

## Gear We've Tried

# WATER

# FILTERS



The Katadyn Hiker (pictured above), the Sweetwater Guardian, and First Need Deluxe all do a respectable job of filtering water.

## Our test of products designed to give you clean, safe water in the backcountry

By Allison Woods

When I was a wee tot ambling the high meadows of the Cascades, we drank from streams and lakes without giving it a second thought. The water was, we thought, clean and pure, and free of icky bugs. Back in those days, the words “waterborne pathogens” were not part of any hiker’s vernacular.

Alas, times have changed. In the 1980s we learned of *Giardia lamblia*, a microscopic parasite encased in a hard shell (called a protozoan cyst) that makes its home in the intestines of animals and humans. More recently we have learned of another cyst, *Cryptosporidium parvum*. Both cause extreme distress in the lower gastrointestinal tract, and are highly contagious. Documented cases of illness due to the presence of these

bugs in humans continues to rise. In 2002, the Washington State Department of Health documented 510 cases of Giardiasis and 62 cases of Cryptosporidiosis. According to Department of Health Epidemiologist Dr. Marcia Goldoft, there are “many, many times these numbers” of cases going undocumented. Interestingly, when asked what posed the greatest future risk for increased dangers in backcountry, she cited dogs.

“They drink and play in untreated water, may become carriers, and then spread the parasites.” While this might not make you think twice about taking Rover into the backcountry, it’s pretty telling that users and their pets may constitute a large part of this problem. Waterborne pathogens are particularly hardy. Dr. Goldoft told me that both pathogens have been able to survive for “weeks to months” outside of

water, and that the number of cysts required to make a person ill is “one.” In other words, a lone *Giardia* or *Cryptosporidium* cyst can make you sick. Backcountry water safety is a matter of reducing odds.

Lucky for us, there are a number of options out there to help us make our water safe for consumption. Filters provide physical filtration at a micron level, enabling the removal of both *Giardia* and *Cryptosporidium*, as well as removing particulate. The EPA has no standard for testing or approving filters, though proper use of a filter does provide reasonable protection. Purifiers, however, must meet EPA standards on removing or neutralizing bacteria and viruses, as well as cysts such as *Giardia*.

There are purifiers available that perform physical filtration as well as other processes, and there are some that perform only a chemical process. The chemical-only methods are simple and lightweight, but you might think twice when your only method of getting clean water is scooping a pan of water from a filthy tarn and adding a little chemical purification to it.

My hiking partners and I used various water cleaning tools in the woods this summer. They were used in conditions ranging from ideal to poor. All performed reasonably well, though none stood out as being, well, perfect. In addition to field testing, the two filters and the purifier were put through an additional test at the WTA Labs, located in my home kitchen. I imported three gallons of water from the famously silty White River, and pumped a gallon through each one, without the assistance of a prefilter, to see how they would do.

### Sweetwater Guardian

The Sweetwater Guardian was, at 10 ounces, the lightest of the group. The Guardian retails for \$59.95. The filter element should be replaced every 200 gallons (there is an indicator on the element to let you know exactly when); a replacement costs \$34.95.

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Even if the water is crystal clear, it can harbor organisms such as *Giardia*. Water filters are an effective way to get safe drinking water.



No mere lightweight: the Sweetwater Guardian, even though it weighs only 10 ounces, does an adequate job making H<sub>2</sub>O safe to drink.

The filter is made of glassfiber, and the pump has a lever-style handle that folds for more compact storage. The element is easily cleaned in the field with the included bottle brush. Two hoses are included, a black one for the dirty water, and a clear one for the clean. Cool idea. The Guardian is a little on the fragile side, as is to be expected with lightweight gear. I broke the pump assembly in the field. I'd carried the filter in my pack loosely assembled, and the pump assembly and filter body had cross-threaded themselves. I tried to undo them using nothing but brute force and ignorance. Whoops. If this happens to you, don't reef on the poor

## What to do if you get sick

If you experience severe diarrhea after backcountry travel, you may have picked up *Giardia* or *Cryptosporidium*. When you visit your health care provider, you may want to consider requesting a test for Cryptosporidiosis, as it's not standard practice to screen for it. There are a few treatments available for Giardiasis, and very recently a treatment for Cryptosporidiosis became available. It's called Nitazoxanide, brand name Alinia. Alinia got FDA labeling in November 2002 for use in children. It is legal to prescribe the drug off-label for adults, and this has been done with good results.

thing, rather, tap it gently on a rock, and the filter will magically free itself. If you do break the handle, the pump will still work, and Cascade Designs will fix it for you when you get home. Flow rate for the Guardian was acceptable, though in the White River Silt Test, this filter didn't fare so well. If you have to filter really nasty water, consider pre-filtering water through a handkerchief or coffee filter. The Guardian works well with a gravity bag system.

