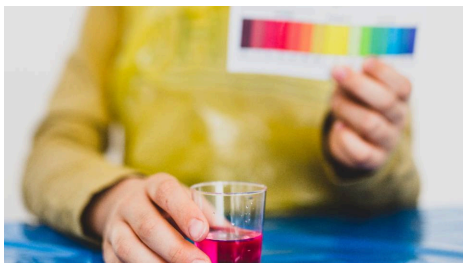


pH



pH stands for “potential of hydrogen.” It is a measure of how many hydrogen ions are in a solution, which indicate how acidic or basic a solution is. pH is measured on a 0-14 scale, with acids having a pH less than 7 and bases a pH greater than 7. Neutral water has a pH of 7. The natural pH of waters in Utah ranges from 6.5-9 [1]. It is normal to have some variation in pH, but large fluctuations likely indicate a source of contamination.

Factors Affecting pH

Many things can influence the pH of a body of water, including the type of minerals the water runs through, photosynthesis of aquatic plants, rainwater, and stormwater runoff. For example, water that comes in contact with granite is more acidic than water that falls on chalk or limestone [2]. Rain water is generally acidic from dissolving gases as it falls. Human influences such as waste discharges can also have an impact on water body pH.

Effects of pH Changes

Changes in pH outside of normal fluctuations can have severe detrimental effects on fish and plants. Aquatic life have adapted to live in a specific environment and habitat. Extremes in pH cause fish to produce increased mucus, damage gill tissue, incur hemorrhages, and may cause death [3]. pH values above 9.2 and below 4.8 have been shown to kill carnivorous fish such as salmon and trout, while pH values above 10.8 and below 5 have been proven fatal to soft-finned fishes such as carp [4].

Fluctuating pH affects more than fish populations. Acidic water is a more effective solvent for heavy metals than neutral water [5]. Acidic water has been found to have higher values of zinc, manganese, and copper than waters with a healthy pH [6]. Lower trophic level species, like ciliated protozoa, have also been shown to decline with lower pH [7].

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