

Treating Water in the Backcountry

Source: CDC

How to make water safe to drink when hiking, camping, or traveling: boiling, filtering, disinfecting, and UV light. Also covers burying human waste and handwashing. For anyone using untreated water.

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<https://www.cdc.gov/drinking-water/prevention/water-treatment-hiking-camping-traveling.html>

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<https://survivalcodex.com/pages/library/cdc-water-treatment-backcountry>

Treating Water in the Backcountry

Key points

- If you are not sure whether the water you are using is safe to drink, treat it to remove germs.
- Boiling is the best way to kill germs in water.
- The next best option is to filter water and then disinfect the filtered water.

Overview

You may not always know if the water you are using is safe to drink, especially when hiking, camping, or traveling.

In these cases, boil your water or use other treatment methods to remove germs before using the water.

Exposure

Germs from human or animal poop can get into water, such as lakes, rivers, or streams. You can get sick from swallowing water that has not been treated to remove germs. For example, you can get sick by using it to:

- Drink
- Cook
- Wash fruits and vegetables
- Make ice or drinks
- Brush your teeth

In places without sanitation and water treatment infrastructure, water is more likely to have germs that can make you sick. These places can include:

- Campgrounds
- Hiking areas
- Remote areas
- Locations within and outside the United States where water is not treated

Clear water can be unsafe

Water containing germs that can make you sick—including bacteria, viruses, and parasites—sometimes looks clean. Drinking water straight from a clear mountain stream is generally **not** safe, for example.

Who is at risk

Anyone can get sick from drinking unsafe water.

Those at higher risk of getting sick include:

- Children
- Pregnant women
- People 65 years or older
- People with a weakened immune system

Symptoms

Common symptoms caused by drinking unsafe water when hiking, camping, or traveling include:

- Diarrhea
- Vomiting
- Stomach pain

Prevention steps and strategies

Treating your water, burying your poop if toilets are not available, and washing your hands can help you avoid getting and spreading germs.

Treat your water

Boiling water is the best way to kill germs that could make you sick. The next best option is to filter water and then disinfect the filtered water.

Follow the instructions on any products you use to make sure they work properly to remove germs.

Do not drink water contaminated with harmful chemicals

You cannot make water containing harmful chemicals, toxins, or radioactive materials safe by boiling or disinfecting it. Use bottled water or a different source of water instead.

Boil

Boiling kills all types of germs, including viruses, bacteria, and parasites (like *Cryptosporidium* and *Giardia*).

To kill germs, bring clear water to a rolling boil for 1 minute. At elevations above 6,500 feet, boil for 3 minutes. To avoid burns, allow the water to cool before using it.

When traveling to places with electricity, consider bringing a small heating coil or beverage warmer to boil water.

Filter

Most portable water filters will remove parasites, but not viruses or bacteria.

A filter labeled with either of the following will remove parasites, but not viruses or all bacteria:

- Absolute pore (hole) size of 1 micron or smaller
- Certified for NSF standards 53 or 58 for cyst reduction or removal

A filter with an absolute pore (hole) size of 0.3 micron or smaller will remove bacteria and parasites,

but not viruses.

Reverse osmosis filters remove parasites, bacteria, and viruses. They also remove salt from water.

Disinfect

Chemical disinfectants kill viruses and bacteria, but may not kill parasites.

You can kill bacteria and viruses in water using disinfectants such as unscented household chlorine bleach, iodine, or chlorine dioxide tablets.

Filter water before disinfecting it. Chlorine bleach and iodine kill bacteria and viruses but do not work well to kill parasites. Chlorine dioxide tablets can kill the parasite Giardia and are somewhat effective at killing Cryptosporidium. However, it is still safest to filter the water first to remove these parasites.

Who should avoid water disinfected with iodine

If you are pregnant, have thyroid problems, or have a hypersensitivity to iodine, avoid drinking water disinfected with iodine. No one should drink water disinfected with iodine for more than a few weeks at a time.

Using UV light

Filter water before using UV light to disinfect it.

Portable units that deliver ultraviolet (UV) light can kill parasites, bacteria, and viruses in small amounts of clear water.

Filter water before using UV light. UV light does not work well in cloudy water because small particles can block germs from the light.

Using MIOX® systems

MIOX® systems use a salt solution to create a mix of chemicals, primarily chlorine. Chlorine kills viruses and bacteria but does not work well to kill parasites.

Bury your poop

If you are in a remote area without toilets, bury your poop to keep it from getting into water. Aim to bury your poop deep in the soil, at least 8 inches, and at least 200 feet away from lakes, rivers, and other natural waters. Make sure to bury poop downstream from where you or others collect water.

Wash your hands

Wash your hands before handling food, eating, and after using the toilet. If soap and water are not available, use a hand sanitizer that contains at least 60% alcohol.

Resources

- How to Make Water Safe in an Emergency
- Food and Drink Considerations When Traveling
- Avoid Contaminated Water During Travel

- Water Disinfection | CDC Yellow Book

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End of the agency text.

The current version of this guidance is always at

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