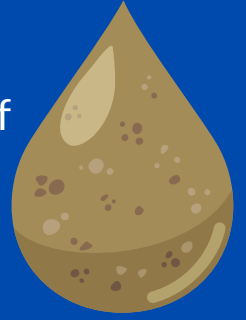


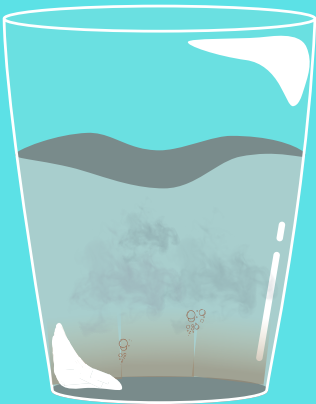
## WHAT IS TOTAL DISSOLVED SOLIDS?

Total **dissolved** solids (TDS) is a measure of the concentration of all substances present in water in a dissolved state. This differs from total **suspended** solids, or the concentration of particles that are *not* dissolved and can therefore be caught in a filter.



Under base flow conditions (when stream water levels are not elevated), the water in a stream or lake comes mostly from groundwater. Groundwater often picks up minerals from the bedrock it flows through. These minerals, as well as potentially fertilizers, road salt, detergents, water softeners, urban runoff, or animal and human waste, make up TDS.

## WHY DO WE MEASURE TOTAL DISSOLVED SOLIDS?



Many things, like salt or minerals, can be dissolved in water. The water quality indicator "total dissolved solids" (TDS) measures the concentration of these substances in the water. Because of this, it is related to many other indicators, including conductivity, salinity, chloride, water hardness, and alkalinity.

A high concentration of TDS is not *inherently* dangerous; for instance, bicarbonates can make up a portion of TDS, and these can improve a waterbody's resilience to pollution (see CSI's Alkalinity Fact Sheet).

However, certain dissolved substances that cause high TDS can also have negative impacts. It is difficult for aquatic life to adjust to fluctuations in TDS, and water with high TDS may contain dissolved substances that give water a bad taste. Many potential components of TDS, like salts and heavy metals, can be tied to pollution. Its relationship to so many other water quality indicators makes TDS an excellent *overall* water quality indicator, particularly for a single measurement. If TDS is high, it is a signal that more analyses may be necessary to determine which substances are present and identify potential pollution sources.

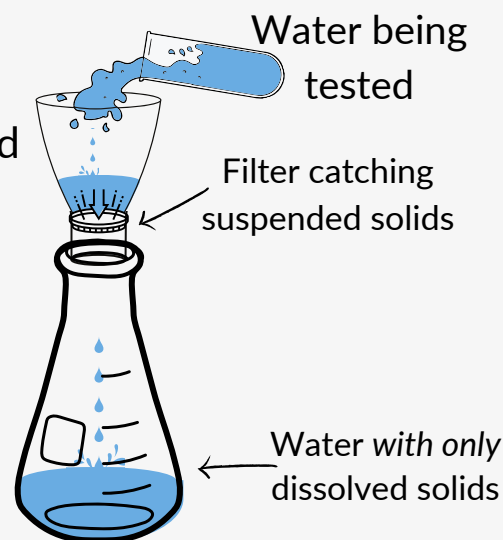
# HOW DO WE MEASURE TOTAL DISSOLVED SOLIDS?

Total dissolved solids is measured with similar tools and processes to total suspended solids: both metrics involve filtering a water sample and measuring the mass and concentration of solids in a water sample.

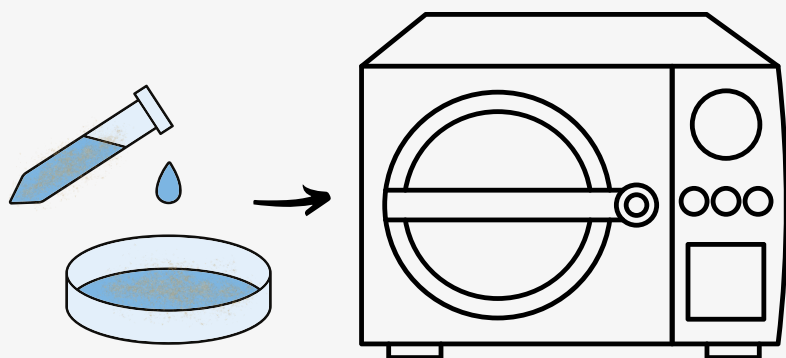
To measure *dissolved* solids, a dish is dried and weighed, then the water sample is filtered to remove any suspended solids. The now-filtered sample is added to the dish and evaporated, and the dish is dried and weighed again.

**First**, the water sample is passed through a filter.

The water that passes through, now free of suspended solids, is poured into a pre-weighed dish. Like with suspended solids, knowing the weight of the dish beforehand is important so it can be compared to its weight after evaporating the water sample.

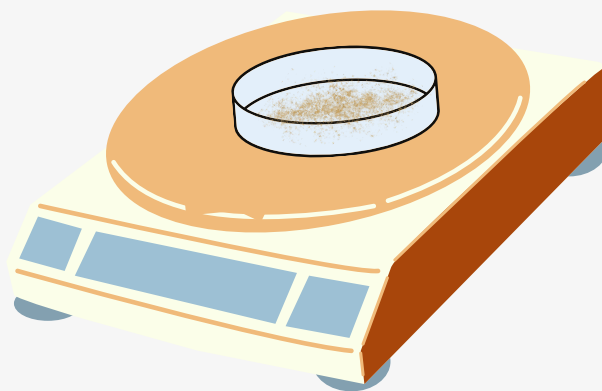


**Then**, the dish with the now-filtered water is dried until all the water evaporates, leaving only the dissolved solids behind.



A drying oven where the water from the sample is evaporated

**Finally**, once the dish has dried, it is weighed again. CSI chemists calculate "total dissolved solids" from the weight of the dish with residue *after* the water sample has been dried onto it minus the weight of the dish beforehand.



Knowing the weight of the solids and the volume of the water sample allows them to calculate the *concentration* of solids in milligrams per liter (mg/L). While TDS levels can vary widely, levels in drinking water should be below 500 mg/L.