

Pipeline and Banana Object Lesson

Have you ever wondered why pipelines are used to bring utilities to your house?

Objective

Students will understand the role of pipelines to safely transport utilities.

Time: 30 minutes

Curriculum Focus

Science
Social Studies

Materials

- Unripe bananas with ends cut off
- Pieces of dry thick spaghetti
- Plastic spoons
- Plastic knives

Key Vocabulary

Pipeline sheathing
Pipeline casing

STEM Connection

Science

- Science as Inquiry
- Science and Technology
- Personal and Social Perspectives

Technology

- Productivity Tools
- Communication Tools
- Research Tools
- Problem Solving and Decision Making Tools

Engineering

- Historical Perspective

Math

- Connection to the Real World

Careers in Energy

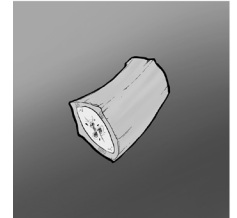
Driller
Pipe Fitter

Background

A common banana illustrates how cables or pipes protect utilities. In this activity, the banana represents the cable or pipe and a piece of spaghetti represents the utility running through it. Students should be encouraged to share what they learn with parents and other family members or friends at home.

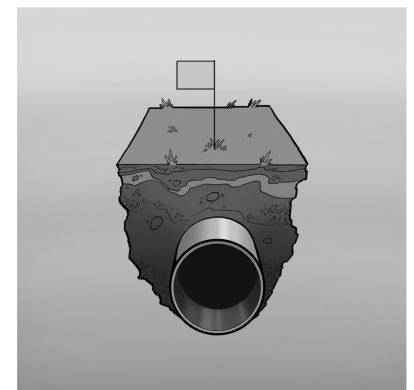
Learning Activity

1. Ask students if they have ever seen pipes in the ground. If so, do they know why they are there or what is inside of them?(water, natural gas, electric cables, communication cables, sewer, etc.)?
2. Explain underground utilities to students. Acknowledge that in some areas electric and communication cables are overhead, however natural gas and water are always delivered through underground pipelines.
3. Show the banana and ask, "How is a banana like an underground cable or pipe?"
4. With the participants watching, insert one or two pieces of spaghetti through the banana.
5. Explain that the spaghetti represents the underground utilities and the banana represents the cable or pipeline that protects it. (If you prefer not to use the spaghetti, say that the banana peel represents the pipe and the banana is the utility inside the pipe.)
6. Explain that the banana peel is water resistant. Like the sheathing on the cable or the casing on the pipe, it keeps water out.
7. Explain that the banana peel also cushions and protects the spaghetti (or banana flesh) like the pipeline protects the product inside.
8. Have a student come to the front of the class and "dig" on the banana with the plastic spoon. (The banana may dent, but should stay intact.)
9. Explain that the plastic spoon represents a small hand shovel. In the same way that the plastic spoon did not cause much damage to the banana peel, a small hand tool causes little or no damage to an underground cable or pipeline.
10. Have a second student "dig" on the banana with a plastic knife. (The knife will most likely cut through peel, banana flesh and spaghetti.)
11. The knife represents a shovel; pick ax or piece of digging machinery. Like the plastic knife, a larger digging tool or machine can cut the underground utility.
12. Explain that every state has a system of marking property with colored flags or paint, to show above the ground where pipelines are below the ground. To have this service performed, just call 811.



Questions

1. What should homeowners do before they dig in their yards to plant trees, put in a mailbox or build a fence? (Call 811 to have utility pipes marked.)
2. What could happen if you don't "Call 811 before you dig?" (Underground cables or pipes might be broken, causing a gas leak or other disrupted utilities.)
3. Ask how the banana could help participants remember the way to avoid damaging underground utilities. (Banana is yellow, just like the yellow flags that mark where natural gas pipelines are located.)



Check for Understanding

Research transmission pipes that transport natural gas. Determine the different diameters of pipes and the materials that they are made from for each diameter.

To Know and Do More

Challenge students to do the activity at home with their families and share the slogan "Know what's below, Call 811 before you dig."