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Aunt Sarah and the Amazing Power, Electricity and Natural Gas Teacher's Guide

OBJECTIVE

After reading the story and doing the activities in *Aunt Sarah and the Amazing Power*, children will be able to explain the many uses of electricity and natural gas. They will also adopt six key electrical safety behaviors and four natural gas safety behaviors:

- Go indoors when there is lightning.
- Put only plugs and safety caps into outlets.
- Keep away from power lines.
- Keep away from electrical equipment (such as transformers and substations).
- Don't mix electricity and water.
- Have a family safety kit in case of outages.
- Don't play near natural gas appliances and equipment.
- Recognize the signs of a natural gas leak—a smell of rotten eggs, a hissing or roaring sound, dirt spraying or blowing into the air, water that is bubbling, grass or plants that are dead or dying for no apparent reason.
- If you smell natural gas, tell an adult. If no adult is home, get everyone out of the house. Do not use a light switch, candle, flashlight, TV, radio, garage door opener, or even a phone—a spark could ignite the gas. Go to a safe location and ask a trusted adult to call 911 and your gas utility.
- Before starting a digging project, adults should call a special service by dialing 811 several days before digging to find out where gas pipelines (and other utilities) are buried.

A Note to Teachers: Please teach the safety concepts in this book in an age-appropriate way, so children learn how to stay safe without becoming fearful.

PREVIEW THE BOOKLET

Use at least one of these activities to get children thinking about electrical and natural gas safety.

Vocabulary Review

Put the following words up on the board: electricity, natural gas, lightning, power outage, electric and natural gas appliances, power plant, power line, pipeline, outlet, safety cap, plug, electric company. Discuss what they mean.

Picture Walk

Look at the pictures and ask children what they think is happening on each page.

Discussion

Ask children some basic questions about electric and natural gas safety, such as: What are some things that use electricity and/or natural gas in your home? How can you be hurt by electricity? How can you stay safe around it? How can you be hurt by natural gas equipment? How can you stay safe around it?

READ AND REREAD THE STORY (PAGES 2-25)

Read the Big Book story aloud to the class. Then introduce the Student Books and have students use them as appropriate for their reading levels. After reading the story through once, you may wish to read it again and ask students the following questions. *(Some possible answers and explanations are in italics.)*

- Pages 2-5** How can you tell a storm is coming? *(Dark clouds, wind, raindrops.)*
- Pages 6-7** Why shouldn't you hide under a tree in a lightning storm? *(Trees and other tall objects attract lightning. If lightning strikes a tree while you are near it, the lightning will also strike you. The safest place to be during a lightning storm is indoors. Stay away from windows, water pipes, electric appliances, and phones, as these can conduct lightning if it strikes the building or nearby utility lines. You are also safe from lightning when inside a vehicle.)*
- Pages 8-9** Why is the power line down? *(A tree branch fell down on it during the storm.)*
What do the power lines look like in your neighborhood? *(Responses will vary: Some areas have wires called "service drops" connecting from the power poles to each building. In some areas—like the neighborhood on this page—power poles are above ground but the service drop wires are not visible because they are underground. And in some areas all wires are underground.)*
- Pages 10-11** Has your electricity ever gone off? What did your family do? *(Responses will vary.)*
- Pages 12-13** What things on these two pages use electricity? *(Refrigerator, oven, blender, kitchen light, toaster, heater, TV, VCR, desk lamp, computer.)*
- Pages 14-15** What other things might be good to put into a safety kit? *(Blankets, drinking water, books and games, candles, matches, lantern, camping stove, etc.)*
- Pages 16-17** Use your finger to trace the path electricity travels to get from the power plant to lights and outlets. Why should only plugs and safety caps go into outlets? *(If you put anything else into an outlet, the electricity could travel through the object and into your hand and give you a painful or deadly shock.)*
- Pages 18-19** What should you do if you see a fallen power line? *(Stay far away and ask a parent or trusted adult to call 911. Assume ALL downed lines are dangerous. Even if the line does not spark or hum it might have electricity in it, which can hurt or kill you if you touch or come near it.)*
- Pages 20-21** If a power line near your home were to come down, who would fix it? *(Elicit the name of the local power company. Make sure students understand that power company workers are the only ones who should fix broken power lines.)*
- Pages 24-25** What are some of your favorite things to do when you are at home? Which of these things do you need electricity for? *(Responses will vary.)*

DO THE ACTIVITIES (PAGES 26-31)

Page 26: Go Indoors When There Is Lightning

The pictures should be sequenced as follows:

Bottom picture happens first: Cats are outside and see lightning.

