

Backcountry Water Treatment Methods

Provided by: HighCountryExplorations.com			
Basic Treatment Method	Treatment Time	Examples	Limitations/Comments
BOILING			
Boiling and heating	Depends upon quantity and heat source		Some claim effective treatment at temps below boiling (e.g., 180 degrees). Boiled water tastes flat; takes extra time and fuel especially at altitude; not want to drink hot liquids in hot and humid temps; lack of agreement about boiling times and temps; pouring scalding water
FILTERS and PURIFIERS			
Standard filters of 0.3 micron or less in bottle and pump form	Variable depending upon type used	Katahdyn Hiker Pro, Mini, Pocket, Vario or Combi; MSR HyperFlow, MiniWorks or SweetWater; Sawyer Squeeze Filter	Most common treatment method; heavier than other methods; can be problematic and unreliable; can be slow and tiresome; retains water that could freeze; not meet EPA standards for purification (especially for viruses); Sawyer Squeeze filters down to 0.1 microns
Gravity systems using filter cartridge	Variable	Platypus Gravity Works System; Katadyn Drip Gravidyn; MSR Autoflow Gravity Filter; Sawyer Point One Biological Filter	No weight advantage over standard filter systems; usually much slower than other methods; suitable for larger groups
Standard filter supplemented with chemical disinfectant (e.g., iodinated resin)	Variable	Katadyn Exstream XR or MyBottle Purifier; Sawyer Treatment Bottle	
Straw with embedded hollow fiber filter	Variable	Lifestraw	Treatment at point-of-consumption rather than point-of-source; easy sucking through hollow fibers—no pump; developed primarily for third world countries; cheap and light
Specialized micro-filters or electrochemically charged filter material that meets EPA standards for purification	Variable	First Need XL purifier; Sawyer PointTwoZero purifier	
CHEMICAL DISINFECTANT			
Iodine (Hydroperiodide) in either liquid or tablet form	30 minutes or more in cold, cloudy water	Polar Pure; Potable Aqua Plus; Coghlan's Two Step Water Treatment	must be stored in glass; chemical taste that can be neutralized; kills viruses, bacteria, protozoa (except cryptosporidia); must filter out organic matter

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Chlorine dioxide in either liquid or tablet form (not same as Chlorine bleach)	15-240 minutes*	AquaMira liquids and tablets; Potable Aqua tablets; Katadyn Micropur tablets	Kills viruses, bacteria, protozoan cysts (including cryptosporidia); some report chlorine taste in tablet form; must first filter out organic matter; liquid form needs pre-mixing of two-part solution; tablets expensive for regular use; often used as backup to other methods; must wait at least 15 minutes (longer in cold water and when using tablets)
Powdered calcium hypochlorite (chemical disinfectant and chemical flocculant)	30 minutes	PUR Clean Drinking Water Kit; Reliance PUR Purifier	Relatively new and expensive; cloth removes turbidity and sediment
Sodium dichloroisocyanurate tablets	30 minutes	MSR Aquatabs	Each tablet is sufficient to treat up to 2 liters of water; formulation sometimes used to disinfect swimming pools; not effective against Cryptosporidium
Electrically activated salt-based solution creates mix of oxidants (free chlorine)	15-240 minutes*	MSR MIOX Water Purifier	Needs batteries; relatively fragile and expensive; pre-filter out larger pollutants to work well; treat large volumes; requires disposable testing strips; more complicated process; used by US Army
ULTRAVIOLET LIGHT STERILIZER			
Ultraviolet light (pen or unit integrated into container cap)	90 seconds per liter; 48 seconds for half liter	SteriPen Adventurer Opti; AquaStar Plus; CamelBak All Clear	Fast; no residual tastes; must filter out sediment and organics or let settle to work effectively; relatively fragile and expensive; needs batteries; pen not work in small neck bottles less than 1.75" inside diameter; will not kill some nasties (e.g., tapeworms)

*Destroys viruses and bacteria in 15 minutes, Giardia in 30-minutes and Cryptosporidia in 4-hours in cold, cloudy water with standard dosage; halve the dosage and double the treatment time, or double the dosage and halve the treatment time.			