



Before darkening the room, offer a welcome and overview. Begin by introducing the program and its topic:

Today's training session focuses on working safely around underground natural gas pipelines. By following the procedures we'll cover here today, you can keep yourself and your coworkers safe and on the job. On the other hand, if you cut corners where gas pipelines are concerned, you put yourself and your coworkers at risk of serious injury and even death. Please pay careful attention, and ask questions if you don't understand.

Darken the room.

Natural Gas Basics

- **Natural gas travels through pressurized underground pipelines of varying diameters.** The size of a gas line is NOT a reliable indicator of the internal pressure.
- **Utility Name** adds a distinctive, sulfur-like odor to natural gas to assist in the detection of leaks. However, in certain conditions, you may not be able to smell this odorant.
- **A natural gas leak can be ignited by a tiny flame or spark—even from a lit cigarette or a phone.**



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Understanding natural gas basics will help you prevent accidents around natural gas pipelines.

- Natural gas travels through pressurized underground pipelines of varying diameters. These pipelines range from 1 inch to 4 feet wide. There are three types of pipes used in the system: transmission pipelines, main lines, and service lines. It pays to be careful around ALL types of pipelines. Pipeline pressure can vary from $\frac{1}{4}$ pound to 1,000 pounds per square inch. The pressure is what moves the gas through the pipes. It's also what makes damaging a pipeline so dangerous.
- **Utility Name** adds a distinctive, sulfur-like odor to natural gas to assist in the detection of leaks. However, in certain conditions, this smell may not be apparent. Weather and soil conditions can strip the odorant from the gas.
- A natural gas leak can be ignited by a tiny spark or flame—even from a lit cigarette or a phone. To avoid spark hazards, do not turn anything electrical on—or off—in the vicinity of a gas leak.

Notify 811 Before You Dig. It's the Law.

- **Dial 811 or enter an online locate request well in advance of digging or moving earth in any way.** This free service will arrange to mark underground utility lines so you can dig safely.
- **Before you call, pre-mark your proposed excavation area** with white paint, flags, and/or stakes, so locators can easily identify and mark affected utilities.
- **If you don't notify 811, you risk hitting an underground line.** You, your coworkers, or others could be hurt or killed. You may also be held liable for damages and repairs.



**Know what's below.
Call before you dig.**

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Underground natural gas lines can pose an unseen but very real danger. By law, and for your safety, you must notify the 811 service before you dig.

- Dial 811 or enter an online locate request well in advance of digging or moving earth in any way. This free service will arrange the marking of underground natural gas lines and other buried utilities in your dig area, so you can work a safe distance away from them. Be sure to leave adequate time in your job schedule. The service is free, but the costs of not calling can be very high. Building a few extra days for the job costs less in the long run than spending months or years recovering physically and financially from a gas line explosion or fire. And remember, it's the law.
- Before you call, pre-mark your proposed excavation area with white paint, flags, and/or stakes, so locators can easily identify and mark affected utilities.
- If you don't notify 811, you risk hitting an underground line. You, your coworkers, or others could be hurt or killed. You may also be held liable for any resulting damages or repair costs.

Wait the Required Time

- **Wait at least three business days**, excluding weekends and state holidays.
- **Do not dig until all utility owners have marked their lines or advised you that the area is clear to dig.**
- **If you wait the required time and the locate is not completed, do not dig.** Notify 811 to place another locate request.



Wait your state's required time for utilities to mark their lines before starting on any digging project:

- **Wait at least three business**, excluding weekends and state holidays.
- Do not dig until all utility owners have marked their lines or advised you that the area is clear to dig.
- If you wait the required time and the locate is not completed, do not dig! You must notify 811 to place another locate request.

Conduct a Visual Site Survey



- **Do not rely exclusively on the locate marks.** Look for visual indicators of underground facilities that have not been marked.
- **Check with property owners about any private underground lines** that would not have been marked by the locator.
- **Also check for signs of something buried after the locate was completed,** such as a fresh trench.
 - If you find a newly installed or unmarked facility, call 811.

Conduct a visual site survey before beginning any digging.

- Do not rely exclusively on the locate marks. Look for visual indicators of underground facilities that have not been marked, such as meters and valves. Use your common sense and industry knowledge.
- Check with property owners about any private underground lines that would not have been marked by the locator because they do not belong to a utility.
- Also check for signs of something buried after the locate was completed, such as a fresh trench.
 - If you find a newly installed or unmarked facility, call 811.

Respect the Marks and Dig with Care

- **Respect the locator marks.** Maintain utility indicator marks and follow them when digging.
- **Dig with care.** Exercise extreme caution when digging near buried utilities, and have a spotter present to observe the excavation whenever heavy equipment is used.
- **Know the underground utility color code:**

AMERICAN PUBLIC WORKS ASSOCIATION COLOR CODE FOR LOCATOR MARKS



Red	Electric power lines
Yellow	Gas, oil, or steam pipelines
Orange	Communications lines, cables, or conduit
Blue	Potable water
Purple	Reclaimed water, irrigation, and slurry lines
Green	Sewers and drain lines
Pink	Temporary survey markings
White	Your proposed excavation

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Respect the marks and dig with care around buried utility lines.

