

Drinking Water Test Results: Trace Metals

The following is a list of metals that are tested for in drinking water. If your water testing shows high levels of any of the following substances, call your local public health inspector. They can give you information about treatment devices for your home water supply.

Talk to your doctor if you have questions about substances in drinking water and if they could affect your health.

Result	Guideline	Information
Aluminum	OG 0.1 or 0.2 mg/L (depending on treatment type)	<p>Aluminum is found naturally in ground and surface water, but it is more common in surface water.</p> <p>Acidic soil (having a pH below 6.5) can lead to higher amounts of aluminum in water.</p> <p>Researchers aren't sure if aluminum in drinking water affects your health.</p>
Antimony	MAC 0.006 mg/L	<p>Antimony gets into untreated water from:</p> <ul style="list-style-type: none"> • natural weathering (erosion) of rocks • runoff (water that flows over soil and gets into a water supply) • water used for mining and manufacturing that gets into a water supply • plumbing fixtures with antimony <p>Antimony levels higher than the MAC may cause small changes in organs, including the thymus, kidney, liver, spleen, and thyroid.</p>
Arsenic	MAC 0.010 mg/L	<p>Arsenic gets into an untreated water supply from:</p> <ul style="list-style-type: none"> • natural weathering (erosion) of rocks • runoff • mining and manufacturing (especially glass and electronics) waste water • pollution from the atmosphere <p>Arsenic levels should be kept as low as possible. Drinking water that has arsenic levels above the MAC may increase the risk of:</p> <ul style="list-style-type: none"> • arsenic poisoning that includes symptoms such as pain, vomiting, diarrhea, and nerve problems • lung, bladder, liver, and skin cancer

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Barium	MAC 1.0 mg/L	<p>Barium may be naturally in the water or gets into untreated groundwater from:</p> <ul style="list-style-type: none"> • runoff • contact with manufacturing waste <p>Barium levels above the MAC may increase the risk of developing high blood pressure and heart disease.</p>
Boron	MAC 5.0 mg/L	<p>Boron is naturally found in soil. It gets into groundwater from:</p> <ul style="list-style-type: none"> • weathering (erosion) of rock • soil erosion • manufacturing waste and wastewater <p>People are mostly in contact with boron through food.</p> <p>Drinking water that has boron levels above the MAC may increase the risk of reproductive problems in men.</p>
Cadmium	MAC 0.005 mg/L	<p>Cadmium gets into drinking water from:</p> <ul style="list-style-type: none"> • plumbing systems that have cadmium in them (such as galvanized or polyethylene pipes) • solder (metal that is used to bind other pieces of metal together) • industrial and city or town (municipal) waste <p>Cadmium levels above the MAC may increase the risk of kidney damage and softening of bones.</p>
Chromium 6 (VI)	MAC 0.05 mg/L	<p>Chromium gets into a water supply from:</p> <ul style="list-style-type: none"> • industrial waste • water cooler systems that use chromium to prevent rust • runoff <p>Drinking water is tested for chromium 6 (VI). Chromium 6 can cause lung cancer or damage to other organs.</p> <p>We need chromium 3 (III) to stay healthy so it's not included in drinking water testing.</p>
Copper	MAC 2.0 mg/L AO <1.0 mg/L	<p>Copper can get into a water supply from industrial waste. It can also get into drinking water from water systems that use copper piping.</p> <p>We need a small amount of copper in our diets to stay healthy. Drinking water that has copper levels higher than the MAC can cause:</p> <ul style="list-style-type: none"> • nausea, pain, vomiting, and diarrhea • kidney problems (if you drink it over a long time)

