

Gas Pipeline Safety . . . A Matter of Commitment, A Matter of Cooperation

Safety is more than manuals and rules. At Dominion, safety is a way of doing business. Dominion is committed to safe operations, safe facilities and safety-minded employees.

As part of our ongoing safety focus, we meet with emergency workers and those who live near our facilities to keep them informed about natural gas, and the Dominion pipeline system.

This information packet will focus on the following areas:

- Basic information about natural gas, and the nature and operations of the Dominion pipeline system.
- Dominion's normal safety procedures, and procedures to be followed in the unlikely event of a significant emergency.
- How landowners and others can serve as an early warning system for any pipeline problems, and promote the safety of nearby communities.
- Safe procedures for excavations along or near our pipelines.

Our safety emphasis and your awareness of pipeline procedures help keep our operations running smoothly and safely, and help keep us a good, safe neighbor all along our pipelines.

Natural Gas: Just The Facts

Chemical Composition *

Methane	96.0%
Ethane	1.5%
Propane	0.3%
Nitrogen	0.3%
Other Hydrocarbons	Less than 0.1%

* Percentages of listed components are approximate and will vary.

Reactivity:

Natural gas is stable, non-corrosive and non-polymerizing. However, when released, it readily mixes with air to form a combustible atmosphere. If mixed with some strong oxidizing agents such as chlorine, bromine, pentafluoride, oxygen difluoride, and nitrogen trifluoride in a confined space, natural gas can burn or explode. It will ignite spontaneously when mixed with chlorine dioxide.

Fire and Explosion Parameters

Auto Ignition Temperature: 900 – 1200 degrees F

Flammable Limits In Air: 4% to 16% (by volume)

Natural gas can ignite if (A) there is a heat source from 900 – 1200 degrees Fahrenheit and (B) if it exists at 4% to 16% of the present air by volume. If it exists at proportions below or above those limits, it will not burn or explode.

Extinguishing:

Natural gas flames can be extinguished with CO₂, dry chemicals or halocarbon gas. The flames will re-ignite or an explosion may occur if flames are extinguished without stopping any flow of gas and surroundings are not cooled to eliminate ignition sources. Water spray should be used to cool surroundings.

Health Hazard Information:

Natural gas is odorless, colorless and lighter than air. Although it is non-toxic, natural gas does act as a simple asphyxiant. It can kill by displacing all or part of the air needed to sustain life.

First Aid:

Get the victim away from the gas and into fresh air. If breathing has stopped, immediately begin mouth-to-mouth resuscitation. Get medical help as soon as possible.

Emergency Response To Natural Gas Leaks:

When a natural gas leak is detected, immediately evacuate the area and provide as much explosion-proof ventilation as possible. Remove or eliminate potential ignition sources. The gas flow should be turned off, but only by the gas or gas pipeline company.

Minor leaks can be detected using a soap solution applied at possible leak points. Escaping gas will produce bubbles or other indication. Never use a flame to detect leaks.

Special Protection Information:

Enter a natural gas atmosphere only in an emergency, and only if you are equipped with self-contained or air-supplied breathing apparatus. Using cartridge or canister respirators will not provide the air needed for life and may result in asphyxiation.

Safe Pipeline Operation: Built On Experience

The pressure of natural gas in a pipeline is carefully controlled so that it does not exceed levels known to be well within the capacity of the pipeline. Indeed, before a pipeline is even put in service, it is tested using significantly higher pressures than it will hold during normal, day-to-day operations. During normal operations, a number of controls and protective devices and systems are used to hold pressures to safe limits.

In areas where a natural gas pipeline will come into contact with corrosive content or a corrosive environment, the pipe is specially treated to withstand corrosion, and additional protective systems are installed to protect the pipe.

Normal pipeline operations are monitored constantly by computer-assisted control centers that can detect and understand changes in pressure or flow. The product actually flowing through the pipeline is also monitored constantly to detect chemical or other changes. But our operational emphasis on safety also involves regular patrols of our lines by experienced observers in low-flying aircraft, and routine ground patrols for a more detailed line examination.

Professional personnel who have been extensively trained in pipeline emergency procedures are stationed at strategic points along pipelines to speed response to problems or unusual events.

Our 24-Hour Emergency Number: 1-888-264-8240

If you witness any problem with a Dominion pipeline at any time, call Dominion's 24-hour emergency number 1-888-264-8240. The professionals assigned to the phone center can actually shut down the pipeline and notify communities near the pipeline about the potential problem.

Dominion personnel undergo routine training so that they are equipped to handle normal operations as well as offering a rapid, appropriate response to potential emergency situations.

Ongoing Safety Procedures: Focus On Safety

Pipelines: Composed of High-Strength Materials and Protected From Corrosion

The two hazards for a pipeline are puncture and corrosion. The Dominion system uses pipelines made of only high-strength materials that meet or exceed the standards of the natural gas industry and federal regulations.

To block corrosion, pipe is coated with special materials. The welds that join pieces of pipe into a single long line are wrapped with a special protective material before the pipeline is placed in the ground.

