

Name _____

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What Is Turbidity?

If you visited the Mississippi River in Illinois or states further south, you would be able to see only about 20 to 38 centimeters beneath the water's surface. On the other hand, if you visited some lakes in Alaska, you would be able to see 30 to 37 meters below the surface. The degree to which a body is not clear is called **turbidity** (ter BIHD ih tee). The Mississippi River is very turbid, but those Alaskan lakes have low turbidity.

What Causes Turbidity?

Turbidity is a measure of how much material is suspended in water. A **suspension** (suh spehn chuhn) is produced when solid matter is dispersed throughout a liquid. All bodies of water are turbid to some degree, even those Alaskan lakes, though suspended particles are sometimes too small or too few in number for humans to notice. Common types of matter suspended in water include small pieces of soil, sewage, industrial waste, and microorganisms.

Any natural or artificial process that places suspended matter in water is a cause of turbidity. Plant root systems normally keep soil from being blown or washed into a river or stream. When forest fires and poor agricultural practices destroy or remove plants from the soil, erosion of the land may result. **Erosion** (ih ROH Zhuhn) is the tearing down and transporting of solid matter by wind, water, or ice. By the process of erosion, soil may be washed or blown into a river or stream. Tornadoes, earthquakes, and floods also can place suspended matter in water.

Living organisms such as plants and animals do add suspended matter to waterways. For example, small portions of decomposing leaves and body waste from birds and animals may wind up in the water.

Many human activities around waterways increase turbidity. People sometimes use waterways to dump garbage and to dispose of waste from sewage systems. River traffic, both commercial and recreational, may erode the banks of the river and agitate the sediments on the river bottom. Dredging waterways to maintain a proper water depth for barges and ships increases turbidity.

Is Turbidity in Water Good or Bad?

There is no single answer to the question of whether turbidity is good or bad. Some aquatic species survive well in highly turbid water. The Mississippi

River is very turbid, yet its waters hold abundant life. Some forms of aquatic life can survive only in water with low turbidity.

Generally, humans prefer less turbid water. For aesthetic, recreational, and health reasons, most of us like water sparkling clear. This preference for clear water has undoubtedly helped humans survive, because turbidity can mean that harmful contaminants are present in the water.

High turbidity can be an indicator of poor water quality. Suspended solids in drinking water can indicate and support the growth of harmful microorganisms. Suspended solids also can interfere with chemical testing and purification of water.

At high levels of turbidity, water loses its ability to support aquatic life. The suspended solids prevent sunlight from reaching aquatic plants. Without light, photosynthesis cannot take place. When photosynthesis is curtailed, green plants cannot produce oxygen; this reduces the concentration of dissolved oxygen in the water. Dissolved oxygen is necessary for fish survival and other aquatic life.

Turbidity changes may disturb bottom-dwelling species, such as clams. Increased turbidity causes more solids to settle to the bottom of a river or stream, especially where the flow rate is slow. As solid matter settles, it may cover bottom-dwelling plants and animals, reducing their ability to survive and reproduce. The clamming industry in the Mississippi River has decreased because solids have covered many of the clam beds.

What Can Be Done to Reduce Turbidity?

Many of the causes of high turbidity can be reduced by people initiating better environmental practices. For example, people can practice good agricultural techniques and good forest fire prevention so that soil erosion is kept to a minimum. People can replenish plants and trees that have been destroyed by forest fires, tornadoes, or floods. People can become more careful with the disposal of their wastes. These are but a few examples that can reduce turbidity. Perhaps you can think of more controls and practices that could be instituted to decrease turbidity.

Questions

1. Describe in your own words what is meant by turbidity.
2. Check the definitions of *turbidity* in a dictionary. Do any of these definitions correspond to the way the word is used in discussing water quality? Explain.
3. High turbidity in a river or stream is not very attractive. What are some additional adverse effects on the environment and on aquatic life?

DRIFTWOOD

Recently a group of students planted willow seedlings along the eroded bank of a mid-western river hoping that some of the seedlings would take root and grow, thus keeping the river bank from eroding further.