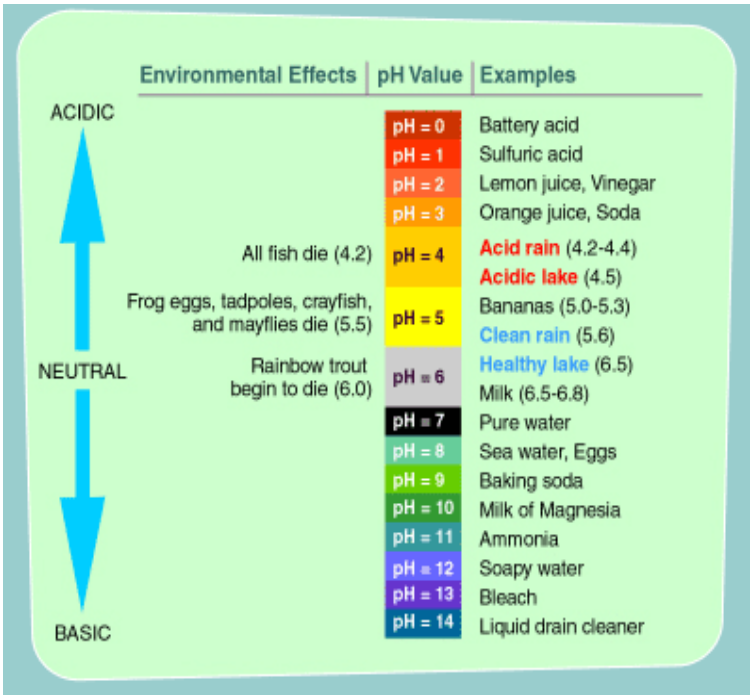
What is pH?

A water molecule is made up of hydrogen ions (H^+) and hydroxide ions (OH^-): $H^+ + OH^- = H_2O$. The hydrogen ion concentration determines the pH of a solution. The term comes from the French "pouvoir hydrogen" literally hydrogen power or hydrogen potential. An acid solution has more hydrogen than hydroxide ions so the net effect when dissolved in water is a lower pH. A base has more hydroxide ions, so the result when dissolved in water is an increase in pH. The pH test allows us to infer how acidic or basic a substance is. The hydroxide and hydrogen ion concentrations are very small absolute numbers, so scientist developed a scale to make reporting and interpretation easier. Since this is a logarithmic scale, for every one change in pH there is a 10-fold change in hydrogen or hydroxide ion concentration. For example, rainwater is slightly acidic with a pH of around 6, while acid rain is ten times more acidic with a pH of about 5.



The carbonate system is one of the most prominent equilibrium systems in natural waters. Aquatic plants also influence pH through photosynthesis and respiration. The landscape of the surrounding watershed can influence pH. Watersheds that contain wetlands or pine forest tend to support waters with a slightly lower pH. Decaying vegetation and other organic matter also produces acids, which leach into nearby waters. Burning fossil fuels and other human activities have a dramatic impact on pH. Coal fired power plants and automobiles emit nitrogen oxides and sulfur dioxides, which react with water vapor in the air to produce nitric and sulfuric acids. Mining, chemical spills, thermal pollution, sewage effluent and agricultural runoff also affect the pH.

pH (**5858**)

1. Collect your water sample using a clean plastic sample bottle then transfer the sample to the test tube.
2. Clean the test tube by rinsing with sample water or distilled water (3-times), then fill with sample water to the 5-ml line (this is the only line on the tube).
3. Add 10-drops of Wide Range Indicator Solution cap and mix thoroughly.
4. Insert the test tube into the Color Comparator; match the sample color to one of the standards. Always match the closest color, do not estimate or average numbers between colors.