

A Primer on Water Quality

What is in the water?

Is it safe for drinking? Can fish and other aquatic life thrive in streams and lakes that are affected by human activities? What is the water quality? To answer these questions, it is helpful to understand what “water quality” means, how it is determined, and the natural processes and human activities that affect water quality.



What do we mean by “water quality”?

Water quality can be thought of as a measure of the suitability of water for a particular use based on selected physical, chemical, and biological characteristics. To determine water quality, scientists first measure and analyze characteristics of the water such as temperature, dissolved mineral content, and number of bacteria. Selected characteristics are then compared to numeric standards and guidelines to decide if the water is suitable for a particular use.

How is water quality measured?

Some aspects of water quality can be determined right in the stream or at the well. These include temperature, acidity (pH), dissolved oxygen, and electrical conductance (an indirect indicator of dissolved minerals in the water). Analyses of individual chemicals generally are done at a laboratory.



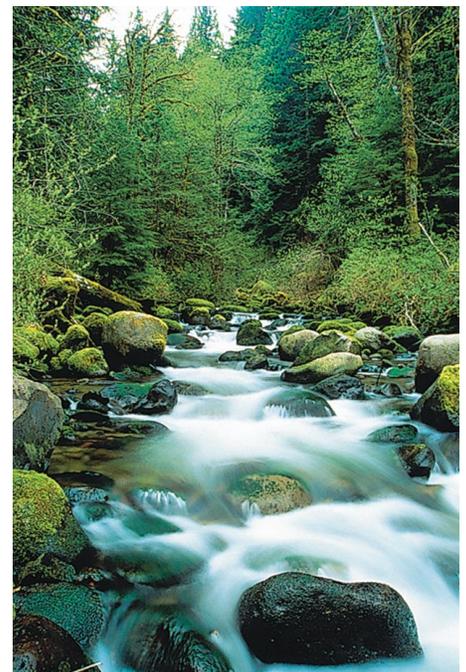
Why do we have water-quality standards and guidelines?

Standards and guidelines are established to protect water for designated uses such as drinking, recreation, agricultural irrigation, or protection and maintenance of aquatic life. Standards for drinking-water quality ensure that public drinking-water supplies are as safe as possible. The U.S. Environmental Protection Agency (USEPA) and the States are responsible for establishing the standards for constituents in water that have been shown to pose a risk to human health. Other standards protect aquatic life, including fish, and fish-eating wildlife such as birds.

How do natural processes affect water quality?

Natural water quality varies from place to place, with the seasons, with climate, and with the types of soils and rocks through which water moves. When water from rain or snow moves over the land and through the ground, the water

may dissolve minerals in rocks and soil, percolate through organic material such as roots and leaves, and react with algae, bacteria, and other microscopic organisms.



Water may also carry plant debris and sand, silt, and clay to rivers and streams making the water appear “muddy” or *turbid*. When water evaporates from lakes and streams, dissolved minerals are more concentrated in the water