

## Arsenic in Drinking Water

Arsenic is found naturally in the rocks in the Earth's crust. Drinking water containing arsenic can have serious short-term and long-term health effects.

### How does arsenic get in drinking water?

Arsenic can get in drinking water from natural deposits or runoff from agriculture, mining and industrial processes.

In BC, natural minerals are the most common sources of arsenic in drinking water.

The amount of arsenic in ground water supplies like wells is usually higher than in surface water supplies such as lakes, streams and rivers.

### What are the health effects of arsenic exposure?

Short to medium term (days to weeks) exposure to very high levels of arsenic in drinking water can lead to arsenic poisoning.

Symptoms of exposure to high levels of arsenic include stomach pain, vomiting, diarrhea, and impaired nerve function, which may result in 'pins and needles' sensation in hands and feet.

Arsenic can also cause skin changes, which include darkening, and wart-like or corn-like growths. These are mostly found on the palms of the hands or bottoms of the feet.

As children tend to drink more water per unit of body weight than adults, they may have more exposure to arsenic in drinking water.

As a result children may be at greater risk of illness when higher levels of arsenic are present.

Long-term (years to decades) exposure to even relatively low amounts of arsenic in drinking water can increase your risk of developing certain cancers, including:

- skin,
- lung,
- kidney, and
- bladder cancer.

The risk of cancer is the reason for developing the Canadian guideline for arsenic in drinking water.

### What amount of arsenic causes health effects?

Health Canada set a Maximum Acceptable Concentration (MAC) of 10 micrograms per litre for arsenic in drinking water.

This level was set based on the ability to treat water practicably to this level. This amount is still linked with a health risk higher than the level considered to be a very minor risk. For this reason people should consider taking precautions with their drinking water even if the arsenic levels are slightly below the guideline.

For more information on *The Guidelines for Canadian Drinking Water Quality* see, [http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum\\_guide-res\\_recom/index-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide-res_recom/index-eng.php)

### How do I know if there is arsenic in my drinking water?

Public drinking water systems are monitored regularly. In drinking water, arsenic has no odor or taste. It is detected by a chemical test. However, most private wells are not tested routinely for water quality or contaminants.

It is the well owner's responsibility to test the water for arsenic. Any well may contain arsenic or other contaminants. Private wells should be tested regularly for water quality. For more information, see BC HealthFile [#45 Should I Get My Well Water Tested?](#)

Contact your local public health unit or public health inspector for information on the testing process in British Columbia.

### **What can I do if there is arsenic in my drinking water?**

Water with arsenic is only a concern if it is being used for drinking or preparing food.

Exposure through breathing and skin contact is not harmful. For example, there are no known health effects from hand washing, bathing or washing clothing in water with arsenic.

If an initial test detects arsenic, even at levels below the guideline, it is important to have a second test done to confirm the results. If arsenic is present, then you can use another source for drinking water or treat the current source.

There are several treatment devices and options including reverse osmosis filters and distillation. Chlorination and mechanical filters do not remove arsenic from water. Boiling water may increase the concentration of arsenic.

There is no regulatory control over treatment devices for private homes, therefore the well owner must be careful and select the appropriate treatment device.

When purchasing a treatment device, you should consider one that has been certified by an organization accredited by the Standards Council of Canada (SCC). The treatment device should meet the following standards:

- NSF/ANSI Standard 62 on drinking water distillation systems; or
- Standard 58 on reverse osmosis drinking water treatment systems; or
- Standards 53 on drinking water treatment units – with specific designation for the water quality parameters you are trying to remove (arsenic).

Certification assures that a device works as the manufacturer or distributor claims. Find an up-to-date list of accredited organizations by visiting the Standards Council of Canada website at [www.scc.ca](http://www.scc.ca).

**For more information on drinking water and treatment options, contact your local environmental health officer.**

### **For more information**

- BC Ministry of Environment website at: [www.env.gov.bc.ca/wsd/plan\\_protect\\_sustain/gro\\_undwater/library/ground\\_fact\\_sheets/index.html](http://www.env.gov.bc.ca/wsd/plan_protect_sustain/gro_undwater/library/ground_fact_sheets/index.html)
- Health Canada, It's Your Health website at: [www.hc-sc.gc.ca/iyh-vsv/environ/arsenic\\_e.html](http://www.hc-sc.gc.ca/iyh-vsv/environ/arsenic_e.html)



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