



Household Drinking Water Disinfection Devices

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Disinfection systems are used to kill or deactivate disease-causing bacteria (pathogens) and viruses. Protozoan parasites require the additional use of a water filter. Filters may also be required to remove excessive colour, turbidity, iron, suspended solids or organic impurities.

Type	Advantages	Disadvantages
<i>Chlorination</i>	<ul style="list-style-type: none"> • Low electrical requirements • Continuous residual disinfection action against bacteria, viruses and some protozoa • Can treat large volumes of water at once • Inexpensive • Can be used for multiple water problems (iron, manganese, hydrogen sulfides, unpleasant tastes & odours, reduces discoloration) 	<ul style="list-style-type: none"> • Requires a pre-filter to remove protozoan cysts (Giardia), turbidity, suspended solids, iron etc. • Chlorine taste and odour problems • Retention tank required for chlorine contact time • By-product (Trihalomethanes) formation if raw water high in organic content • Careful storage & handling of chlorine is required
<i>Distillation</i>	<ul style="list-style-type: none"> • Effective against all pathogens • Does not need any chemicals • Reduces unpleasant tastes & odours, scale producing minerals, lead, copper, sodium, nitrates, turbidity, sodium, certain pesticides, heavy metals • Easy to maintain and operate 	<ul style="list-style-type: none"> • Slow-takes several hours to process one gallon of drinking water • Water reservoir requires cleaning • Requires a pre-filter • High operating & maintenance expense • Water must be stored in a non-metallic container once distilled • Does not provide residual bacterial action
<i>Ultraviolet Irradiation</i>	<ul style="list-style-type: none"> • Effective against bacteria and some viruses only • Does not alter taste, smell, colour of water • Uses no chemicals • Doesn't need a retention tank • No harmful by-products produced • Compact and easy to operate 	<ul style="list-style-type: none"> • Pre-filtration required to remove cysts, turbidity, iron, suspended solids etc. • Usually combined with a softener or carbon filter • Lamp and filters require regular replacement and cleaning • Does not provide any residual bacterial action • High operating costs and electricity • Requires monitoring devices to alert user if lamp is malfunctioning • Must flush system after periods of non-use

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Ozonation	<ul style="list-style-type: none"> • Neutralizes acidic water • Removes organic compounds, including pesticides • Kills cysts, bacteria and viruses • Reduces scale formation • Uses no chemicals • Controls tastes, odours, colour 	<ul style="list-style-type: none"> • May create by-products (aldehydes, ketones, bromoform) if water is high in organic content • Does not provide any residual bacterial action • Ozone must be generated on site and the equipment needs regular monitoring • Must flush system after periods of non-use • High cost, complex to operate & maintain

Before you buy a device, consider the following:

- Water clarity, pH and temperature are important factors in the success of pathogen destruction.
- The raw water should be tested before choosing a system or device. Different raw water conditions may require a combination of treatment processes to produce water of drinking quality.
- The treated water should be tested a minimum of 3 times per year to ensure that the device is capable of removing pathogens from the water.
- All devices and filters should be certified by a third party testing and certification organization such as the National Sanitation Foundation (NSF) or the Underwriters Laboratory Inc. (UL)



Contact the Health Unit for the following additional information:

- Household Drinking Water Filtration Devices
- Common Drinking Water Quality Complaints
- Listing of Accredited Laboratories
- Drinking Water Safety
- Well Water Construction
- Protection of Water Quality in Drilled Wells
- Rural Water Quality Testing Program
- Healthy Futures Rural Well Upgrading & Decommissioning Project