

Smokestacks



Essential Question: Why do power plants have tall smokestacks?

Overview

In earlier lessons, you learned about atmospheric pollutants and how they are formed and released by coal-burning power plants. You have also learned about some of the ways that power plants can reduce their emissions.

In this lesson, you will look at where and how those pollutants spread. Later, you will predict what the effects of building a new power plant might be. In this activity, you will use sand to represent emissions from a coal-burning power plant. You will compare the distances the sand spreads depending on the elevation from which it is released.

Materials

For the class:

- 1 5-lb bag of sand
- 1 roll of invisible tape

For each group:

- 1 sheet of newspaper, 3 ft x 4 ft
- 1 tape measure
- stack of textbooks totaling 24 in. high
- 1 pkg. of 8 colored markers

Procedure

1. Tape the large sheet of newspaper to the tabletop. In the corner of the paper farthest from the edge, draw an “X” 2 cm from each side of the paper. (See diagram on the next page.)
2. Place one small spoonful of sand on the X.
3. Gently blow the sand as shown in the diagram. On the paper with a colored marker, draw a loop around the area where the sand has spread.
4. Clean all the sand off of the paper.
5. Stack the textbooks 6 in. high on top of the X. Place one spoonful atop the books. This spoonful of sand should be in the same location as the previous one, only higher.
6. Gently blow the sand again. Draw a loop around the area where the sand has spread with a different colored marker.
7. Repeat Steps 5 and 6 with a stack of textbooks 24 in. high over the X.
8. Clean up all your materials.