

UV Water Treatment

What is UV treatment?

Ultra-violet (UV) treatment is the disinfection process of passing water by a special light source. Immersed in the water in a protective transparent sleeve, the special light source emits UV waves that can inactivate harmful microorganisms.

This method of treatment is growing in popularity because it does not necessarily require the addition of chemicals.

UV systems alone are neither intended to treat water that is visually contaminated nor intended to convert wastewater to safe, microbiologically potable water.

How does UV treatment work?

The ultra-violet rays, similar to the sun's UV but stronger, alter the nucleic acid (DNA) of viruses, bacteria, molds or parasites, so that they cannot reproduce and are considered inactivated. UV treatment does not alter the water chemically as nothing is added except energy. It should be noted that inactivated microorganisms are not removed from the water. UV treatment does not remove dirt and particles, metals such as lead or iron, or hard minerals such as calcium. Other devices are required to remove particles, metals and minerals, and information can be found in other About Your House documents in the water treatment series.

Do I need a UV system?

If your drinking water is municipally supplied or your regularly tested water source is safe, it is likely that you do not need a UV system for health purposes. If further peace of mind for safe drinking water is your goal, UV may provide additional treatment to your water.

Is UV-treated water safe to drink?

UV-treated water is safe to drink. UV treatment does not add chemicals or change the chemical composition of the water. When properly sized and installed on a visually clear water source, UV can effectively protect from micro-organisms in the water. Prolonged storage of water after UV treatment is not recommended.

Are there different types of UV systems?

There are different types of UV systems. UV systems exist to treat all possible flow ranges, from small point-of-use applications to entire municipalities. For household applications, a point-of-use or point-of-entry UV system can be used. A point-of-use system is a small, portable device that attaches to a faucet and rests on the counter.

It can also be mounted under a counter. Larger point-of-entry systems are also available which are installed where the water supply enters the home, disinfecting the entire water supply.

Should you decide to purchase a UV system, there are two types: **Class A** and **Class B**.

Class A systems can be both point-of-entry and point-of-use (large or small); and, are designed to inactivate and/or remove microorganisms including bacteria, viruses, Cryptosporidium oocyst and Giardia cysts from contaminated water.

However, they are intended to be installed on visually clear water (not coloured, cloudy or turbid water) and not for converting wastewater or raw sewage to drinking water.

Class B systems can also be point-of-entry and point-of-use systems (large or small); however, they are intended for supplemental bactericidal treatment of disinfected public drinking water (i.e. municipally supplied water) or other drinking water that has been tested and deemed acceptable for human consumption by the provincial or local health agency having jurisdiction. They are intended to reduce nuisance microorganisms and are not intended for disinfection.

Residential systems can treat from 4L (0.08 US gal) of water per minute to upwards of 152L (40 US gal) per minute. All types of systems require a 110-V outlet for operation.

What are the parts of a UV system?

A UV system is comprised of the following:

- UV light source called a “lamp” or “bulb”. Class B UV systems typically deliver a dose of 16mJ/cm², and are normally chosen by people on municipally treated water or private water supplies unlikely to be unsafe. Class A systems deliver a dose of 30 to 40 mj/cm², enough to be used on water supplies which are not considered safe. A dose of 40/cm² is recognized by Health Canada as sufficient for this type of application. As there are a variety of wattages for the lamp, ensure your replacement bulb is the one the manufacturer recommends for that unit.
- Protective transparent housing for bulb — usually quartz
- Power supply
- A water chamber for the water to travel through for treatment
- Filters for pre- and/or post-treatment
- For larger Class A systems, there may be a bulb replacement indicator light and/or alarm