Top picture happens next: Cats go inside to be safe from lightning.

Middle picture happens last: Cats stay indoors during the lightning storm.

SAFETY DISCUSSION: Refer to the notes for pages 6-7 of the story.

Page 27: Outlet Safety

The key, paper clip, and fork are not safe to put into an outlet and should be X'd out.

SAFETY DISCUSSION: Refer to the notes for pages 16-17 of the story.

Page 28: Stay Away from Electrical Equipment

Everything but the slide should have an X on it.

SAFETY DISCUSSION: On the top left is a pad-mounted transformer. It is used in places where power lines run underground. The equipment inside transformers is very dangerous so transformers should always be locked closed. If children see one unlocked they should ask a parent or trusted adult to call 911 to immediately report it.

On the top right is a tall tower that supports large power lines called transmission lines. No one but specially trained workers should ever climb on these towers.

On the bottom right is a substation. No one should ever climb into a substation because the equipment inside is very dangerous. If a ball or toy goes into a substation, children should ask a parent or trusted adult to call the power company right away. If children see anyone climbing a substation fence, they should ask the person to get down and tell a parent or trusted adult.

Page 29: Stay Away from Power Lines

S E M A J
T A W A Y
A F R O E
Y R E S P
P O W E R
Y M T E B
L I N E S

SAFETY DISCUSSION: Refer to the notes for pages 18-19 and 20-21 of the story. Emphasize that children should stay far away from any lines that have broken and come down, as well as lines that are up on poles.

Pages 30-31: Natural Gas Is Another Amazing Power

Children should connect “Natural gas keeps us warm” with the kitten in the blanket; “Natural gas cooks our food” with Aunt Sarah and the cookies; and “Natural gas heats our water” with the bathtub.

SAFETY DISCUSSION: Water heaters, furnaces, stoves, and dryers are some types of appliances and equipment that use natural gas. They may have pipes attached to them. Children should never play with these pipes.

Aunt Sarah’s Natural Gas Safety Tips

(Note: Some versions of the booklet do not discuss gas pipeline leak warning signs and response procedures. Please discuss these with your class anyway, as this is important material.)

Read these tips to children. Explain that natural gas comes to our homes through underground pipes and that several days before digging, adults should call the service at 811 to find out where these pipes are located. Explain that natural gas appliances and equipment have a flame inside, so we need to keep toys and papers away. Ask them if they can recognize the smell of natural gas. (Explain that it smells like rotten eggs.) Review the other

warning signs of a gas pipeline leak: a hissing or roaring sound, dirt spraying or blowing into the air, water that is bubbling, grass or plants that are dead or dying for no apparent reason.

SAFETY DISCUSSION: Emphasize that if students smell natural gas in their home, they should tell an adult. If no adult is home, students should go to a safe location from which they can ask a trusted adult to call 911 and the local gas utility to report the problem. Also stress that the entire family should leave the home quickly without using matches, a light switch, candle, flashlight, TV, radio, garage door opener, or even a phone—a spark could ignite the gas.

If warning signs of a gas pipeline leak are detected, do not use a candle or anything electrical. Go far away from the area right away, and do NOT go back until safety officials say it is safe. Ask a trusted adult to report the leak to 911 and the local natural gas utility.

USE THE SAFETY PLEDGE (BACK COVER)

After reading the story and doing all the activities, show students the safety pledge on the back cover. Read the pledge aloud with students (or have them read it to partners) and review the safety concepts in it. Then have students write their names beneath the pledge. **Encourage students to take the booklet home to share the story, activities, and pledge with family.**

GO FURTHER

Here are some ideas for students who want to learn more about electricity and natural gas:

- Make the story into a play and act it out for other students.
- Work in teams to find all the details in the illustrations that make it seem like a cat world. For example, the various cat-related stores on pages 2, 3, and 4; the catnip sign on page 7; and the feline family portraits on page 22.
- With an adult, make a list of all the things in your home that use electricity or natural gas. Put them into the following categories: Needs, Comfort, and Entertainment.
- Interview several friends and family members to find someone who has been shocked by electricity. Ask the person how it happened and how it could have been prevented, then share the story with the class in a written or oral report.
- Find out why electricity and water should never mix.
- Find out where natural gas comes from and how it is delivered to homes and businesses.