

## What is it?

*In a sample of water, pH is a measure of the concentration of hydrogen ions. pH evaluates how acidic or alkaline the water is. The pH scale ranges from 0 to 14, with 7 being neutral. In north central Victoria the acceptable pH level for the health of aquatic plants and animals in freshwater ecosystems is 6.0 to 8.5. Marine ecosystems are slightly more alkaline than this.*



**Why monitor pH:** A large increase or decrease in pH, outside of the normal range for a stream, can have a dramatic effect on the abundance or diversity of species found within a waterway. Some animals are very sensitive to changes and will migrate out of the system, while others are quite tolerant.

**What causes pH to change:** pH can change in response to a range of factors. Some of these factors include increases in carbon dioxide levels as a result of respiration of plants, or decreases due to photosynthetic consumption of carbon dioxide; chemicals introduced through stormwater; pollutants such as fertilisers, exhaust fumes, and sewage; increases or decreases in salinity; soil type and disturbance.

**What are the environmental impacts:** The affects of altered pH levels on the environment include interruptions to breeding cycles which causes altered development in aquatic species, and decreased health or death of aquatic species, usually occurring from acidic water conditions burning the skin.

**Managing pH levels:** There is a limited amount that can be done to manage the pH of a waterway. Actions that can be taken to manage extreme fluctuations include reducing the primary source of pollution. This includes effective stormwater and sewage management, reducing soil disturbance and improving farming techniques.

**How to measure pH:** A pH meter or pH strips can be used to measure pH. There are no units for pH, it is simply stated as a number, e.g. 8. A value of less than 7 is becoming more acidic and contains more H<sup>+</sup> ions than OH<sup>-</sup> ions, while a value of greater than 7 is becoming more alkaline and contains more OH<sup>-</sup> ions than H<sup>+</sup> ions.

An increase or decrease in pH of one unit equals a tenfold increase or decrease in concentration e.g. an increase from 8 to 9 is 10 times more alkaline, while an increase from 8 to 10 is 100 times more alkaline and so on.