

# Be Safe Around Natural Gas

## Teacher's Guide

### Introduction

*Be Safe Around Natural Gas* is a coloring and activity booklet that describes important natural gas safety concepts. The booklet engages children through various activities while introducing them to the uses of natural gas in the home and key safety behaviors around natural gas. This teacher's guide contains suggestions for classroom discussions about the booklet's safety content.

### Cover

Explain to children that this booklet contains important information about using natural gas safely.

### Discussion:

- What does the picture at top left show? *(A woman on her cell phone, with a boy pointing at the house, where fumes are coming out the window.)* Ask if anyone can think of what could be happening in this picture and why the woman is shown speaking on the phone. *(Children may not yet know this, but the fumes represent leaking natural gas. The woman and the boy have left the house in order to stay safe. She is calling 911 for assistance because a natural gas leak can be dangerous.)*
- What does the picture at top right illustrate? *(Toys and paper towels on the counter next to a natural gas stove burner that is turned on.)* Ask students if they know what is unsafe about this? *(If these objects get too close to the gas flame, they could catch on fire.)*
- What does the bottom picture indicate? *(A man is digging a hole to plant a tree. The hole is right over a natural gas pipeline that runs from the street to the house.)* Ask students if they can think of why the man's digging is unsafe. *(The shovel could damage the pipe and cause a natural gas leak, which could result in a fire or explosion.)*

### Page 2: Dig safely!

Explain that natural gas comes from deep inside the earth and is pumped up through wells. It is sent through large transmission pipes to a processing plant where it is purified, and then it is transported to buildings through smaller underground pipes like the one shown in this illustration.

Ask a student to read aloud the text at the top of the page. Explain that leaking gas from a damaged natural gas pipe can be dangerous and can interrupt the gas supply to homes and businesses. To prevent this, dialing 811 connects you to a free service that arranges for utilities to come and mark their underground gas pipelines, so that people doing digging projects can dig a safe distance away from these pipes. Students may confuse 811 with 911. Be sure to explain that calling 811 several days before a digging project is very different from calling 911 for emergencies. Calling 811 is solely for the purpose of having utilities come out to mark natural gas pipelines and other buried utility lines.

Discussion:

- Why do you think we need to learn where gas pipes are located underground before doing a digging project? *(Because if you don't know where the gas pipes are located, you could strike one and cause a gas leak.)*
- What is an example of a digging project? *(Answers could include planting a tree or shrub; putting in a patio, pathway, or fence; doing a construction project.)*

Puzzle Answer: Dig Safely Near Buried Gas Pipes

**Page 3: Natural gas at home**

Ask a student to read the text at the top of the page. Explain that all of the appliances shown on this page (clothes dryer, furnace, range, and water heater) are fueled by natural gas. (They can also be fueled by electricity.) Natural gas needs to be burned to create heat, which is how gas appliances work. A small flame or electronic spark is used to ignite the supply of natural gas coming from the pipe. The burning natural gas delivered to appliances creates the heat needed to dry your clothes, warm your house, cook your food, or heat your water.

Have students do the coloring activity. When completed, ask them where they colored the four flames. Did anyone learn something they didn't know about natural gas appliances?

Going Further:

Ask students to talk with their families about which of their appliances, if any, run on natural gas. *(Answers could include natural gas furnace, barbecue, range, water heater, dryer, fireplace, swimming pool heater, and/or outdoor lighting.)*

**Pages 4-5: Find the hazards!**

Invite a student to read aloud the directions at the top of the page. Invite other students to read aloud the four safety messages in white boxes. Have students complete the activity.

