

What water treatment devices are available?

Water treatment devices for drinking water can be divided into two groups, according to function - point-of-use and point-of-entry devices.

Point-of-use devices are portable, plumbed-in or faucet-mounted and are used to treat the water at a single tap for drinking and cooking only. Point-of-entry devices are installed on the main water supply and treat all the water entering the home.

Chlorinators, iodigators and ultraviolet light (UV) devices are most practical when it is necessary to disinfect water that serves a whole dwelling. Chlorine and iodine kill most disease-causing organisms and require short to moderate contact times.

NOTE: Chlorine or iodine treatment alone may not provide adequate protection against protozoa such as *Giardia* and *Cryptosporidium*. If protozoa are present or suspected, it is recommended that the water be first passed through a filter with an absolute 1 micron or smaller pore size to remove these parasites and then chemically treated with chlorine or iodine to kill bacteria and viruses. Iodine disinfection of drinking water should be reserved for emergency and occasional use (e.g., at a weekend cottage or in recreational vehicles). Iodine should not be used for long-term continuous disinfection because it is physiologically active and ingestion in excessive amounts may be harmful.

UV devices are effective against bacteria and viruses, add nothing to water and produce no taste or odour; in addition if the water is clear, exposure to UV light is required only for a few seconds. They do not, however, ensure the safety of the water beyond the point of application, so that flushing of the system is recommended after periods of non-use. Point-of-use UV light devices are also available. A pre-filter, however, should always be employed to remove protozoan cysts and reduce turbidity, thus improving the effectiveness of the UV light.

Ceramic or glass fibre filters handle smaller amounts of water and are useful when water from just one tap is to be treated for drinking and cooking, or to provide drinking water while camping, boating or hiking. Such filters can remove bacteria and protozoa from mildly contaminated waters. They are not suitable for removing viruses or for treating highly contaminated water. Therefore, when treating surface waters, it is recommended that these filters be used in conjunction with disinfection. Portable glass fibre or ceramic filters with iodine-releasing resins are available to disinfect water for campers or for travellers in countries where the safety of the drinking water is questionable. Some iodine-releasing devices contain an activated carbon filter to remove excess iodine from the water.

Distillers and ozonators are point-of-use devices suitable where electric power is available and where there is sufficient space to install the equipment. Distillation is commonly used to reduce the levels of all chemicals in drinking water. Distillation devices are effective for the removal of inorganic chemicals, including heavy metals and some organic chemicals, but are often combined with activated carbon for the removal of certain "volatile" chemicals (e.g., trihalomethanes, tetrachloroethylene). The boiling process also kills any microorganisms (viruses, bacteria and protozoa) present in the water. There are no known beneficial or harmful health effects associated with the ingestion of demineralized or distilled water.

Ozonators produce small quantities of ozone, a strong oxidizing agent that is effective in killing pathogens over a short period of time. Ozonation produces no taste or odour in the water. The process is dependent on good mixing of ozone with the water. Unlike chlorine and iodine, ozone does not protect the water after application. Ozonation is often combined with activated carbon filtration to achieve more complete water treatment.

What else can I do to be safe?

- When camping, canoeing or hiking, you should assume that all waters contain disease-causing organisms and you should disinfect the drinking water before use. Care must also be taken to avoid ingestion of untreated water during other activities such as brushing your teeth.
- Wells should be analyzed at least annually for microbiological contamination. Drinking water should contain 0 (zero) total coliform bacteria per 100 ml. If well water does not comply with this guideline, it should be disinfected using one of the methods described above.
- As most disinfection systems require clear water to ensure maximum efficiency, it may be necessary to combine two specific devices — one to remove various organic or inorganic compounds or to reduce sediments in the water and one to reduce microbiological contamination. Ultimately, the best approach to ensure complete disinfection of water intended for human use and consumption is a multi-barrier one consisting of collecting water from the cleanest source possible, followed by filtration and disinfection.

The importation and sale of materials, such as water treatment devices and disinfectants that come in contact with drinking water, falls under the jurisdiction of the federal government. At present, there is no specific legislation governing these products in Canada.

Drinking Water Fact Sheets

How Do I Know If My Well Water Is Safe?
How Do I Test My Well Water?
What Do I Do When a Boil Water Advisory Is Issued?
How Do I Disinfect My Well?
What are the Guidelines for Food Establishments During a Boil Water Advisory?
What Water Treatment Devices are Available?

Where can I get more information?

For further information on well water safety, please contact HealthLinks at 788-8200 or 1-888-315-9257, or contact the nearest office of Manitoba Conservation or The Manitoba Water Services Board at the numbers listed below.

Manitoba Conservation

Winnipeg	204-945-0675
Fax	204-945-1211
Brandon	204-726-6064
Fax	204-726-6567
Virden	204-748-2321
Fax	204-748-2388
Steinbach	204-346-6060
Fax	204-326-2472
Selkirk	204-785-5030
Fax	204-785-5024
Lac du Bonnet	204-345-1447
Fax	204-345-1415
Flin Flon	204-687-1625
Fax	204-687-1623
The Pas	204-627-8307
Fax	204-623-1773
Killarney	204-523-5285
Fax	204-523-4626
Dauphin	204-622-2030
Fax	204-622-2306
Swan River	204-734-3436
Fax	204-734-5151
Winkler	204-325-1750
Fax	204-325-1758
Portage la Prairie	204-239-3188
Fax	204-239-3185
Thompson	204-677-6704
Fax	204-677-6652

The Manitoba Water Services Board

Brandon	204-726-6079
Fax	204-726-6290
Dauphin	204-622-2116
Fax	204-622-2298
Beausejour	204-268-6059
Fax	204-268-6060

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Information Compiled by the Drinking Water
Coordinating Group