

MODULE: *Chemical Change*

Episode 1: Chemistry Watch

Activity Sheet 1.1: Distinguish chemical from physical change and recognise evidence of chemical and physical change taking place



Part 1

For this activity you should work in small groups.

Look at column 1 in the table at the end of this sheet. These are the events you saw in the video clip. They are listed in the order in which they appeared. Do you remember most of these?

Look at column 2. In your group, discuss the changes you think were happening for each event listed. Write what you decide in this column (Two of the examples in column 2 have been given to help you).

Part 2

Now read about the chemical and physical changes below:

Chemical changes

Chemical changes occur when atoms and molecules of one or more substances (the reactants) react to form new substances (the products).

All chemical reactions or changes have certain common features. One or more of these can be observed or detected, for example:

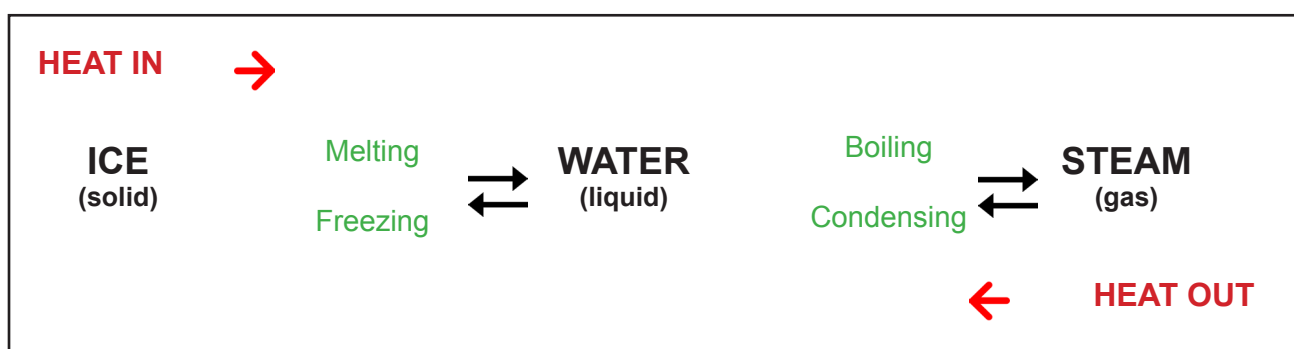
- **change of appearance** – the products look different to reactants.
- **energy changes** – temperature, light, noise emitted.
- **colour change** – one or more of the products has a different colour.
- **gas production** – bubbles of gas observed or smell detected.

Chemical changes are very difficult to reverse and some can never be changed back to the starting materials.

Physical Changes

These are also concerned with energy and states of matter (solids, liquids, gases). Unlike a chemical change, a new substance is not formed.

Changes in state or phase (freezing, melting, boiling, condensation) are physical changes:



Part 3

Look again at the table you used in stage 1 and use scissors to carefully cut out the 'physical and chemical change' cards in columns 3 and 4 and also your answers to 'What changes take place?' in column 2. These will also be used as cards for the activity below.

1. Arrange these cards into three sets on the table where your group is sitting.
2. Each person in turn puts a 'What changes take place?' card in the middle of the table.
3. As a group then decide whether the change is a physical or chemical change by placing one of those cards alongside the 'What changes take place?' card.
4. Discuss this until agreement is reached. You should be able to give reasons and justification for making these decisions.
5. This continues until all 'What changes take place?' cards are used.

Table 1.1 Understanding physical and chemical change

Column 1 Event observed	Column 2 What changes take place?	Column 3	Column 4
Gas is turned on and lit to produce a flame.	The eggshell still looks like an eggshell.	PHYSICAL CHANGE	CHEMICAL CHANGE
An egg shell is cracked.	The egg cooks, changes appearance, colour, shape and becomes solid.	PHYSICAL CHANGE	CHEMICAL CHANGE
An egg is heated in pan over flame.		PHYSICAL CHANGE	CHEMICAL CHANGE
Bread is being heated in a toaster.		PHYSICAL CHANGE	CHEMICAL CHANGE
A man is eating food.		PHYSICAL CHANGE	CHEMICAL CHANGE
A kettle of water is being heated.		PHYSICAL CHANGE	CHEMICAL CHANGE
Sugar is added to tea.		PHYSICAL CHANGE	CHEMICAL CHANGE
Ice is added to hot water.		PHYSICAL CHANGE	CHEMICAL CHANGE
Vitamin C tablet is added to water		PHYSICAL CHANGE	CHEMICAL CHANGE
A man is cleaning his teeth and washing his hands		PHYSICAL CHANGE	CHEMICAL CHANGE
A car starts and moves away and exhaust gases are seen.		PHYSICAL CHANGE	CHEMICAL CHANGE