Discussion:

- Ask students to identify the four parts of the home, inside or outside, where something is happening that poses a natural gas safety risk. *(Kitchen: gas range has toys and paper towels beside it; Basement: child hanging from natural gas pipe; Outside house: woman digging above a gas pipe; Garage: gas and chemicals stored beside water heater.)*
- What is the risk of keeping toys, books, and paper towels beside the stovetop? *(If these objects get too close to the gas flame, they could catch on fire.)*
- What is unsafe about hanging from gas pipes? *(Pipes could break and gas would leak out.)*
- What is the danger of digging above the natural gas pipe? *(The shovel could damage the pipe and cause a pipeline leak, which can be dangerous.)*
- Ask students to identify the objects stored near the natural gas water heater in the garage. *(Old newspapers, cleaning fluid, paint, an unlabeled chemical in the red can, motor oil, and gasoline.)* Explain that the red and yellow can labeled "GAS" contains gasoline for vehicles, not natural gas. Ask students why it is risky to store the gasoline and other items near the water heater. *(All of these items are flammable, which mean they burn easily. There is a flame inside the water heater. If the papers get too close to the flame, or if the gasoline or chemicals spill out, a fire could start.)*

### Going Further:

As a class, create a natural gas safety mini-chart, listing the safety rules from these pages and any others that come up in the rest of the book.

### **Page 6: Something smells!**

Have students complete the coloring activity, and then ask what body part they circled. (*The nose.*)

### Discussion:

- How many senses do you have, and what are they? (*Five senses: Sight, hearing, smell, taste, touch.*)
- What sense are the people in the illustration using to detect an odor? (*Smell.*)
- What does natural gas smell like? (*Natural gas itself is odorless, but it is treated with a chemical that has a distinct odor of sulfur or rotten eggs. This odor helps people know when gas is leaking.*)
- Ask for a show of hands of who has smelled leaking gas before.
- What is unsafe about a natural gas leak? (*Leaking gas can easily be ignited by a small flame or even a spark and could cause a fire or explosion.*)

Outdoor Gas Pipeline Leaks: Explain to students that in addition to their noses, they can use their eyes and ears to detect outdoor gas pipeline leaks. They may SEE grass/plants dead or dying for no apparent reason. They may HEAR a hissing, whistling, or roaring sound. They may SEE or HEAR continuous bubbling in water, or dirt spraying or blowing into the air.

Outdoor gas leak response is not covered in this booklet; however, it is similar to the indoor leak response that students will learn on page 7: If an outdoor gas leak is detected, one should move away from the area, go to a safe location, tell an adult to report the leak to 911 and the local gas utility immediately, and avoid using matches or anything electrical (even a cell phone), as any tiny spark could ignite the gas. One should then stay far away from the area of the leak until utility officials say it is safe to return.

### **Page 7: If you smell gas, get out fast!**

Ask a student to read aloud the text at the top of the page. Then have students complete the numbering activity. Once complete, ask students to describe the order that the photos should be in. (*1. Gas leaks from the stove. 2. The boy and a woman notice the smell. 3. The boy, the woman, and their dog leave the house. 4. The woman calls 911 from a safe distance away.*)

### Discussion:

Emphasize that in the event of an indoor natural gas leak, everyone present should leave the home quickly without using matches or any electrical or battery-operated devices.

- Why do you think you shouldn't use a light switch, flashlight, TV, or even a phone if you smell gas? (*Because any of these devices could cause a spark that could ignite the gas and cause a fire or explosion.*)

### Going Further:

Do a natural gas leak drill, starting in the classroom. When you return, or while outdoors, discuss why you have these rules and drills.

**Page 8: Where did you see this?**

Ask a student to read the headline and directions to the activity on the page. Then have them complete the activity.

Answers: *Kitten on towel—p. 3; water heater with papers and chemicals nearby—p. 5; woman digging—p. 4; dog with bone—p. 2; woman and boy smelling a gas leak—p. 7.*

Discussion:

Ask students which of these five images points to a natural gas safety hazard (*all but the cat and the dog*).

Review/Going Further:

- Ask students to state the things they learned about natural gas safety from this booklet.
- Add any unrecorded safety tips to the class mini-chart if you created one.
- Encourage students to take the booklet home and share it with their families.