

Office of Water  
Environmental Protection Agency  
Washington, D.C. 20460

Office of Water

# EPA Developing Criteria To Protect Our Nation's Waters





## Water Quality

Lakes, streams, rivers, wetlands--our nation's waters are a national treasure. Clean water supports an incredible diversity of plant and animal life, and it is a source of drinking water and food that sustains human life. It is a valuable resource that is used for many other activities, such as boating and swimming. It is also used by industry and for agricultural purposes. For these, and many more reasons, the U. S. Environmental Protection Agency (EPA), states\*, and Indian tribes\*, carry out programs to protect the quality of the nation's waters.



### Water Quality Standards

Water quality standards are the foundation of the nation's surface water quality protection program. States set water quality standards for all surface waters within their boundaries. Water quality standards form the legal basis for controls on the amount of pollutants entering these waters from sources such as industrial facilities, wastewater treatment plants, and storm sewers. They are also the technical basis for reducing runoff from rural and urban areas. Water quality standards comprise three components, each of which are specific to a defined body of water:

- The Use (such as swimming and boating) designated for the water body

\*The terms state and Indian tribe, as used in this brochure, refer to the 50 states, U. S. Territories, the District of Columbia and Indian tribes that are authorized to administer the water quality standards program.

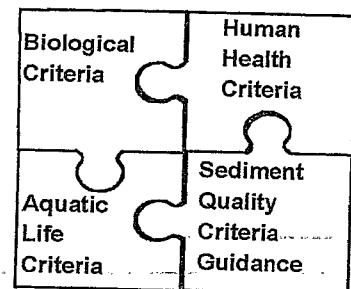
- Water quality criteria, or limits on chemical concentrations that may be present in the water body
- Antidegradation Policy to protect existing water quality

This brochure focuses on the second component: water quality criteria.

### Water Quality Criteria

Many types of microscopic plants and animals such as plankton, water beetles, and insects that live in or on the water, serve as food for small fish. Small fish are eaten by larger fish which, in turn, are consumed by even larger fish. These large fish may ultimately be consumed by humans. All life along this food chain is dependent on the water environment and it is for this reason that the quality of the nation's surface waters must be protected.

The Clean Water Act directs EPA to develop criteria for water quality that accurately reflect the latest scientific knowledge about the effects of pollutants on aquatic life and human health. In developing these criteria, EPA examines the effects of specific pollutants on plankton, fish, shellfish, wildlife, plant life, aesthetics, and recreation in any body of water. This includes specific information on the concentration and dispersal of pollutants through biological, physical, and chemical processes as well as the effects of pollutants on biological communities as a whole.



States may use the criteria that are developed by EPA to help set water quality standards that protect the uses of their waters or they may develop their own water quality criteria. EPA publishes human health and aquatic life criteria and is currently developing sediment and biological criteria. These criteria are complementary: each is designed to protect specific types of living organisms or ecological systems from the adverse effects of pollution.

### Human Health Criteria



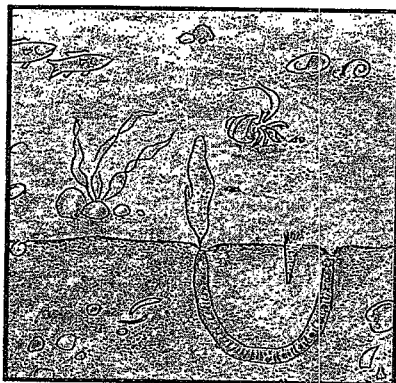
People can potentially be exposed to water pollutants when they drink untreated surface water or eat fish, shellfish, or wildlife that have been contaminated by pollutants in surface waters. To reduce the risk to humans from these sources, EPA scientists research information to determine the levels at which specific chemicals are not likely to adversely affect human health. EPA publishes these levels as human health criteria that the states use, along with other information, to set allowable concentrations of pollutants in their water quality standards. In this way, EPA and the states work together to protect people from exposure to harmful pollutants in surface waters.

### Aquatic Life Criteria

Aquatic life criteria provide protection for plants and animals that are found in surface waters. EPA develops these criteria as numeric limits on the amounts of chemicals that can be present in river, lake, or stream water without harm to aquatic life. Aquatic

life criteria are designed to provide protection for both freshwater and saltwater aquatic organisms from the effects of acute (short term) and chronic (long term) exposure to potentially harmful chemicals. Aquatic life criteria are based on toxicity information and are developed to protect aquatic organisms from death, slower growth, reduced reproduction, and the accumulation of harmful levels of toxic chemicals in their tissues that may adversely affect consumers of such organisms.

#### Sediment Quality Criteria Guidance



In a healthy aquatic community, sediments provide a habitat for many living organisms. Worms, plants, and tiny micro-organisms living in or on the sediment sustain the fish and shellfish that, in turn, nourish larger fish, wildlife, and man.

Controlling the concentration of pollutants in the sediment helps to protect bottom dwelling species and prevents harmful toxins from moving up the food chain and accumulating in the tissue of animals at progressively higher levels. This is particularly important at the lower levels of the food chain because the concentration of many pollutants may increase at each link in the food chain. A pollutant level in the sediment that does not harm snails or small fish may bioaccumulate in the food chain and become very harmful to larger fish, birds, mammals, wildlife, and people.

EPA develops sediment quality criteria

guidance on the concentrations or amounts of individual chemicals that can be present in river, lake, or stream sediments and still protect sediment-dwelling organisms --and ultimately animals higher in the food chain--from the harmful effects of toxic pollutants.

#### Biological Criteria



The water body depicted inside this brochure is shown in its natural condition. It is free from the harmful effects of pollution, habitat loss, and other negative stressors. It is characterized by a particular biological diversity and abundance of organisms. This biological integrity--or natural structure and function of aquatic life--can be dramatically different in various types of water bodies in different parts of the country. Because of this, EPA is developing methodologies that states can use to assess the biological integrity of their waters and, in so doing, set protective water quality standards. These methodologies will describe scientific methods for determining a particular aquatic community's health and for maintaining optimal conditions in various bodies of water.

#### For More Information

For information about your state's water quality standards contact the state or Indian tribal agency responsible for water quality. You may also contact the U. S. Environmental Protection Agency, Office of Water, Office of Science and Technology, (Mail Code 4301), Washington, D. C. 20460. Information related to water quality standards and criteria may also be obtained by visiting the Office of Water, Office of Science and Technology's Home Page at: <http://www.epa.gov/OST>.