

Water purification is a serious issue for backcountry campers and people who own cabins in remote areas. A normal person doing nothing strenuous needs a half gallon of water a day. It is impossible to carry all the necessary bottled water. Many people face the problems that stem from relying on local, untreated sources of water with unknown and potentially hazardous contaminants. Thankfully, doing an adequate job of purifying water in the field is easy and requires only a few simple items.

#### One Step Methods

There are two methods for purifying water that work in one step, but unfortunately both have their own complicating issues. Reverse osmosis filtration works by forcing water through a membrane under pressure, leaving impurities of all kinds behind. However, these filters are often bulky, always expensive and generally not suitable for mobile applications. It might be worth carrying one into the field, but only if it could be left indefinitely in place.

The other one-step method is to build a solar still. These use the heat of sunlight to distill water away from impurities, and knowledge of how to build one is a useful survival skill. However, the typical solar still works very slowly and creates only a small amount of water. To meet any serious demand for clean water, either many such stills have to be built or another method must be used.

#### Two Step Strategy

Practical field water purification works in two steps, one for each source of contamination. The first step must kill any bacteria and/or parasites that are in the water. The second must eliminate pollutants.

#### Killing Microorganisms

##### Common bleach

The simplest method for killing microorganisms like bacteria and parasites is to boil the water. It is only necessary to bring the water to above 212 F for a few minutes, since almost all potentially harmful microorganisms in the water will have been killed by the rising temperature before the boiling point is even reached.

The alternative is to use a chemical agent, and these are handy for people who don't have an opportunity to boil water. The two agents in widespread use are iodine and bleach. Iodine tablets have been in use by campers and the military for decades for decades. The typical tablet is minute, and can purify a quart of water. Bleach has seen in widespread use in countries where the tap water is semi-treated and dubious, with eight drops being sufficient to purify a gallon of water. Both chemical methods require a half hour wait to guarantee full results.

#### Filtration

##### Activated Carbon

The second step is to filter out pollutants. The best way to do this is with activated carbon, the technology used in Pur and Brita filters. Carbon is a chemically sticky substance, and it likes bonding with almost everything it comes into contact with. The store-bought filters work by using powdered charcoal. Charcoal has a rough surface on a microscopic level, and the pits and fissures greatly increase its real surface area. Combined with being powdered, a little charcoal has the ability to pull a lot of pollutants out of the water.

In addition to manufactured carbon filters, filters can be improvised in the field. All that needs to be done is to take some charcoal from the fire used to boil the water, grind it up, place it in a strainer, and then put the strainer into a funnel to slow the flow of water through the filter. Pouring boiled or chemically purified water through this will complete the purification