounded by live plants near buried gas lines are all signs of a possible gas leak.

Sound

Natural gas sometimes makes a hissing, blowing or whistling sound near the area of a leak.

Taking action in a natural gas emergency

We all have the same goal during an emergency — to make sure everyone is safe. When we work together, we can do that even more effectively.

Evacuate first.

Immediately evacuate anyone in or near the leak area to a safe distance. Please consult your safe operating procedures book.

Call us.

Once all occupants are at a safe distance, call our emergency line at **800-887-4173**.

Do not create a spark or flame.

Any flame or spark could ignite leaking gas and cause a fire or explosion. This includes phones, light switches, door bells, garage door openers or any other electrical device. Avoid smoking or lighting any pilot lights.

Do not attempt to plug or squeeze off a plastic natural gas line or operate any street valves.

This can make the problem worse.

Do not return to the area.

Keep all occupants at a safe distance until it is determined safe.

If natural gas is escaping or burning inside a home, building or outside from a manhole, vault, sewer, gas meter or other source:

Use a CGI.

If a CGI is available, use it to check for gas accumulation in the area. This may include checking nearby buildings, especially basements, sewers and other confined areas.

- Spire crews are also equipped with CGIs and will assist upon arrival and take the appropriate corrective action
- If the CGI shows any measurable quantities of natural gas are present, evacuate the area
- If a CGI is not available but you suspect a natural gas leak, assume there is an ignitable mixture present, and evacuate the area
- Be aware that escaping gas can migrate underground, in structures and accumulate far from the source of the leak

Enter concentrated areas only when absolutely necessary.

Entry into buildings, manholes, vaults and sewers and other enclosed spaces where a leak is suspected should happen only when absolutely necessary to ensure public safety. Special equipment such as a self-contained breathing apparatus and flame-resistant clothing must be used if entry is required.

Eliminate all potential ignition sources in the area.

- Do not allow anyone to light a match, smoke a cigarette, start an engine, use a telephone of any type, or turn on or off any electrical switches or appliances, including an electric garage door opener, doorbell or light switch
- Communicate by two-way radio or phone in a safe area away from any gas migration
- Use soapy water and cover the rim of manholes, vaults and sewers before removing the cover to prevent creating a spark that could cause a fire or explosion
- Do not position an apparatus over sewer or manhole covers
- Vent the manhole, vault or sewer by removing the covers of adjoining manholes until reaching manholes where no gas is detected
- Do not enter any excavation or confined vault or pit where natural gas is blowing to stop the flow of natural gas. Natural gas escaping from an opening of an exposed plastic gas pipe has the potential to generate a static electrical charge which may be sufficient to ignite leaking gas

Shut off gas at the meter.

If a meter is outside, you may shut it off in these limited circumstances:

- If gas is escaping or burning inside a home or building.
  Note: If shutting the gas off at the meter does not eliminate a gas fire inside, then the source of the gas is probably outside
- If it appears that inside gas piping, gas appliances or the gas meter are endangered by a fire in the building (regardless of whether natural gas is involved in the fire)
- If there is any doubt about the source of the leak

CAUTION: Please check with the Incident Commander on site. If an inside gas fire is extinguished before the natural gas is shut off, an explosion may occur as the accumulating natural gas is ignited by nearby ignition sources. If you must extinguish the fire to perform a rescue, coordinate the effort of extinguishment and natural gas shutdown and watch for reignition.

Know what to do after you shut off the meter.

- Leave it off, and immediately tell us what has been done when we arrive on the scene. Only Spire should turn the gas supply on again when it has been shut off. By law, it must be performed by someone with appropriate training
- Always exercise care when shutting off gas in an industrial setting. Shutting off the wrong valve can interrupt costly industrial processes

Learn how to handle natural gas that's burning or escaping and igniting.

- Never attempt to extinguish the gas fire if it is outside. Instead, let the natural gas burn until we can shut off the gas supply
- If rescue is needed in the outside fire area, use a fog spray to push the fire back until we can shut off the natural gas supply or use a dry chemical (ABC or BC) to extinguish the fire

Never assume that all the escaping gas is burning.

- Natural gas follows the path of least resistance and can accumulate in confined spaces like basements and attics, migrate under pavement and travel through sewer lines as well as telephone and electric ducts
- Because of this, keep nearby buildings and combustibles wet until Spire arrives and can control the flow of gas

Protecting our communities

Local fire departments have the specialized equipment and training needed to respond to calls about the possible presence of carbon monoxide (CO). Because of this, we encourage everyone we serve to contact the local fire department if they suspect CO is present in their home.

