

Turbidity / Dissolved O2

Turbidity

Turbidity is simply how cloudy the water is. Turbidity is the condition resulting from suspended solids in the water, including silts, clays, industrial wastes, sewage and plankton.

It is caused by soil erosion, excess nutrients, various wastes and pollutants, and the action of bottom feeding organisms which stir sediments up into the water.

Such particles absorb heat in the sunlight, thus raising water temperature, which in turn lowers dissolved oxygen levels.

They also prevent sunlight from reaching plants below the surface. This decreases the rate of photosynthesis, so less oxygen is produced by plants.

As a consequence of the particles settling to the bottom, shallow lakes fill in faster, fish eggs and insect larvae are covered and suffocated, gill structures get clogged or damaged. Suspended materials can also reduce resistance to disease in fish, lowering growth rates, and affecting fish egg and larval development.

Turbidity may harm fish and their larvae. The suspended solids may contain acidic soil, high levels of phosphates, high levels of nitrates, and a host of other naturally and human caused pollutant and nutrient introduction.

The suspended particles also help the attachment of heavy metals and many other toxic organic compounds and pesticides.

Dissolved O2

An adequate supply of dissolved oxygen gas is essential for the survival of aquatic organisms. A deficiency in this area is a sign of an unhealthy river. The atmosphere is a major source of dissolved oxygen in river water. Waves and tumbling water mix atmospheric oxygen with river water. Oxygen is also produced by rooted aquatic plants and algae as a product of photosynthesis.

There are physical factors that can lessen the amount of oxygen dissolved in water. High temperatures, which may result from high turbidity and from the return of industrially used water to the river. Dry periods also decrease flow which reduces the amount of oxygen churned into the water.

Bacteria which decompose plant material and animal waste consume dissolved oxygen, thus decreasing the quantity available to support life. Ironically, it is life in the form of plants and algae that grow uncontrolled due to fertilizer that leads to the masses of decaying plant matter.

Too much dissolved oxygen is not healthy, either. Extremely high levels of dissolved oxygen usually result from photosynthesis by a large amount of plants. Great uncontrolled plant growth, especially algal blooms, is often the result of fertilizer runoff. This phenomenon is called cultural eutrophication.

Dissolved oxygen levels in sections of the river in which plants are the major contributor of oxygen fall sharply at night because photosynthesis ceases.