Science Part-1

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Chapter-1
Chemical Reactions and Equations

Chemical Reactions and Equations

Situations of Daily life

milk is left at room temperature during summer

food is cooked

an iron tawa/pan/nail is left exposed to humid temperature

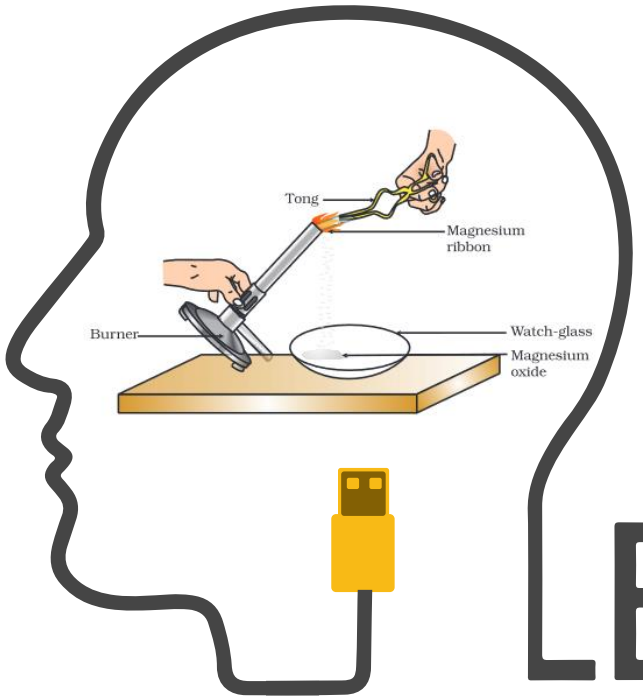
food gets digested in our body

grapes get fermented

we respire

Chemical Reactions and Equations

Activity 1:
Burning of a magnesium ribbon in air and collection of magnesium oxide in a watch-glass.



A1

You may perhaps be wondering as to what is actually meant by a chemical reaction. How do we come to know that a chemical reaction has taken place? Let us perform some activities to find the answer to these questions.

Step1:
Clean Magnesium ribbon (about 3-4 cm long) by rubbing with sand paper.

Why to clean?

Step2:
Hold Magnesium ribbon with pair of tongs.

Step3:
Burn Magnesium ribbon using burner.

Step4:
collect the ash so formed in a watch-glass.

Observation:
You must have observed that magnesium ribbon burns with a dazzling white flame and changes into a white powder. This powder is magnesium oxide. It is formed due to the reaction between magnesium and oxygen present in the air.

LEARNING

Key Points:
Change in state ?
Change in color ?
evolution of gas ?
Change in temperature ?

Chemical Reactions and Equations

Chemical equations

Activity 1:

Magnesium + Oxygen ⟶ Magnesium Oxide 1

Reactants

Product

Mg + O2⟶ MgO 2

Magnesium - Mg
Oxygen - O2
Magnesium Oxide - MgO

- The description of a chemical reaction in a sentence form is quite long. It can be written in a shorter form. The simplest way to do this is to write it in the form of a word-equation [equation 1].
- The substances that undergo chemical change in the reaction, magnesium and oxygen, are the reactants.
- The new substance is magnesium oxide, formed during the reaction, as a product.
- A word-equation shows change of reactants to products through an arrow placed between them. The reactants are written on the left-hand side (LHS) with a plus sign (+) between them. Similarly, products are written on the right-hand side (RHS) with a plus sign (+) between them. The arrowhead points towards the products, and shows the direction of the reaction.
- Is there any other shorter way for representing chemical equations? Yes. It is possible using chemical formulae.
- A chemical equation represents a chemical reaction. If you recall formulae of magnesium, oxygen and magnesium oxide, the above word-equation can be written as in equation 2.
- Count and compare the number of atoms of each element on the LHS and RHS of the arrow. Is the number of atoms of each element the same on both the sides?