Our pipelines are made resistant to corrosion by cathodic protection. A small electrical current is run around buried pipe in our system to hold down the corrosive effects of the soil. This kind of protection is also required by the U.S. Department of Transportation.

Testing and Inspection: Making Safety Work

All Dominion pipelines are inspected and tested regularly to identify potential problems.

During pipeline construction, all pipe welds are x-rayed to insure they meet exacting standards.

Then, before pipes are actually placed in initial operation, they undergo hydrostatic testing.

Sections are filled with water and pressurized to levels well above normal operating pressure.

Any pipe sections with weaknesses are replaced or repaired before the pipe is put into service.

Operating pipelines are visually inspected by patrols flying and walking along the pipeline right-of-way. This visual inspection looks for any natural or manmade conditions that could impact the pipe or affect its safe operation. Factors such as soil erosion, landslides, construction work or excavation could pose problems for a pipeline.

The effectiveness of the system-wide cathodic protection process will be tested routinely with "pipe-to-soil" inspections. Pipelines also are regularly surveyed using sensitive devices called "sniffers" to check for leaks. Sniffers are sophisticated electronic devices that can detect even minute levels of natural gas in the air. Any leak detected is located and repaired immediately.

Internal Inspections: Getting Inside Safety

Even though pipelines operate underground and out of sight, they can be inspected from the inside using modern technology. Dominion uses "smart pigging" to measure and analyze conditions along the pipeline's inner and outer walls. The "pig" device travels through the pipelines and electronically reads and records the slightest change in pipe wall thickness. These changes can pinpoint potential problems before they become problems.

Operations and Monitoring: Making Safety Work

Natural gas is completely odorless and colorless, and hard to detect with human senses.

Throughout the pipeline system, the pressure of the gas in the pipes is monitored to make sure it remains well within the limits established by the U.S. Department of Transportation.

Sophisticated computer and telecommunications equipment can detect fluctuations and control flows. Dominion's gas control centers operate 24 hours a day, seven days a week and know immediately if the pressure within a pipeline falls. In the event of such a pressure drop in one area, the control center will act to stop the gas flow to the problem area by selectively isolating sections of the pipeline. Inspections can then determine the cause of the problem and guide repairs.

This constant monitoring and rapid response to change ensures that the system operates safely and enhances the reliability of our service to customers.

Training, Commitment and Constant Attention

People are a key element in the safe operation of a natural gas pipeline system. Dominion employs highly trained personnel with years of proven experience in pipeline operations. They know how to operate the pipelines in accordance with federal, state and local regulations, and they are committed to the very highest safety standards.

Call Before You Dig: It's The Law

Homes and businesses today are connected by an underground network of power lines, telecommunications wires, and pipes carrying natural gas, water or other materials. It is impossible to know where all these underground facilities are in any given area. Yet it is foolish to dig in any area without knowing.

That's why the One-Call system was established. And that is why state law requires that you use this system before any excavating, blasting, tunneling or any other work that disturbs the soil beneath our streets, sidewalks, yards, farms or other property.

Under the One-Call system, anyone planning to dig or disturb the earth calls a single number and reports their intentions and location. All utilities, authorities and others with underground facilities in the area will then come to the area and clearly mark any of their facilities before work begins. These location services are free, and let you begin your project without worrying about costly accidents.

Digging into underground pipes or lines can be extremely dangerous, and extremely costly. Digging into a natural gas pipeline would obviously pose great danger for those in the area. Even if you didn't cause a rupture or leak, disturbing a pipeline can easily lead to corrosion or other damage.

To learn the location of Dominion pipelines or other underground facilities in the area where you plan to dig simply call the number appropriate for your state or area. Please call three working days before you plan to dig. And remember that the service is free. And it's the law.

When making your call, be prepared to provide your name, phone number, and, if you represent a company doing the work, the name of that company. You also will be asked to specify the location of the work, the type of project involved, and the date and time the work will begin. You will be also asked if you will be using explosives.

One-Call numbers in the Cove Point Expansion Pipeline service area include:

Pennsylvania:

Pennsylvania One-Call 1-800-242-1776

Maryland:

Miss Utility 1-800-257-7777

Pipeline Safety: You Can Help!

Although Dominion constantly monitors and inspects its system, we cannot be everywhere all the time. You can help us keep our system and its neighbors safe by simply being alert when you are near our facilities or pipeline rights-of-way.

Although natural gas is non-toxic and lighter-than-air, a leak is frequently detectable through the senses. If you detect or suspect a gas leak, avoid creating or approaching any ignition source and leave the area immediately. Please call us as soon as you get to a safe area.

Call 1-888-264-8240 to report the leak.

Your call will go directly to the Dominion Transmission Gas Control Center, a facility staffed 24-hours a day, every day of the year. A Dominion team will be dispatched immediately to investigate any reported leaks.

Here are some ways you can spot a potential gas leak:

By Sound ...

Leaks may make a loud, high-pitched whistle or roar. If you hear such a sound near a pipeline, please leave the area and call us immediately.

By Sight ...

