Name

What Is Meant by Total Solids?

The term ***total solids*** refers to all solid matter that is either suspended or dissolved in water. Turbidity is the result of only suspended solids; it does not include dissolved solids.

How are dissolved solids different from matter that causes turbidity? Dissolved particles are mixed with the water evenly, so every part of the solution has the same composition. **Dissolved solids** cannot be separated from water by sedimentation or flocculation. Examples of solutions include table sugar or salt dissolved in water. A solid that has dissolved in water is not visible even with the aid of a microscope.

How Do Dissolved Solids Get into a Body of Water?

Solubility (sahl yuh BIL uht ee) refers to the ability of a substance to dissolve in another substance. A large number of chemicals are soluble (dissolve) in water. Nitrates, for example, are very soluble. If sodium nitrate or potassium nitrate are in the soil, rain will dissolve them. The water will carry the dissolved nitrates into nearby waterways. In the same manner, dissolved chlorates, chlorides, and sulfates may also be washed into a river or stream.

How Are Total Solids Measured?

The amount of total solids is determined by evaporating a measured quantity of water to dryness and then weighing the residue. The residue is composed of both the dissolved and the suspended matter. The quantity of total solids in water may be reported in grams per liter (g/L) or milligrams per liter (mg/L). Mg/L is often referred to as parts per million (ppm).

Example: 1L of river water is allowed to evaporate, leaving 4 grams of residue. The amount of total solids would be 4 g/L or 4000 mg/L or 4000 ppm.

The Effect of High Levels of Total Solids

Drinking water should have no more than 0.5 grams of total solids per liter. Drinking water with higher levels tends to have an unpleasant taste, may induce health problems, and is unfit for many household and industrial uses. A high level of total solids in water may also adversely affect aquatic plans and animals, depending on what the solids are.

Questions

1. What is the major difference between turbidity and total solids?
2. Describe how the amount of total solids in water is determined.
3. What units are used to measure total solids?
4. What maximum level of total solids is acceptable in drinking water?

Problems

1. When 1.00 liter of water from a stream near your school was evaporated, 0.75 grams of total solids remained. Express the amount of total solids in the water in mg/L and ppm.
2. While running a total solids test, students found that only 0.8 L of water had been collected. When the water was evaporated, 0.65 g of residue remained. Express the amount of total solids in the water in mg/L and in ppm.