## First Need

The First Need Deluxe is a water purifier rather than a water filter. That means that it removes viruses and bacteria as well as protozoan cysts such as *Giardia* and *Cryptosporidium*. This comes at a cost though. The Deluxe is both the heaviest, at 16 ounces, and the most expensive, at

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*The First Need Deluxe purifier is bulky, but its flow rate is highest of the three units we tested.*

\$88.50, of the bunch. The filter should be replaced at about 125 gallons, and will set you back \$40. The Deluxe is bulky, especially when compared with the slim Sweetwater. The pump handle is an acceptable shape, though it's hard to get the purifier balanced well when pumping into a non-rigid container, like a hydration bag. Flow rate is tremendous, especially on a gravity bag system. A gravity bag does come with the Deluxe, but it was too small to be very useful. We also wish it came with an outflow hose. The First Need is a terrific choice if you are planning to travel abroad or in a large group, but we found it took a bit of getting used to its awkward shape and lack of field maintainability. When put to the test with White River Silt Water, the Deluxe did the job without so much as a hiccup. The thing I liked the best about the First Need is that it accomplishes the task of water purification without the addition of any chemicals, leaving the water tasting great and free of additives.



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## Letting Gravity do the Work

I'd heard of gravity bags, but before I got a set of Platypus bags, I didn't really know what they were. Having now used them for several months, I don't know how I ever lived without them.

Gravity bags are an incredibly simple addition to the water cleaning arsenal. The system consists of a pair of bags, one for dirty water and one clean, with hoses running to and from the filter or purifier. It takes an hour or so to filter a gallon of water this way, so it's not a trailside fix, but in camp, the convenience can't be beat.

Not every filter will run on gravity. Pumps with a ball valve assembly, such as the MSR

Miniworks, (not tested in our review, but a popular unit) must be dismantled to remove the ball valve, spring, and umbrella valve. Some, like the Katadyn Hiker we tested, have the ball valve assembly in a sealed system and therefore can't run a gravity system. The Sweetwater Guardian, however, worked well with a gravity bag.

We liked the Platypus bags very much, though the Big Zip feature is a mixed blessing. It makes filling the dirty water bag a cinch, but the Zip is difficult to close. Since first testing the gravity bags in late spring, I haven't gone on a single trip without this ultra-handly system. —A.W.

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### Katadyn

Swiss company Katadyn has been in the water filter business since 1928, and is a popular choice for many backpackers. We tested their most popular backcountry filter, the Hiker. This filter was previously manufactured by Pur, which was acquired by Katadyn in 2002. The Hiker uses a pleated glassfiber filter, which requires no field maintenance. It weighs in at a respectable 11.1 ounces, and costs \$59.95. The filter should be replaced approximately every 200 gallons, and retails for \$29.95. I liked the Hiker a lot, though WTA staffer Jonathon Guzzo found flow rate became a bit poky in the field. We both liked the monster pump handle, and I found field flow rate to be superb. It handled White River silt water solidly and without complaint, completing its task better than the Sweetwater, though not as well as the Deluxe. The Hiker unfortunately will not run a gravity bag system, though this was the only thing about it that I didn't like. The filter is bombproof, with a very sturdy casing that will take years of abuse.

### Other methods

Exstream, a division of Katadyn, makes a sports bottle purifier called the Orinoco. It's simple to use. Put dirty water in the sports bottle, and then drink the water after it passes through the filtration system. This consists of a microfilter and what the manufacturer calls "Virustat Technology." The bottle weighs in at seven ounces. The system does use iodine as part of its purification process, so the water does get "that iodine taste." Katadyn also makes a tablet, the Micropur, EPA approved as a purifier. Its active ingredient Sodium Chlorite. Very simple, just drop a tab in water and wait. Caveats: Product is known to be toxic to fish and other aquatic organisms, and I found water treated with the tabs to taste a bit like swimming pool water.

### Conclusions

There are known risks to our backcountry water safety. Nothing will guarantee safety 100 percent, though there are many options available to substantially decrease your odds of getting sick. None of the devices or methods tested worked perfectly, though personal preference leans me toward a filter.



*Katadyn's Exstream purifies water by the sip. But its iodine-based filtration system does give the water that distinctive "iodine taste."*

### Neat Stuff!



This winter, MSR will release the long-awaited MIOX Purifier. It is incredibly simple, using simple table salt and dirty water, which is converted to a mixed-oxidant solution with a blast of electricity. It's a tiny device, weighing in at 3.5 ounces without batteries and measuring 7" by 1". I tried one out at the Outdoor Retailer show in August, and it was cool! The MIOX will retail for \$139.95. Caveat: This purifier is EPA-approved, but the Agency's standards for any chemical purification system require a four-hour wait time. Some manufacturers say that their own testing indicates that *Cryptosporidium* is killed off after only one hour of waiting, but that is not the legal standard. I tried to reach the EPA for comment, but was unable to get a response before press time. —A.W.