

# Natural gas activity card



## Grades 4–6

This natural gas safety activity card is intended to be used along with our age-appropriate booklets, teacher’s guides and other resources located at [e-smartonline.net/xcelenergy](http://e-smartonline.net/xcelenergy).



### Safety quiz

Test your students’ natural gas safety IQ. Download and print our age-appropriate safety test online at [e-smartonline.net/xcelenergy](http://e-smartonline.net/xcelenergy). It quizzes students on safety issues around how natural gas gets to our homes, its many uses, how to identify a leak and what to do if you smell gas. Discuss and compare their responses to the correct answers. Then, learn more about these topics by ordering our booklets, reading them with your class and performing the activities.

### Vocabulary

Put the following words on the board and discuss what they mean. Go further with your class by discovering more about these topics online at [e-smartonline.net/xcelenergy](http://e-smartonline.net/xcelenergy).

- Energy
- Natural gas
- Pipeline
- Heating
- Fossil
- Fuel
- Furnace
- Resources

### Fun Fact

If all the natural gas pipelines in the United States were placed end to end, they would stretch to and from the moon almost three times.

### Q&A

**Q:** Where does natural gas come from?

**A:** Natural gas is formed several miles beneath the earth’s surface and is extracted by wells, pumped into pipelines, carried to processing plants and then to storage tanks or homes and businesses.

### Experiment

This experiment demonstrates the effects of gas pressure and that gases occupy space. Although we are not using natural gas, the principle is the same.

#### MATERIALS

- An empty two liter soda bottle
- A small rolled up ball of paper (small enough to sit inside the mouth of the bottle)

#### DIRECTIONS

1. Place the bottle on the edge of a table and put the ball of paper inside of the opening of the bottle.
2. Purse your lips and try and blow the paper into the bottle.
3. The paper should shoot back out towards you.

Moving air is at a lower pressure than still air. In the case of the soda bottle, the air that is blown towards the mouth is deflected around the sides of

the bottle. This means that the air pressure in front of the ball of paper is lower than behind, and so the paper flies out.

The force that propels natural gas through pipelines is its pressure, which gradually decreases as it travels through the pipeline.

A series of compressors, or “pumping” stations, along the pipeline’s path, increase the pressure of the gas to push it to the next station along the line. In the distribution lines that bring natural gas to your home, the gas travels through the pipelines at the slow and steady pace of 15 miles per hour.

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# Natural gas activity card



## Grades K–3

This electrical safety activity card is intended to be used along with our age-appropriate booklets, teacher's guides and other resources located at [e-smartonline.net/xcelenergy](http://e-smartonline.net/xcelenergy).



### Safety quiz

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### Vocabulary

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- Energy
- Furnace
- Natural gas
- Fossil fuel
- Pressure
- Pollution
- Hazard
- Flammable

### Fun Fact

In 1821, the first natural gas well was dug in New York. It was only 27 feet deep. Some of today's wells are 30,000 feet deep.

### Q&A

**Q:** How is natural gas made?

**A:** Natural gas is created from the decayed remains of plants and animals that died millions of years ago. These remains were subject to the pressure, shifting and heat within the earth's rock layers.

### Experiment

Gas is formed by a chemical reaction that occurs below the earth's surface. In this experiment, we'll create gas (carbon dioxide) by putting together chemicals that react to each other. This gas is not the same type of gas that is used to heat homes, but the experiment will show students how gas is created.

#### MATERIALS

- Baking soda
- Vinegar
  - Plastic soda bottle
- Balloon
- Two funnels

#### DIRECTIONS

1. Using one of the funnels, pour vinegar into the soda bottle. Fill about one-third of the bottle.
2. With the other funnel, pour some baking soda into the balloon. Fill the balloon up about halfway.
3. Attach the balloon to the top of the bottle, making sure you don't spill any baking soda into the bottle.

4. Lift up the balloon so the baking soda drops into the vinegar.
5. The mixture will bubble up and gas will form, blowing up the balloon.

The acid in vinegar reacts with the baking soda, producing a chemical reaction that creates gas. When the gas expands out of the bottle it blows up the balloon.

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