

The Greenhouse Effect in a Jar

Area: Physical Science

Age Group: 3-5

Materials:

- 2 Small thermometers
- 1 Jar or other see-through container
- 1 Clock or watch
- 1 Copy of the worksheet
- Sunlamp or access to a sunny area to perform the experiment

Introduction / Background:

The air over the exposed thermometer is constantly changing, and as it gets warm it is replaced by cooler air. Because the air in the jar cannot circulate to the rest of the room, this air stays in the sunlight and gets warmer and warmer. A similar trapping of heat happens in the Earth's atmosphere. Sunlight passes through the atmosphere and warms the Earth's surface. The heat radiating from the surface is trapped by greenhouse gasses. Without an atmosphere, the Earth's temperature would average about 0°F. This warming due to heat-trapping gasses is called the "Greenhouse Effect." Both the atmosphere and the jar allow light to enter, but then trap that energy when it is converted to heat. They work differently, however, because the jar keeps in the heated air, while the greenhouse gasses absorb radiative heat.

Instructions:

1. Place the two thermometers in the sunlight or under a sunlamp for a few minutes to let them get warm.
2. Record the readings of both thermometers at the top of the columns.
3. Record the time next to the starting temperatures and place the jar over thermometer #1.
4. Every minute, record the readings of both thermometers on the worksheet below without disturbing them.

Extension: Students can graph their data.

Resources: <http://www.fi.edu/tfi/activity/earth/earth-5.html>

Name: _____

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Time	Thermometer 1 Temperature	Thermometer 2 Temperature
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		