

Treating Backcountry Water

*Bad Actors, Remedies, Choices, Strategies, and
Cautions*

Meet the Bad Actors

What is it?	How Big?	Examples:	How Common in NW?	What you get:
Protozoa oooooooo	Big (5 microns)	Giardia, Cryptosporidium	Some	Intestinal distress
Bacteria ~~~~~	Small (0.2-1.0 micron)	E. Coli, Shigella, Salmonella, Cholera	Some	Intestinal distress, fever
Viruses	Very small (0.01-0.3 micron)	Norwalk, Rotavirus, Hepatitis A	Less	Flu like symptoms
Silt/Debris oooooooooooo	Mostly huge	Glacial silt, debris, algae	Local	Grit in your teeth
Toxins	In solution	Industrial, agricultural, geologic	Less	Poisoning
Other	In solution	Tanin, odors	Local	Flavoring?

(1 micron = 1/1000 millimeter)

Remedies

What is it?

Protozoa

oooooooooo

Bacteria

~~~~~

Viruses

.....

Silt/Debris

oooooooooo

Toxins

Other

Boiling

Filtering

Disinfecting  
Chemical

Iodine  
Chlorine  
Chlorine  
Dioxide

UV

Prefilter

Activated  
Carbon  
Filter

## Effectiveness

- 1 minute at sea level, 3 minutes at 6,000 ft.
- Filter must be labeled as a Purifier to be effective against viruses. Typical 0.2 micron size effective against Protozoa and Bacteria. Purifiers add an additional process to kill viruses.
- Iodine and chlorine products may not be effective against Cryptosporidium. Chlorine dioxide products need long contact time for Cryptosporidium.
- Water must be clear
- Too much will clog filter
- Improves taste, can remove some organic toxins

# Choices

|              |                             | Weight  | Cost            | Examples                          |
|--------------|-----------------------------|---------|-----------------|-----------------------------------|
| Boiling      |                             | ▲ ▲     | \$\$            | Extra stove fuel                  |
| Filtering    | Pumps                       | ▲ ▲ ▲ ▲ | \$\$\$-\$\$\$\$ | MSR, Katadyn,                     |
|              | Gravity                     | ▲ ▲ ▲   | \$\$\$          | MSR, Katadyn, Sawyer,<br>Platypus |
|              | Squeeze                     | ▲ ▲     | \$\$            | Sawyer, Katadyn                   |
| Disinfecting | Chemicals:                  |         |                 |                                   |
|              | Iodine                      | ▲       | \$              | Potable Aqua, Iodine              |
|              | Chlorine                    | ▲       | \$              | MSR, Aqua Tabs                    |
|              | Chlorine<br>Dioxide         | ▲       | \$              | Aqua Mira, Katadyn, Micropur      |
|              | UV                          | ▲ ▲     | \$\$\$          | SteriPen, CamelBak                |
| Other        | Pre Filters                 | ▲       | \$              | SteriPen, MSR                     |
|              | Activated Carbon<br>Filters | ▲       | \$              | Platypus                          |

# *Strategies and Cautions*

Be choosy about your water.

Dirty water reduces the effectiveness of almost all remedies.

Risks higher with more visitor traffic.

Keep dirty and clean items identified and separate.

Plan ahead. Allow time for treatment.

Cold water makes chemistry go more slowly.

Filters can fail or leak.  
Freezing is bad.

Read all the instructions

Don't forget the cap threads!

Consider packing a dipping cup.

Sunlight deactivates chlorine dioxide.  
Keep treated containers in the dark.

Consider filtration then disinfection.

Think through the full system of treatment, water containers, and your hydration needs.