



# e-SMARTkids



## EXPERIMENT TIPS

## Making methane

This advanced experiment appears in the section *Natural gas science*.

### Materials

Students will need the materials listed:

- 1½ cups of soil
- Funnel
- Permanent marker
- 2 cups of a mixture of vegetable scraps and grass clippings
- 6 identical small-necked bottles (plastic water or soda bottles work well)
- Duct tape
- Measuring cup
- 6 large party balloons, not inflated

### Objective

Students will understand that both natural gas and the biogas formed in the experiment come from the decomposition of dead plants and other organic matter, and that in both situations, heat is a key factor that lets gas form.

### Getting it across

Make sure students thoroughly mix the soil and vegetable scraps. There will be some material left over after students put ½ cup into each bottle. It's very important that the balloon be securely sealed to the mouth of the bottle. Remind students to check for tears or holes around the neck of the balloon.

### Questions and answers

1. What was the relationship between the levels of the mixtures and what happened to the balloons? (The balloons that inflated with gas should have gotten bigger as the level of the mixture in their bottles got lower. Ask students to share their results. Were the results the same? If not, why not? Answers will vary. Be sure the experimental setup was not at fault.)
2. In which locations did the balloons grow biggest, and why? In which locations did the balloons grow the least, and why? (The locations where the balloons grew biggest should have been those with the most heat: i.e., in sunlight, near a heat source. The balloons should have grown the least in the colder areas: i.e., in the refrigerator and freezer. Again, ask students to share their results and to determine whether their experiment setup could account for any extreme differences in findings.)
3. Compare your experiment's results and the conditions that allowed for the formation of natural gas deposits millions of years ago. (The conditions that allowed natural gas to form included organic matter decomposing in hot conditions, and a rock configuration that allowed the gas to accumulate rather than to disperse.)