- Respect the locator marks. Maintain utility indicator marks for the duration of the job, and follow them when digging. If lines become indistinguishable, call 811 to refresh them—do NOT use paint to refresh fading marks yourself!
- Dig with care. Exercise extreme caution when digging near buried utilities, and have a spotter present to observe the excavation whenever heavy equipment is used.
- Know the underground utility color code. Utilities use these colors to mark their lines. Learn the code to stay safe.
 - Red: Electric power lines.
 - Yellow: Gas, oil, or steam pipelines.
 - Orange: Communications lines, cables, or conduit.
 - Blue: Potable water.
 - Purple: Reclaimed water, irrigation, and slurry lines.
 - Green: Sewers and drain lines.
 - Pink: Temporary survey markings.
 - White: Your proposed excavation.

Respect the Tolerance Zone

- **Adhere to state laws for digging within the tolerance zone.** This safety area spans the width of a marked utility plus a specified distance from each indicated outside edge.
- **Hand dig prudently in this zone** until you have determined the exact location of the lines.
- **Once visual identification has been achieved,** you may use mechanized digging equipment. Use a spotter to observe the excavation and help prevent damage when heavy equipment is used near gas lines.
- **The tolerance zone is a *minimum* safety clearance.** Protect yourself by using the *maximum* possible distance.



Respecting the tolerance zone not only protects buried utility lines from damage, but it also protects you from injury.

- Adhere to state laws for digging within the tolerance zone. This safety area spans the width of a marked utility plus a specified distance from each indicated outside edge.
- Hand dig prudently in this zone until you have determined the exact location of the lines. Use extreme care and caution. Too many accidental utility contacts have occurred when someone dug with a backhoe or other power-operated equipment instead of a shovel.
- Once visual identification has been achieved, you may use mechanized digging equipment. Use a spotter to observe the excavation and help prevent damage when heavy equipment is used near gas lines.
- The tolerance zone is a minimum safety clearance. Locator marks are only the locator's most reasonable interpretation of the equipment's signal. So protect yourself by using the maximum possible distance.

Know When to Stop Digging



- If there are no locate marks after you have waited the required time, do NOT dig.
- If you do not understand the locate marks, do NOT dig.
- If you cannot visually verify the location of marked utility lines by hand digging, STOP digging.
- If you find unmarked, mismarked, or seemingly abandoned facilities, STOP digging.
- If you see signs of something buried after the locate was completed, such as a fresh trench, STOP digging.
- If the marks fade or are destroyed, STOP digging.

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When you work around gas lines, knowing when to stop a job could save your life.

- If there are no locate marks after you have waited the required time, do NOT dig. Contact 811 and wait until utility lines are marked or you have been notified that the area is clear of lines.
- If you do not understand the locate marks, do NOT dig. Ask your supervisor what you must do to work safely.
- If you cannot visually verify the location of marked utility lines by hand digging, STOP digging and notify 811 immediately.
- If you find unmarked, mismarked, or seemingly abandoned facilities, STOP digging. Assume all utility lines are in service and report them to 811.
- If you see signs of something buried after the locate was complete, such as a fresh trench, STOP digging. Notify 811.
- If the marks fade or are destroyed, STOP digging and contact 811 to request a new ticket. Do not resume digging until the area is re-marked.

Watch Out Around Pipeline Markers

- Pipeline markers indicate the need for extra care around natural gas transmission pipelines.
- These markers are general indicators only. For security purposes, they do not show the exact location, path, or depth of gas pipelines.
- The markers should never be used as a substitute for calling 811.
- Call the number on the marker if you notice any type of suspicious activity or construction occurring nearby without Utility Name personnel present.



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It's critical to be aware of gas transmission pipelines in the vicinity of your jobsite.

- Pipeline markers indicate the need for extra care around natural gas transmission lines. These markers are usually found at roadways, railroad crossings, and other points along the pipeline route.
- These markers are general indicators only. For security purposes, they do not show the exact location, path, depth, or number of gas pipelines in the area, and not all pipelines follow a straight course between markers. Maps can also be viewed to identify the approximate locations of major natural gas pipelines (but not gas distribution main lines or service lines). You can access them via the National Pipeline Mapping System website: www.npms.phmsa.dot.gov.
- The markers should never be used as a substitute for calling 811. Nor should you rely on the pipeline maps. 811 is your best resource for natural gas pipeline locates.
- Call the number on the marker if you notice any type of suspicious activity or construction occurring nearby without Utility Name personnel present.

