

Turbidity

What is turbidity?

Turbidity is a measurement of how cloudy the water is in a lake or river. Anything that makes water cloudy will increase turbidity. High turbidity can be caused by silt, mud, algae, plant pieces, melting glaciers, sawdust, wood ashes or chemicals in the water. Turbidity increases in river and lake water mainly because of floating algae, soil washing from the banks into the water, fires, or from industrial activity such as mining, logging or dredging. The picture below on the left shows water flowing the margin of a melting glacier on Ellesmere Island, Nunavut. The water is very turbid due to lots of suspended mud - it appears brown and dirty. In contrast, the picture on the right shows the clear, low-turbidity water of Lake Hazen.



Photo credits: Jenny Graydon

Turbidity in rivers and lakes can vary throughout the seasons. For example, large rivers can be very low in turbidity during the winter below the ice, but turbidity usually increases dramatically during snowmelt when water carries soil off the land into rivers and streams. The picture below shows the Mackenzie River Delta during spring flood. Notice the turbid river water flooding the nearby lakes and making their water appear brown as well. Lakes can also become more turbid in the summer as algae and small animals grow quickly and increase their activity.



Photo credit: Faye Hicks

High turbidity in rivers can be caused by natural occurrences such as heavy rains, snowmelt, ice scour or windstorms. However, high turbidity in rivers can also be caused by human activity in upstream areas. For example, clear cutting causes soil to wash away into rivers and increase turbidity. Mining can also release large amounts of sediment and rock material if not properly contained, and this material can wash into nearby rivers, lakes, and streams, and increase turbidity.

Why does turbidity matter?

High turbidity, depending on the season, can have negative effects on a lake or river. Floating algae in lakes in the later summer can block out light that other plants need to grow. This can have consequences for animals, including fish that feed on these plants. High turbidity because of algae can also affect fish because when large amounts of algae die, oxygen is used up to decompose them, leaving less oxygen for the fish. Large amounts of suspended soils or clay may clog the gills of fish and kill them directly. High turbidity can also make it difficult for fish to see and catch prey, and it may bury and kill eggs laid on the bottom of lakes and rivers. Pollutants and harmful bacteria may also be attached to particles that cause turbidity.

How do we measure turbidity?

Turbidity is best measured directly in the water you are monitoring. A turbidity sensor shines light into the water and measures how quickly that light is scattered by particles in the water. The results are reported in units called Nephelometric Turbidity Units or NTUs. The higher the NTUs, the higher the turbidity of the water is.

References/For More Information

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