Prince Edward Island
Fisheries, Aquaculture and Environment

Water wise

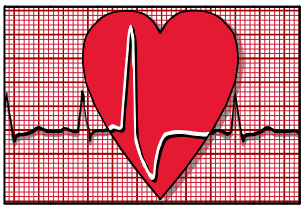
CHLORIDE

Chloride is a major constituent of most waters. It is normally present in low concentrations in surface waters, while groundwater will contain varying amounts of chloride depending on the surrounding geology.

Chloride is widely distributed in the environment, generally as sodium chloride (NaCl), potassium chloride (KCl) and calcium chloride ($CaCl_2$). The weathering and leaching of sedimentary rocks and soils and the dissolution of salt deposits release chlorides into water.

Chloride in the form of sodium chloride and calcium chloride is used extensively for snow and ice removal. In various other forms it has a number of commercial and industrial applications and is used in wastewater treatment.

Chloride in drinking water is generally not harmful to human beings until high concentrations are reached, although it may be harmful to some people suffering from heart or kidney disease.



Restrictions on chloride concentrations in drinking water are generally based on palatability requirements rather than on health. The *Guidelines for Canadian Drinking Water Quality 1989* has set the aesthetic objective for chloride in drinking water at 250 mg/L.

Chloride in drinking water may impart a salty taste at concentrations as low as 100 mg/L, however, the limit of 250 mg/L is considered the taste threshold for the average individual.

Besides imparting a salty taste, chloride can affect the taste of coffee brewed in water containing a high concentration of chloride. Chlorides also appear to exert a significant effect on the rate of corrosion of steel and aluminum and can therefore affect some metals used in water handling systems.

In addition to chloride entering the groundwater from leaching of sedimentary rock and salt deposits, other sources of contamination are road salt application and storage, sewage and industrial discharges, leachate from dumps and landfills, irrigation for agricultural purposes and saltwater intrusion.

While a sudden increase in the chloride content of a water supply may not dramatically affect the water quality, the increase may indicate a connection with a sourc of contamination and the increasing chloride levels should be investigated further.

Treatment techniques for the removal of chloride from the drinking water include demineralization processes such as reverse osmosis, electrodialysis, ion exchange, distillation or separation by freezing. Another method of removing chloride from the drinking water would be the construction or reconstruction of a water well. This frequently involves the installation of additional casing beyond the length (depth) normally required by regulation.

Fisheries, Aquaculture and Environment, Water Resources Division, (902) 368-5044, www.gov.pe.ca

Revised April 2000