Natural Gas Leak Detection: Look, Listen, and Smell

- **Utility Name** adds a distinctive, sulfur-like odor to natural gas to assist in leak detection. But in certain conditions, you may not be able to smell this odorant.

- **Don't rely on your nose alone. Use your senses of sight, hearing, and smell to detect a natural gas leak.**

Here are the signs:

- The distinctive odor of natural gas
- Continuous bubbling in water
- A hissing, whistling, or roaring sound
- Dead or dying vegetation (in an otherwise moist area) over or near a pipeline
- Dirt or water being thrown into the air
- An exposed pipeline after an earthquake, fire, flood, or other disaster
- A damaged connection to a gas appliance



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When it comes to detecting natural gas leaks, you must use all your senses. Look, listen, and smell.

- **Utility Name** adds a distinctive, sulfur-like odor to natural gas to assist in leak detection. However, in certain conditions, you may not be able to smell this odorant.
- So don't rely on your nose alone. Use your senses of sight, hearing, and smell to detect a natural gas leak. Here are the signs:
 - The distinctive odor of natural gas. This smells like sulfur or rotten eggs.
 - Continuous bubbling in water.
 - A hissing, whistling, or roaring sound. The sound will vary with the pressure in the line.
 - Dead or dying vegetation (in an otherwise moist area) over or near a pipeline.
 - Dirt or water being thrown into the air. This will vary with pressure as well.
 - An exposed pipeline after an earthquake, fire, flood, or other disaster.
 - A damaged connection to a gas appliance.

Natural Gas Emergencies

■ If you suspect a gas leak or if you contact a gas pipeline, take these steps:

- Warn others and leave the area immediately.
- Do not use matches or lighters, start an engine, or operate any electrical device—even a phone. A spark could ignite the gas, causing a fire or explosion.
- Leave the excavation open. Do not operate any gas pipeline valves or attempt to bury or fix the pipeline.
- From a safe location, call 911 and **Utility Name**. Excavators are required by law to call 911 in the event of escaping gas. Call the utility even if there is no visible damage to the pipeline.
- Stay far away from the area until safety officials say it is safe to return.
- Report the incident to your supervisor.



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A pipeline may become compromised even when damage is not visible, and the smallest spark can ignite leaking gas and cause a fire or explosion.

So if you suspect a gas leak or if you contact a gas pipeline (even if damage is not apparent and a leak is not obvious), assume there's a danger and take these steps:

- Warn others and leave the area immediately.
- Do not use matches or a lighter, start an engine, or operate any electrical device—even a phone. A spark could ignite the gas, causing a fire or explosion.
- Leave the excavation open. Do not operate any gas pipeline valves or attempt to bury or fix the pipeline.
- From a safe location, call 911 and **Utility Name**. Excavators are required by law to call 911 in the event of escaping gas. Call the utility even if there is no visible damage to the pipeline.
- Stay far away from the area until safety officials say it is safe to return.
- Report the incident to your supervisor.

Natural Gas Safety Review

- Notify 811 **at least three business days before you dig**, excluding weekends and state holidays.
- Pre-mark your dig area with white paint, flags, and/or stakes.
- Wait the required amount of time.
- Conduct a visual site survey before digging.
- Respect the marks and dig with care.
- Watch out around pipeline markers.
- Know the warning signs of a natural gas leak.
- If you suspect a natural gas leak, warn others, leave the area, avoid spark hazards, and call **911** and **Utility Name** immediately.

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So let's review the key safety points of this presentation.

- Notify 811 before you dig. It's required by law.
- Pre-mark your dig area with white paint, flags, and/or stakes. This makes it easier for locators to identify and mark affected utility lines.
- Wait the required amount of time for lines to be marked.
- Conduct a visual site survey before digging. You might find something that the locator overlooked.
- Respect the marks and dig with care. Make sure you dig safely within the tolerance zone.
- Watch out around pipeline markers. Report any suspicious activity nearby.
- If you suspect a natural gas leak, warn others, leave the area, avoid spark hazards, and call 911 and **Utility Name** immediately.

Contact Information

Here is some contact information you may find helpful:

- In case of a natural gas emergency, call **Utility Name** at **800-000-0000**
- For additional information, visit our website at **www.e-smartworkers.com**

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Here is some contact information you may find helpful:

- In case of a natural gas emergency, call **Utility Name** at **800-000-0000**.
- For additional information, visit our website at **www.e-smartworkers.com**



Thank you for your attention.

*Take questions and begin discussion. If you are using the trainer's guide, in it you will find more detail about the properties of natural gas, when to contact **Utility Name**, and other information.*

Discuss how this information conflicts with what your audience believed about natural gas safety, and ask how they may have put themselves or others at risk in the past. Ask what they would have done differently had they had this training before.

***Utility Name** thanks you for helping to keep workers safe.*