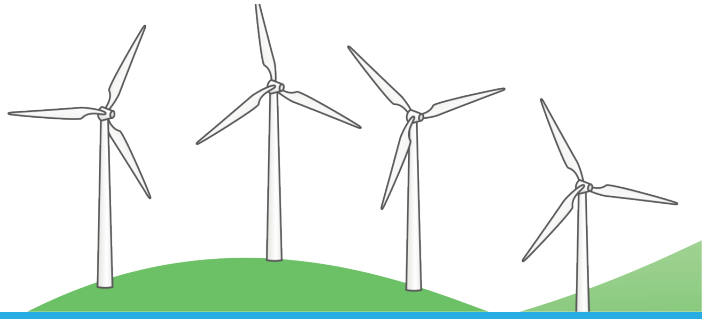
e-SMARTkids



EXPERIMENT TIPS

Biomass Experiment

The Biomass Experiment gives students an understanding of how biomass from landfills can be used as an energy source. When students compare the two bags of beans they will see how the beans in the closed bag will have produced gas. This gas is similar to the methane gas created by decomposing waste.

Materials

- 20 cooked pinto beans
- 2 sandwich bags, one of which can be tightly sealed
- A warm or sunny spot indoors

Experiment Tip

Make sure that one bag is tightly sealed and the other remains open throughout the week.

Getting It Across

Explain that biomass energy comes from organic matter, such as agricultural and animal wastes, or from methane gas produced from decay in landfills. Like fossil fuels, biomass can be burned to create energy in the form of electricity, heat, steam, and fuels. It can also be converted to methane gas and used for fuel. The process taking place inside the sealed bag is anaerobic digestion, which has methane gas as one of its by-products, so it resembles a form of biomass energy. If this bag were at a biomass power plant, the odorous gas inside the bag would be used to heat water into steam to turn a turbine!

Discussion Ideas

- **Predict:** Before doing this experiment ask students to predict what will happen to both bags. What differences do they expect to find? Have them explain why they predicted as they did.
- **Conclude:** After doing the experiment ask the students if their predictions were accurate. Ask them what they think happened inside the bags.
- **Discuss** with students how this experiment relates to using biomass as a source of energy.

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