

pH Information Sheet

Background

The pH of a stream is a measure of how acid or alkaline (basic) the water is on a scale from 0 to 14. It is a measure of the hydrogen ion (H^+) concentration. Water contains both H^+ and OH^- ions. Pure distilled water contains equal numbers of H and OH ions and is considered neutral (pH 7).

pH measurements between 7 and 0 indicate the solution is acidic and the solution contains more H ions than OH ions. Measurements from 7 to 14 indicate alkalinity and the water contains more OH ions than H ions. From pH 7 to pH 0, water becomes more acidic and from pH 7 to 14, water becomes increasingly alkaline. pH is a logarithmic scale so that for every one unit change (eg from 5 to 4), there is a ten-fold increase in acidity.

The pH of fresh waters usually lies in the range 6.5 to 8.2 although wide variations can occur because of catchment geology. The pH can also be affected by a range of factors including industrial runoff and sewage.

pH Changes in Water

Changes in pH outside the normal range of a water body will cause loss of the more sensitive species. Extremely high and low pH values will lead to the death of all aquatic life.

The most common cause of unnatural changes in pH occurs in catchments which have acid sulphate soils that have been exposed to the atmosphere by mining or urban development. During high rainfall events, these acids can be washed into streams causing sharp rises in pH values for short periods of time. Nutrient pollution can cause excessive growth of algae and other plants and lift the pH values to quite high levels at certain times of the day. These sometimes large variations in pH can reduce the number of species of aquatic organisms normally present in the water body.

Measuring pH

The pH measurement should be made in the field. This is because the pH of a bottled sample will quickly change due to biological and chemical activity in the sample container.