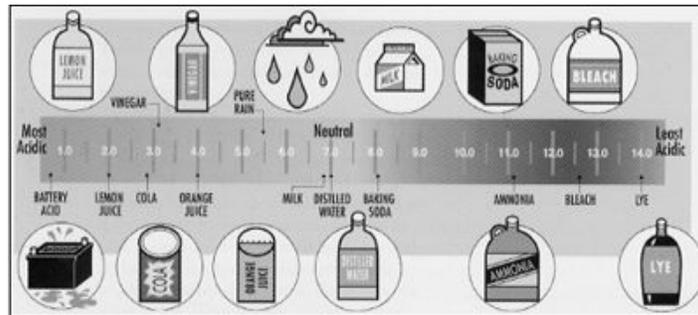


# SOLID LIQUID VAPOR MORE PROPERTIES OF WATER

## Water Quality

Water quality is judged by the types, and levels of concentration, of many constituents that may be present in the water. Some of these constituents occur in nature, and some are generated by humans. Water quality scientists and technicians test for hundreds of chemicals and conditions to ensure high quality water.

PH is one of the most common water quality tests performed. PH indicates the sample's acidity, but is actually a measurement of the activity of hydrogen ions in the sample. PH measurements run on a scale from 0-14, with 7.0 considered neutral. Solutions with a pH below 7.0 are considered acids. Solutions with a pH above 7.0, up to 14.0 are designated bases.



Changes in pH may result from chemical changes in the water. For example: when carbon dioxide is removed from water, pH increases; when carbon dioxide is added to water, pH decreases. Active plants and animals produce carbon when they respire. Carbon dioxide dissolves in water to form carbonic acid. Thus, respiring plants and animals increase the acid content of water and lower the pH level.



**CO<sub>2</sub> dissolved in H<sub>2</sub>O**



## **Small change = Big change**

The pH scale logarithmic, so every one-unit change in pH actually represents a ten-fold change in acidity. In other words, pH 6 is ten times more acidic than pH 7; pH 5 is one hundred times more acidic than pH 7.

Water quality scientists also test for total dissolved solids or TDS. When the rain falls to earth, the water starts to dissolve the minerals and salts in the rocks and soil. These dissolved minerals are called total dissolved solids. Chemically, dissolved mineral salts have atomic structures that make them good – conductors of electricity. As a result, the TDS level of water affects its ability to conduct electricity. The more conductive a water sample is, the higher its level of TDS.

Microorganisms (tiny plants and animals which are difficult, or impossible to detect without a microscope) may also be present in a water source. They include algae, beneficial bacteria that decompose wastes, and harmful bacteria such as those that cause cholera. Water filtration plants include a step to insure that the harmful bacteria are not present in your drinking water.