

Water wise

MANGANESE

Manganese is found as oxides, carbonates and in other chemical forms in the soil bedrock in Prince Edward Isl. Manganese has similar cherr properties to iron and, like irc can be found in both the red and oxidized states in groundwater.

In the oxidized state, manganese is only very slight in groundwater. However, in groundwater which is under reduced conditions, manganese (Mn^{2+}) can be leached from Island soils and bedrock and occur in relatively large concentrations.



Manganese can become a problem in water supplies at concentrations as low as 0.02mg/L, while the aesthetic objective is set at 0.05 mg/L. Some effects of high manganese concentrations are discoloured water, unpleasant or metallic taste, stains on plumbing fixtures and laundry, encrustation in water pipes, deposits on food during cooking and the promotion of the growth of microorganisms in water pipes (such as manganese bacteria).



Manganese deposits can cause blackish, purplish or yellowish colour to appear and, in some cases, small specks or substances can be seen floating in the water. The stains caused by manganese are more annoying and harder to remove than those caused by iron.

Manganese, as with iron, is considered necessary for good health, and there are no reported adverse health effects due to the intake of small amounts of manganese. Manganese may become a health hazard at concentrations of more than 20 mg/L.

Manganese can be removed from water supplies by the same methods as iron.

Insoluble manganese in the form of sediment or precipitates may be removed from wells by any of the following methods.

- ◆ Heavy pumping for a minimum 12 hour period. If the situation improves, repeat.
- ◆ Lowering or raising the pump intake (foot valve) by at least 10 feet.
- ◆ Installing a sediment filter after the storage tank.
- ◆ Chemical treatment using the process of oxidation, precipitation, chlorination and filtration. This requires the purchase of fairly expensive equipment.
- ◆ Constructing or reconstructing a water well. This frequently involves adding more casing than normally required by regulation.

If soluble manganese (dissolved) is the cause, then the following methods may be helpful.

- ◆ Installing an ion exchange domestic water softener which will handle a combined iron and manganese concentration of up to 5.0 mg/L.
- ◆ Chemical treatment using the processes of oxidation, precipitation, chlorination and filtration. A combination of automatic chlorination and fine filtrations is one effective method, as well as ion exchange with green sand, or treatment with potassium permanganate followed by filtration.
- ◆ Constructing or reconstructing a water well.