

## Manganese Analysis (Community)

- **Purpose:** To determine the Manganese concentration in drinking water. Determination will be done by using a test strip method. You will compare the different results, you will also see if the water meets the Canadian Drinking Water Guidelines.

Manganese occurs naturally in the environment, but humans can add to these levels through the burning of fossil fuels, mining, manufacturing, as well as some manganese bearing pesticides that are used by the agricultural community. Some of the natural food contributors of Manganese are; grains, rice, nuts, eggs, Soya beans, and green beans.

Manganese is one of the three essential toxic elements that our body requires to function properly, however if Manganese concentration becomes too high in our body, it can have serious negative health effects. Manganese deficiencies can cause health problems like; obesity, blood clotting, birth defects, poor bone development, and serious neurological disorders. Some of the health problems related to manganese poisoning are; Parkinson's disease, bronchitis, hallucinations, forgetfulness, and in men it can cause impotence.

A 0.05 mg/L Canadian Guideline Limit Sample will be included for quality control purposes; this is also the limit for Manganese according to the Canadian Drinking Water Guidelines.

### Materials:

- 1 - 0.05 mg/L Canadian Guideline Limit Sample (CGLS).
- 2 - Test strip packets.
- 1 - Colour charts to determine Manganese concentration.
- 2 - Drinking glasses.

### Method:

1. Label the beakers sample, and CGLS.
2. Put 50 mL of sample or (CGLS) in the beakers.
3. Dip one test strip in beaker for 30 seconds with a constant back and forth motion.
4. Remove and shake strip once briskly, to remove excess water.

Visit the Safe Drinking Water Foundation Website [www.safewater.org](http://www.safewater.org) to learn more about issues affecting safe drinking water.

5. Wait for 2 minutes, and then match with closest colour on the colour chart to determine the Manganese concentration in mg/L or parts per million (ppm).

**NOTE: Complete the colour matching within 30 seconds.**

**Results:** Compare results to the Canadian Drinking Water Guidelines. The **CGLS** for Manganese should give a result very close to the 0.05 mg/L guideline; a darker colour means that the water **Does Not** meet Canadian Drinking Water Guidelines.

**Safe Handling of Materials**

**Caution must be taken at all times when handling any chemicals. Although this test is safe to use in any area, please be cautious with the materials supplied.**

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