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An Essential Utilities Company

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

Worker Beware®

Natural Gas Safety Trainer's Guide

Contents

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Introduction

The *Worker Beware* training program from Peoples is designed to provide contractors with the information they need to work safely around underground natural gas pipelines.

This trainer's guide will help you make the most of the *Worker Beware* program. It contains five sections:

- **Know Your Audience.** An overview of contractors' learning preferences.
- **Natural Gas Basics.** Information on how natural gas works and some terms to know.
- **Plan Your Session.** Tips for preparing an effective training session.
- **Your Five-Step Training for Survival.** Step-by-step training guidance.
- **Before and After Quiz.** Reproducible utility safety quiz to help trainers and participants evaluate the program's impact.

Section One: Know Your Audience

Understanding how contractors learn best will help you tailor your training session to this unique audience. Take into consideration the following:

- **Contractors are very focused on working efficiently.** Contractors may face pressure to cut corners where safety is concerned in the interest of saving time and money. Acknowledging this from the start—and cautioning against it—will put you all on the same page.

- **Contractors tend to be action-oriented learners** who do best when given an opportunity to practice and repeat recommended behaviors.

- **Contractors prefer practical (rather than theoretical) information.** Keep the focus on real-life situations.

Section Two: Natural Gas Basics

This section will help you answer questions about natural gas from session participants.

What Is Natural Gas?

Natural gas, like petroleum, is a fossil fuel. It is found in pockets deep underground, and is harvested by drilling. Here are some basic properties of natural gas:

- Natural gas ignites at about the temperature at which a cigarette burns.
- Natural gas burns within a specific concentration range: between approximately 5% and 15% gas to air. At the ideal 10% concentration, natural gas burns cleanly.
- Natural gas is lighter than air. Whenever possible, it will rise. If contained, it will move laterally or **migrate**, seeking an upward path, and it will follow the path of least resistance.
- Natural gas is odorless. Peoples adds a distinctive, sulfur-like odor to natural gas so you can detect even small amounts of escaping gas. Gas that has been treated with these chemicals is **odorized**; however, certain conditions can strip the odorant from the natural gas.
- Many natural gas transmission companies do not odorize natural gas transmission lines.

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The Natural Gas Transmission and Distribution System

To harness and transmit natural gas, we use thousands of miles of pipes. There are three types of pipes used in the system: transmission pipelines, main lines and service lines.

Transmission pipelines move natural gas from refining plants across long distances. They are the largest pipelines. Note that natural gas in some transmission lines has not yet been treated with odorants and thus, has no smell.

Always be aware of pipeline markers that indicate the need for extra care around a high-volume transmission line. For security purposes, these markers are general indicators only, and do not show the exact location, path or depth of gas pipelines. Call the number on the marker if you notice any type of suspicious activity or construction occurring nearby without natural gas utility personnel present.

From transmission pipelines, main lines bring natural gas into residential and commercial areas where it will be used. Service lines bring natural gas from main lines to individual structures.

Pressure, created at various points along the lines, moves the gas through the pipes. The size of natural gas lines varies greatly from 1 inch to 4 feet in diameter; the pressure can vary from ¼ pound per square inch to 1,000 pounds per square inch. The size of a gas line is NOT a reliable indicator of the internal pressure.

Section Three: Plan Your Session

A well-organized, informed instructor will gain participants' respect and be far more effective. Below are some recommendations to help you prepare for your training session with confidence.

Know Your Material

Always preview the materials before showing them to session participants. Gathering information in advance can be useful and make the training materials more relevant. Review all the materials and rehearse your presentation well before the session.

Make the Material Relevant

Identify the key situations that contractors in your training session may encounter, and focus the group's attention on these topics during training:

- **Where are the natural gas transmission lines** in your area?
- **What type of digging activities** might bring workers close to natural gas lines?
- **What natural gas hazards** have participants encountered in the past? Recently?

Tailor the Session to the Training Space, Audience Size and Allotted Time

Remember that contractors are hands-on, action-oriented learners. The session will need to include opportunities to simulate recommended practices and to discuss potential applications of the material. Room size and arrangement can have a measurable impact on the participation level. Consider:

- **Will all materials be visible** to all participants, or do you need additional space or equipment?
- **Are the seats arranged in a way** that will foster discussion?

