



Albedo Effect

materials

For each team

- 1 sheet of black and white construction paper
- 2 empty metal food cans, same size
- Scotch tape
- 2 thermometers
- Ruler
- Desk lamp or sunny window

background

Albedo is a measure of how much light energy is reflected off an object and how much is absorbed and turned into heat energy. A light colored or shiny object will reflect more light than a dull, dark colored object. Albedo plays an important role in heating the earth. Land and water heat up more than snow and ice. The Polar Regions count on a high albedo to keep their region cold. As more of the ice melts in global warming, more heat is absorbed by the ocean and the land mass of Greenland and Antarctica. This causes more melting of the ice sheets and sea ice.



directions

1. Use a ruler to measure the height of the cans.
2. Cut the white and black paper to fit the cans' height.
3. Tape the paper to cover the outside of the cans.
4. Check the thermometers for the same reading on both.
5. Put the thermometer in the cans.
6. Place the cans 30 centimeters (12 inches) from the lamp.
7. Turn on the lamp (or use sunny window location) and wait 10 minutes to read the thermometers.

activity time:
30 minutes



discussion

- What were the temperature readings?
- Why was one cooler than the other? (Light colors reflect more of the light waves than the black paper and the absorption of the light waves increases the temperature.)



vocabulary

Albedo - a measure of how much light energy is reflected off an object and how much is absorbed and turned into heat energy.

Reflect - to send back light, sound or heat to its point of origin (where it came from)



extension

Use tube popsicles and wrap them in white paper or black paper. Put them under a light to see which melts the fastest. Check after 2 minutes and continue checking until there is a noticeable difference.

alignment to national science standards

Unifying Concepts and Processes, Standards A, B, D, E, F, G

alignment to kansas science standards

Science as Inquiry: K-2: 1.1.3, 1.1.4, 1.1.5; 3-4: 1.1.1, 1.1.3, 1.1.4; 5-7: 1.1.1, 1.1.3, 1.1.4, 1.2.2, 1.3.1

Physical Science: K-2: 2.1.1; 3-4: 2.1.1; 5-7: 2.3.1, 2.4.2, 2.4.3

Earth Science: K-2: 4.2.2; 3-4: 4.2.3; 5-7: 4.3.1, 4.4.2

Science and Tech: K-2: 5.1.2

History and Nature of Science: K-2: 7.1.1; 3-4: 7.1.1