



## FACT SHEET

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### **Barium in Drinking Water**

#### **What is Barium?**

Barium is a metal that is common in sedimentary rock, such as limestone and dolomite. Barium can enter the ground water by leaching from rocks that contain barium and are breaking down. Barium is able to form compounds with other chemicals. Some barium compounds dissolve in water. The barium compounds that dissolve in water are a concern for human health, because these compounds are easily absorbed into the bloodstream. Barium compounds that do not dissolve in water last longer in the environment and are generally not harmful. One of these compounds is barium sulfate that is sometimes used in medical tests to take x-rays of the stomach or intestines.

#### **Barium Exposure**

Our main source of barium is through food and drinking water, with food being the main source of exposure. Barium can enter the ground water and well water when rocks that contain barium break down and dissolve. Barium levels in food vary, depending on the barium compounds in the soil. Barium levels in water depend on naturally occurring barium levels in the geological formations, the break down and how well barium dissolves in water.

#### **How can Barium Affect my Health?**

Health effects from exposure to barium in water depend on which barium compounds are present and how well these compounds are absorbed into the bloodstream. Exposure to trace amounts of barium in food and drinking water are not considered to be a concern for human health.

Levels of barium found in well water are generally below the levels that cause health effects. Ingestion of higher levels of barium may cause symptoms such as vomiting, abdominal cramps, diarrhea, difficulty breathing, increased or decreased blood pressure, numbness around the face and muscle weakness. Ingesting very large amounts of barium compounds that dissolve easily in water can cause changes to heart rhythm, paralysis and possible death.

#### **Barium Drinking Water Standard**

The Ontario maximum acceptable concentration (=MAC) in drinking water for barium is set at 1.0 mg/L. This level is intended to be protective against adverse effects on the cardiovascular system.

## Barium Treatment Options

If you know that barium compounds in your water are greater than 1.0 mg/L, you may want to choose an alternative water source for drinking and food preparation such as bottled water or install a cistern and have water delivered by a water hauler.

Water softening is effective in removing barium compounds from drinking water. Water softening is not an option for a municipal treatment facility, due to its removal of any measurable chlorine residual in the distribution which is required to be present by regulation.

**For more information contact the Public Health Inspector helpdesk: (519) 376 9420 or 1-800-263-3456 and press option 4**

### References:

Durham Health Region: Barium in Well Water  
Health Canada, 2018: Barium in Drinking Water- Guideline Technical Document for Public Consultation  
Water Quality Association: Barium in Drinking Water