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- **Is there adequate space** for participants to conduct simulations?
- **Is there adequate lighting** for all participants to see the instructor and materials and to take notes if necessary?
- **Will everyone be able to hear?**

Just as room and audience size can impact the effectiveness of training, so can session time. No one learns well sitting for long periods. On the other hand, cramming too much information into a short session can reduce retention. Plan your session to allow time for discussions and simulations. If there is not time for all the materials, consider which ones will be most effective for these participants.

Section Four: Your Five-Step Training for Survival

Follow these steps for a high-impact meeting that will keep participants involved and reinforce essential safety information:

1) Advertise the meeting.

Post a notice well in advance of the meeting in a highly visible location.

2) Pass a sign-in sheet.

Keep attendance records of all safety meetings. Someday you may have to show who attended the meeting, what the session covered, and when it was held.

3) Offer an overview.

Tell participants what you will cover in the meeting and what you hope they will learn. This is a good time to convey the importance of this information—that it can help protect contractors, their co-workers and the public from utility-related injury or death.

4) Present the Worker Beware *materials.*

Discuss the utility safety information in these materials and the natural gas emergencies that participants might encounter. Review these vital safety tips with participants periodically to refresh their memories.

5) Conduct a discussion.

Participants will retain more information if they get involved in a discussion:

- **Remind participants of the circumstances of any recent natural gas emergencies** in your region. Discuss how information in the materials is relevant to those incidents.
- **Review the proper 811 notification procedures.** Discuss why following the law and allowing extra time for a utility locate can prevent injuries and save time and money in the long run. Discuss additional safety measures such as pre-marking the dig area, conducting a visual site survey, and asking the property owner about any private underground lines.
- **Review the warning signs of a natural gas leak**, stressing the need to use the senses of sight and hearing as well as smell.
- **Invite participants to ask questions** about the materials and the safety procedures they outline. If they have questions you can't answer, research the answers yourself, and provide that information as soon as possible.

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- **Ask participants to brainstorm a list of key safety issues** identified in the materials. Review these key issues and discuss incidents that resulted when related safety precautions were ignored. What were the consequences?
- **Ask each participant to name one thing they learned** from the materials or discussion that will help them be safer in the future.

Remember that discussions are intended to reinforce proper behavior—NOT to call out or embarrass participants. Maintain a cooperative, supportive atmosphere at all times, and encourage participants to ask questions and provide feedback.

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Section Five: Natural Gas Safety Quiz

The quiz on the next page is intended to help instructors and participants assess the program's effectiveness. Administer it before beginning the training, and ask participants to record their answers in the "Before" column. Then administer it again at the end of the session and ask participants to list answers in the "After" column. The quiz is designed for two-sided photocopying.

Quiz Answers:

1. A
2. C
3. D
4. D
5. D
6. A
7. D
8. C
9. F
10. A

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Name:_____ Date:_____

Worker Beware Natural Gas Safety Quiz

Before	Questions	After
_____	**1. True or false? Natural gas is lighter than air.** A. True B. False	_____
_____	**2. Which of the following is the explosive (flammable) range of natural gas?** A. 2% to 5% gas to air B. 10% to 30% gas to air C. 5% to 15% gas to air D. 50% to 100% gas to air	_____
_____	**3. If you suspect a natural gas leak, you should:** A. Bury your excavation B. Use your phone or radio C. Attempt to shut off the gas supply D. None of the above	_____
_____	**4. Which of the following devices should NOT be used in the vicinity of a gas leak?** A. Radios B. Doorbells C. Light switches D. All of the above	_____
_____	**5. What does the law <u>require</u> that you do to determine the location of underground utility lines before digging on a job site?** A. Look for right-of-way markers B. Check your maps C. Call Peoples D. Notify 811	_____
_____	**6. True or false? Before digging, you should ask the property owner about any private underground lines that may not be marked by the locator.** A. True B. False	_____

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_____ **7. Which of the following is a time to stop digging?** _____

A. If the locate marks are not visible
B. If you don't understand the locate marks
C. If you find an unmarked natural gas pipeline
D. All of the above

8. Pipelines markers indicate:

A. Old pipelines that are no longer in service
_____ B. Low-level transmission lines that don't require extra care _____
C. High-volume transmission lines that require extra care
D. The pipeline's *exact* location.

9. Which of the following may indicate a natural gas leak?

_____ A. A distinctive, sulfur-like odor _____
B. Dirt or water being blown into the air
C. A hissing, whistling or roaring sound
D. Continuous bubbling in water
E. Dead or dying vegetation in an otherwise moist area
F. Any of the above

10. True or false? Natural gas rises and, if confined, it will move
_____ **laterally until it finds its way up.** _____

A. True
B. False

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