



Total dissolved solids

by Jeff Wahl

If a glass of water is held up and it is colourless, crystal clear and has no odour would you think there is much wrong with the water? Total dissolved solids (TDS) are completely dissolved in a water supply and generally invisible to the human eye. They are not associated with a bacterial test and are not tested for at the public health unit when you submit a water sample. At certain levels they pose a risk and are not a recommended drinking water source according to the Canadian Drinking Water Guidelines.

SCOPE

TDS is made up of inorganic salts and small amounts of organic matter that are dissolved in water. These are usually calcium, magnesium, sodium, potassium, carbonate, bicarbonate, chloride, sulphate and nitrates. They can be found in drilled or dug wells and can be influenced where agriculture is predominant. Areas with excessive road salt usage can give rise to runoff in cases where salt makes its way into the ground water and elevates TDS levels. Please read the case study below for another example of extreme TDS in water.

CASE STUDY #4: WELL WATER AND A REAL ESTATE TRANSACTION

A home purchased on Manitoulin Island in Ontario obtained its water from a drilled well on the property with an existing water softener and ultraviolet disinfection system. The realtor submitted a water sample to the local health unit for analysis as one of the requirements for the sale, the results were negative for bacterial contamination and the sale was completed. The new owner moved in and soon after noticed that the water left an extremely dry or “tacky” feeling and had a terrible taste. They contacted a water treatment company and a water analysis was completed for water hardness and total dissolved solids as a preliminary indicator of the well water quality. The results were astonishing, the hardness level was 468 grains per gallon with the TDS measuring 11,500 parts per million (ppm).

All testing was conducted by an accredited

laboratory. The Canadian Drinking Water Guidelines recommendation for TDS is less than 500 ppm. The water was not safe for human consumption and had passed the health unit test. The homeowner was left with no choice but to pursue alternative water sources.

EDUCATION

People will often investigate when the water has a foul odour or leaves stains on fixtures. They trust a health unit test as part of a sale or routine water testing and are often completely unaware of the potential for dissolved solids to be present at levels that are not recommended for consumption. The test for TDS can be done using a portable hand-held meter available for purchase through various retailers or by taking a water sample to a water treatment dealer who has more advanced meters for identifying the level in water. Water testing laboratories also will provide this service as a standalone test or as part of a drinking water analysis. One of the best ways to identify the presence of elevated dissolved solids levels is to freeze the water. Once frozen, the dissolved solids will appear as “white flaking” or as discoloured white ice. This is easily spotted in ice cubes as they will “shrink” in size and leave white flakes in the tray.

RECOMMENDATION

Total dissolved solids are primarily in ground water sources or surface water that is under the influence of ground water or runoff. They are not visible to the human eye. Consult a qualified water treatment professional for advice on testing and treatment equipment if you suspect they may be present in your water.

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