Class - X Chemistry

Topic - IMPORTANCE OF pH

The pH plays an important role in our daily life.

* pH in our digestive system -
In our stomach HCl is produced having pH 1.4. It helps in digestion of food in our stomach. Due to some reasons excess of HCl is produced occasionally, which causes indigestion, with pain and irritation. So, in order to cure indigestion some substances called antacids are used. Antacids like magnesium hydroxide (Milk of magnesia), sodium hydrogen carbonate (baking soda) are are used to maitain pH of stomach. These antacids are mild bases having no toxic effects on our body. Antacids react with excess acid and neutralise it.

* pH change causes tooth decay.

There are bacteria present in our mouth. When we eat food containing sugar, these bacteria act on sugar and break down it to form acid like lactic acid. Lactic acid decreases the pH level in the mouth. When pH of mouth goes down below 5.5 tooth decay starts. This is due to the reason that acid attacks

the enamel of teeth and corrode it. Enamel of teeth is made up of calcium phosphate, which gets destroyed by the action of acid produced in mouth.

Therefore, it is suggested to clean mouth thoroughly after eating food by rinsing with clean water and by using toothpastes. Toothpastes contain bases which neutralise the acid formed in the mouth and prevent tooth decay. Tooth decay may also be prevented by changing eating habits such as less eating of sugary foods like sweets, toffees, ice cream, candy etc.

* Plants and animals are sensitive to pH change —

The growth of plants and survival of animals depend on the availability of pH conditions which suit them.

* Soil pH and growth of plants —

Most of the plants grow best when the pH of soil is about 7. If soil becomes too acidic or too basic, the growth of plants gets affected badly. Use of chemical fertilisers affects the pH of soil.

Therefore, chemicals are used to maintain pH of soil.

If soil becomes so acidic, CaO or $Ca(OH)_2$, $CaCO_3$ are used to neutralise the acidity of soil i.e, to increase pH of soil up to 7.

If soil becomes basic, then decaying organic matter like manure or compost is should be added because it contains acidic materials.

* pH change and survival of animals—

The pH plays an important role in the survival of animals as well as humans. Human body can work well within pH range 7.1 to 7.8. If it is disturbed then many ailments can occur.

Aquatic animals survive within a narrow range of pH. Acidic rain decreases the pH of water sources like lake, ponds etc. Decrease in the pH may kill aquatic animals. So Calcium carbonate is often added to acidic lake to neutralise the acid i.e. to maintain pH level.

* Self defence by plants and animals through chemical warfare—

Many animals and plant protect themselves from enemies by injecting painful and irritating acids or bases into their skin.

For example— Honey-bee injects an acidic liquid into the skin of a person when it stings. Ant's sting injects methanoic acid into the skin which causes pain. When wasp stings, it injects alkaline liquid into the skin, which causes pain. During these conditions mild bases or acids are used to stop pain.