Alkalinity

Did you ever get an upset stomach? It happens when your stomach releases too much acid during digestion. One cure is an antacid tablet. An antacid tablet reduces the acidity and settles things down. Water can also become too acidic from things like acid precipitation or acid drainage from an old mine.

The alkalinity of water is its ability to resist a decrease in pH. It is known as buffering capacity. It measures the amount of carbonates in the water. Carbonates come from limestone and other rocks. Carbonates are the same as that antacid tablet in your stomach. They reduce the acidity of the water.

Why does it matter?

Water in an area with limestone will have a better buffering capacity to resist acid rain. These waterways are known as “limestone streams.”

Water in other areas may have a low pH if there is no limestone around. These waterways are known as “freestone streams.”

| Alkalinity (Calcium carbonate:) CaCO₃ |
|---------------------------------------|------------------|
| **Freestone Streams**                 | **Limestone Streams** |
| 10 mg/l or less: Very sensitive to acid precipitation | 75 mg/l or greater |
| 10-20 mg/l: Somewhat sensitive to acid precipitation | |
| 20 mg/l or greater: Not sensitive to acid precipitation | |

Former PFBC employee Sue Herzing taking a water sample from a lake.

WCO Vance Dunbar taking a water sample to test the water quality of a stream.
You may have noticed that some streams are clear while others seem murky. Water carries particles like sand, silt, clay, plankton and pollution. The cloudy look from these particles and plankton is called turbidity. The clarity and how much light passes through is called transparency.

Scientists have special tools to measure turbidity or transparency. A Secchi disk is one tool used in deep, slow-moving water. The depth when it becomes invisible is the Secchi depth. Shallow depth means unclear water, deeper depth means clearer water.

Why does it matter?

Too many particles make it hard for fish to find food and avoid predators. Particles can block sunlight and affect plant growth. Also, particles absorb heat and increase water temperature. High turbidity can indicate pollution, because pollutants and bacteria can attach to particles.
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