The natural gas in pipelines is very dry. Escaping gas will quickly dry out the soil near any leak. If you see a patch of discolored soil or dead vegetation near a pipeline, it could indicate a leak. A leak occurring near standing or flowing water may cause bubbles you can easily see. If you see anything that even might indicate a leak on a Dominion pipeline, please leave the area and call us immediately.

By Smell ...

Although natural gas is odorless, local distribution companies add an odorant to the gas, an odorant that gives gas the distinctive, repugnant smell familiar to most of us. If you smell the slightest hint of that odor near our pipelines, please leave the area and call us immediately.

Remember that, if you hear, see or smell anything that you suspect may be a leak, don't try to investigate the situation yourself. Just get out of the area, and tell anyone else nearby to leave. Call us as soon as you get to a safe area.

You also can help us keep our lines safe by making sure that anyone digging or disturbing the soil near our lines has contacted the One Call system and had all utility and gas lines marked before they began work.

Dominion Emergency Guidelines

The Dominion Emergency Response...

When Dominion gets a report of a gas emergency involving our facilities, we

- Identify the type of facility involved and the exact location. We also gather information on injuries, if any.
- Act immediately to notify emergency response agencies and organizations in the area if necessary.
- Isolate the affected facility and take all possible steps to stop gas flow at the point of the leak.
- Designate a single company person as contact for all outside agencies and organizations.

When our personnel arrive at the scene of the problem, we ask responding emergency units to

- Establish perimeter control around the affected area.
- Communicate and work with our designated company spokesman in responding to the situation.

Guidelines For Responding Emergency Units ...

When there is a fire:

- Do not attempt to extinguish the fire unless life is in danger.
- Protect the area surrounding the fire.

When no fire is involved:

- Remove any open flame or other possible sources of ignition from the area and prohibit smoking.
- Position apparatus at a safe distance and have all personnel in protective clothing.
- Control any secondary fires.
- Assist with personal injuries and coordinate evacuation, if it is necessary.
- Assist Dominion personnel with access to valve locations as needed.
- Non-company emergency personnel should never attempt to operate any valve connected to natural gas lines or facilities.
- If it's appropriate, help with news media.

In any emergency, accurate communication and quick cooperation between Dominion and fire or police units will be essential. When Dominion initially communicates with any emergency response units, we will indicate the facilities involved, the design and operating parameters, the nature of the product involved, and the details of our response to the situation. Normally, we will dispatch personnel to the area immediately. We also will establish and maintain mobile communications with the site until the emergency has been resolved.

Usually any emergency or potential emergency will be detected and reported immediately through Dominion's ongoing monitoring of its facilities. However, there may be situations when emergency units may report emergencies where our facilities are directly or indirectly involved.

If you are reporting such an emergency to Dominion, please provide all the data you can. Information about the facility, the nature of the product, the location, and the observed condition of our facilities is needed. Your information will be used to determine our initial response to the situation.

Generally the most effective way to respond to an emergency involving our facilities is to shut off the flow of the gas. Please remember that shutting off the flow is the responsibility of

Dominion. Non-company personnel should never attempt to use valves and controls. Dominion's personnel know the piping systems involved and will make sure that correct actions are taken.

All of us at Dominion deeply appreciate the efforts of emergency response units when emergencies arise. Working together, we can keep our system operating safely, and reliably delivering the natural gas needed by millions of homes and businesses across our region.

Rights-Of-Way Corridor: Essential For Safety

The right-of-way corridor along our natural gas pipeline is an important element in maintaining the integrity and safety of Dominion's network.

Rights-of-way are described in a legal document called the Right-of-Way Agreement or ROW. In this agreement, landowners grant the pipeline company the right to use part of their land to install, operate and maintain a natural gas pipeline. The ROW Agreement remains effective even if the property is sold, and is binding on any future owners.

The access and restrictions set by the ROW are important so that a pipeline company like Dominion can monitor and maintain its facilities, and keep those facilities operating safely.

To ensure pipeline safety:

- Do not construct buildings or other structures on the right-of-way.
- Do not plant trees or other growing things that may obstruct the right-of-way.
- Don't excavate, change the grade or impound water within the right-of-way without permission from Dominion.
- Don't move heavy equipment or logs across the right-of-way, and avoid blasting within 1,000 feet of the pipeline without approval from Dominion.

Although building on rights-of-way is prohibited, under certain conditions the pipeline may be crossed by roads, railroads, cables and other utility lines. When such crossings are necessary, we will work with the landowner, the developer or contractor to accommodate such construction safely. The owner or developer is required to pay any costs associated with such projects to ensure that the pipeline continues to meet all applicable regulations.

If you are a landowner affected by a Dominion right-of-way, we recommend that you read and be familiar with your ROW agreement. The conditions set out in these agreements help us continue to operate our gas pipelines safely and efficiently.

Please call our local operations personnel any time you have any questions about our pipeline or your ROW agreement.

A Cooperative Effort: Safety Takes All Of Us

Dominion is committed to the continued safe and efficient operation of its natural gas pipelines. But safety really takes all of us – pipeline operators, contractors, landowners, emergency response teams, and neighbors. By remaining focused on safety and staying alert and by working as a team, we can make safety happen.