

Climate Chaos

Day 4 Afternoon session: What we can do; Energy conservation at home

Activity 1: How does insulation work?

Time required: 1 hour

You will need (for each experiment)

- Six plastic bottles
- Hot (not boiling) water
- A measuring jug
- A thermometer
- Five different materials (e.g. newspaper, woollen and cotton fabrics, egg boxes, cotton wool, polystyrene) – enough of each to cover one bottle
- Rubber bands and sticky tape
- **Worksheet** with instructions (below)

Aim

To increase understanding of the role and importance of insulation in conserving energy and helping to slow climate change.

What to do

This activity can be done as a whole class activity, by a group, or by an individual child.

Give them the worksheets and materials (from the list above) and ask them to carry out the experiment and record the results.

If possible, provide an opportunity to feed back on the results and discuss the implications.

Climate Chaos

Worksheet: How does insulation work?

You will need:

- 6 plastic bottles with lids
- Hot (not boiling) water
- A measuring jug
- A thermometer
- 5 different materials (e.g. newspaper, woollen and cotton fabrics, egg boxes, cotton wool, polystyrene) – enough of each to cover one bottle.
- Rubber bands and sticky tape

1. Wrap a different material around five of the bottles and fasten it securely. Make sure the whole bottle is covered, but leave the bottle opening free. You may need to bend, scrunch, or break some of the materials to make them fit. You could try using varied thickness of the same material on two of the bottles (e.g. a couple of sheets of newspaper and a whole newspaper). Leave one bottle unwrapped.
2. Put the same amount of hot water in each bottle and put the tops on.
3. Test the temperature of the water in each bottle every 5 minutes and record the results in the table below.

Material	Start	5 min	10 min	15 min	20 min	25 min	30 min

Which material kept the water warmest?

Do you think the results would have been different if you had used varied thickness of each material?

Materials used to stop heat from moving from one area to another are called insulation. Householders are advised to put thick layers of insulation in their lofts, around their walls and around hot tanks so they use less energy to keep warm. Wearing a thick jumper has the same effect!