If you're entering a home where CO is suspected, here's what we recommend.

- When you enter the structure, complete both CGI and CO checks to confirm the atmosphere is safe
- When you perform CO instrument tests, be sure to test the rooms that contain natural gas equipment and the warm air vent nearest the furnace
- If you detect 35 parts per million (PPM) or more of CO in the open atmosphere, evacuate the building
- Once the area is made safe, check for signs of faulty appliances that can generate dangerous or fatal CO levels. This can be determined by:
  - A yellow or unsteady burner flame in gas equipment
  - An unfamiliar or burning odor
  - Black soot deposits on gas equipment and vents
  - Increased moisture inside of windows

We're here to help.

If the fire department or another public safety agency requests our presence, we're happy to assist in determining the source of CO emissions. Give us a call at 800-887-4173.

If you're interested in free training on responding to natural gas emergencies, please contact the Spire Pipeline and System Integrity department at 573-330-0756.

Learning about pipelines

Some areas are considered High Consequence Areas (HCAs).

At some locations along transmission pipelines, there are HCAs. These locations are based on federal regulation definitions, but are generally defined as areas with a high concentration of people or places where large crowds gather. We always encourage first responders to become familiar with these areas. Visit npms.phmsa.dot.gov to learn more.

Many pipelines are marked.

Pipeline markers are located along the pipeline route, at road, river and railroad crossings, fence lines, property boundaries and at aboveground facilities. These markers identify the general area but not the exact location or depth of the pipeline. They also contain information about who to contact in the event of an emergency. While many pipelines are marked, not all are. And, the pipeline may not always follow a straight line between markers. That's why it is always necessary to call 811 before you dig.

Rights of way should always be kept clear.

Rights of way are land interests over and around the pipeline, typically 25 to 150 feet on either side of the pipeline. Commonly, Spire and the landowner each have a legal interest in the land. However, to protect the pipeline from damage, there are restrictions on what the area can be used for. Unauthorized use of rights of way typically involves buildings, structures, trees and shrubs that could interfere with the safe operation of the pipeline. This can be a serious safety issue, because these encroachments can prevent us from performing important tasks like:

- Responding to pipeline emergencies
- Reducing or eliminating the chance of third-party damage
- Providing right of way surveillance
- Performing routine maintenance
- Meeting federal and state inspection requirements

Contact us immediately if you notice unauthorized use of a right of way.

Give us a call at 800-887-4173 if you notice unauthorized use of a pipeline right of way. Also, we always ask that you take note of any unusual or suspicious situations or unauthorized excavations taking place within or near the pipeline right of way or pipeline facility.

Stay informed.

If you'd like a map of all the pipelines near your home, business or school and in other nearby areas, the National Pipeline Mapping System (NPMS) has all that information and more at npms.phmsa.dot.gov. The NPMS is a geographic information system created by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, and Office of Pipeline Safety. They created this system in cooperation with other federal and state governmental agencies and the pipeline industry to help ensure the safety of people throughout the country. It's a great resource if you have more questions.

Communicating with the people we serve

Here's what we communicate to the people we serve about carbon monoxide (CO) in their home.

- If you or someone else is exhibiting symptoms of CO poisoning, evacuate and call 911
- If you suspect CO is present but are not exhibiting symptoms of poisoning, call 911 and:
  - — Open doors and windows to let in fresh air
  - — Turn off any equipment you suspect may be releasing CO
  - — Call a licensed professional to inspect your natural gas equipment

We'd like to ask for your help in communicating these important messages.

- Have your natural gas equipment and related venting systems inspected annually by a licensed professional
- Regularly check gas equipment exhaust vents for blockage, including snow and ice, which can prevent the equipment from operating properly
- Use a broom to sweep snow away from outside vent openings.
- Install, maintain and use UL-listed CO detectors throughout homes and businesses according to the manufacturer's instructions
- Never use an oven or range-top burners to heat a home.
- Never use portable heaters or generators indoors unless they are designed and approved for indoor use
- Never use charcoal or any type of grill indoors for cooking or heating

Reaching out

We're always happy to answer questions, so feel free to reach out to us any time.

Emergency number:
800-887-4173 or 911

Pipeline and System Integrity department:
573-330-0756

Media line:
314-342-3300

Website:
SpireEnergy.com

Before you dig:
Call 811

Helpful websites:
Missouri-811.org
call811.com
npms.phmsa.dot.gov

Notes

SpireEnergy.com

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