Project #7 Shoebox Solar Water Heater

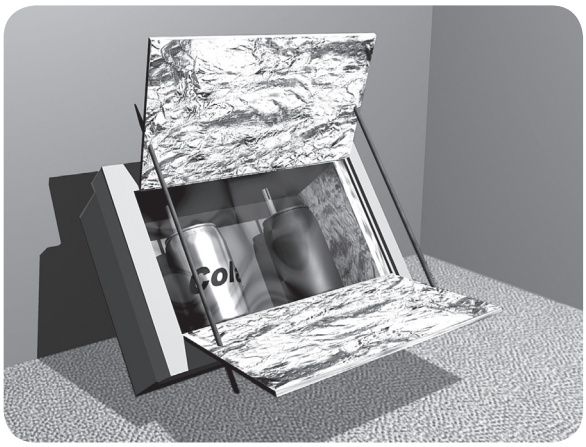
The Shoebox Cooker in Project #5 can be used as a solar water heater too. Just put soda cans filled with water inside the cooker.

Materials

- 1 Shoebox Cooker (see Project #5)
- Oven Thermometer
- Soda Cans
- Black Paint (or wide tipped felt marker)

OR

- Black Paper & Rubber Bands
- Extra kabob stick to hold flap open
- Aluminum Foil
- Masking Tape
- Scissors (or Craft Knife if an adult helps)
- Newspaper & carboard for insulation



What to Do

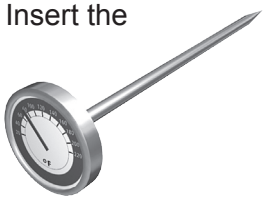
1. Paint a soda can black. If you don't have paint you can use a felt marker, or even wrap the can with black paper. Secure the paper with tape or rubber bands. This helps the can absorb heat.

2. Use kabob stick to punch a hole through one of the long sides of the shoebox. The hole should be about 2" from the back of the box. This is for the thermometer.

3. You may have to add several layers of cardboard inside. This lets the thermometer reach the inside of the can. It also adds insulation. Try wrapping the cardboard with aluminum foil to reflect heat onto the can.

4. (Optional) Attach another reflector with tape. Puncture the reflectors with kabob sticks, and and slide them through the reflectors. use the sticks to hold the reflectors open.

5. Lay the shoebox on its side in the sun. You can lean it against a wall to face the sun. Fill the soda can about 3/4 full with water, and place it in the box. Insert the thermometer, and record the temperature. record the temperature again at regular intervals (15 minutes or more).



6. Try using a black-painted can and a plain can to see how fast each heats up. Make a chart to record your results.