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<p>Lead</p>	<p>MAC 0.005 mg/L</p>	<p>Lead gets into drinking water from:</p> <ul style="list-style-type: none"> • lead pipes used in older plumbing systems (commonly used before 1945 but most have been replaced) • solder • unplasticized polyvinyl chloride (uPVC) pipes • landfill runoff • industrial and city or town (municipal) wastewater, storm water <p>When high levels of lead are found in Alberta drinking water, it usually has come from solder or lead pipes.</p> <p>Higher levels of lead in drinking water can cause:</p> <ul style="list-style-type: none"> • development problems in children under 6 years of age • development problems in unborn babies (whose mothers drink water with high levels of lead) • learning and memory problems • kidney problems <p>Contact with high levels of lead over many years can cause stomach and lung cancer.</p>
<p>Manganese</p>	<p>MAC 0.12mg/L AO <0.02 mg/L</p>	<p>Manganese is commonly found in soil, rocks, surface water, and groundwater at high levels in groundwater and surface water in Alberta.</p> <p>Manganese can get into water from:</p> <ul style="list-style-type: none"> • weathering of rock and soil • landfill runoff • manufacturing waste and wastewater <p>Manganese can:</p> <ul style="list-style-type: none"> • stain plumbing fixtures and laundry • give drinking water a bad taste • cause bacteria to grow in pipes • form coatings on pipes (this can come off and look like black liquid or specks in the water) <p>We need a small amount of manganese in our diets to stay healthy. Drinking water high in manganese can lead to:</p> <ul style="list-style-type: none"> • learning, memory, and behavioral problems • having trouble paying attention (concentrating) • movement problems <p>People who are very young, pregnant, older, and those with liver disease have the highest risk of developing these health problems.</p> <p>Infants also have a high risk of developing these problems if they drink formula made with water that has high levels of manganese.</p>

Result	Guideline	Information
Selenium	MAC 0.05 mg/L	<p>Higher levels of selenium can be found in groundwater in Alberta.</p> <p>Selenium gets into an untreated water supply from:</p> <ul style="list-style-type: none"> • petroleum refineries • mine and industrial waste • natural breakdown of rock and soil <p>It may also be found in unleaded brass (to replace lead).</p> <p>We need a small amount of selenium to stay healthy. We get most selenium from food.</p> <p>Eating food or drinking water with high levels of selenium can cause:</p> <ul style="list-style-type: none"> • hair loss • tooth decay • weak nails • numbness and tingling of the arms and legs • muscle weakness
Uranium	MAC 0.02 g/L	<p>Uranium is naturally found in some types of soil and rocks, like sandstone, shale, and granite bedrock.</p> <p>Uranium may be found in well water when the well is drilled in bedrock that has uranium. Wells that are shallow (dug or bored wells) and surface water supplies usually have less uranium.</p> <p>Low levels of uranium may also be found in food, water, and air.</p> <p>Drinking water with higher levels of uranium over a long time can cause kidney problems.</p>
Zinc	AO<5.0 mg/L	<p>Zinc gets into an untreated water supply from:</p> <ul style="list-style-type: none"> • weathering of rock and soil • burning fuel • using pesticides • manufacturing waste from industries that make things from iron, steel, copper and nickel • the zinc coating on galvanized pipe • zinc parts in hot water tanks • brass fittings <p>Water with zinc levels higher than the AO will look cloudy or milky, and have a greasy film when boiled.</p> <p>Health Canada has not found any health concerns related to drinking water with zinc.</p> <p>If your drinking water supply comes from a system that uses galvanized pipes, run your tap for 1 minute before drinking the water.</p>

You can get more information about these trace metals and others from Health Canada.

The following metals aren't included in the Guidelines for Canadian Drinking Water Quality. At this time, Health Canada has not found that these metals are related to any health concerns.

- beryllium
- cobalt
- molybdenum
- silver
- thallium
- titanium
- vanadium

Alberta Health Services is collecting information about these trace metal levels to better understand if they get into our drinking water from natural causes or industrial activity.

For more information about drinking water, visit:

- [Alberta Health Services – Information for your Home](https://www.albertahealthservices.ca/eph/Page8294.aspx)
<https://www.albertahealthservices.ca/eph/Page8294.aspx>
- [Alberta Environment and Parks – Working Well](https://www.alberta.ca/working-well.aspx)
- <https://www.alberta.ca/working-well.aspx>

For more information, please contact your nearest Environmental Public Health office.

Edmonton Main Office
Calgary Main Office
Lethbridge Main Office

780-735-1800 Grande Prairie Main Office
403-943-2288 Red Deer Main Office
403-388-6689 www.ahs.ca/eph

780-513-7517
403-356-6366

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