Making Pond, River, or Stream Water Safe to Drink

Emergency preparedness card | For use when tap water is unavailable

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Step 1. Choose the cleanest source

Moving water (stream, river) is better than a stagnant pond. Avoid water with floating material, scum, an odor, or a dark color. **Never drink floodwater.**[1,2]

Step 2. Settle and filter

Let cloudy water settle, then pour the clearer water through a clean cloth, paper towel, or coffee filter. Dirt and organic matter use up disinfectant.[3]

Step 3. Boil: the best option

Bring to a **rolling boil for 1 full minute** (3 minutes above 5,000 ft). Let it cool and store in clean, covered containers. Boiling kills bacteria, viruses, and parasites.[3]

Step 4. If you cannot boil, use bleach

Use regular, **unscented** liquid chlorine bleach, less than 1 year old. Do not use scented, color-safe, splash-less, or added-cleaner bleach.[3]

Amount of water	6% bleach	7.5% bleach	8.25% bleach
1 quart or 1 liter, clear	2 drops	2 drops	2 drops
1 gallon, clear	8 drops (about 1/8 tsp)	7 drops	6 drops
1 gallon, pond / creek / cloudy / very cold (double dose)	16 drops	14 drops	12 drops

Stir and wait 30 minutes. The water should smell faintly of chlorine. If not, repeat the dose and wait another 15 minutes. If the taste is too strong, pour between two clean containers and let stand a few hours.[3,1]

Filters that remove parasites

Bleach kills bacteria and viruses but does **not** work well against parasites such as Giardia and Cryptosporidium. Look on the label for **either**: an **absolute** pore size of 1 micron or smaller, **or** NSF Standard 53 or 58 certification for cyst reduction/removal.[4]

Filter type	Parasites	Bacteria	Viruses
Absolute 1 micron or smaller, or NSF 53/58 cyst-rated	Removes	Not reliably	No
Absolute 0.3 micron or smaller	Removes	Removes	No
Reverse osmosis	Removes	Removes	Removes

"Absolute" vs. "nominal": An absolute rating means nothing larger than the rated size gets through. A nominal rating means the filter catches most particles that size, but some larger ones can slip through. With parasites, most is not good enough.

Best combinations: Filter + bleach (covers all three) • Filter + boil • Boil alone.[4]

Cautions: Boiling, bleach, and filters do **not** remove chemicals, fuel, pesticides, heavy metals, or blue-green algae toxins, so avoid scummy green ponds and runoff from farms or industry. Never mix bleach with other cleaners. Keep the dirty and clean sides of a filter separate. Date your bleach bottle.

1. Oklahoma State University Extension, Emergency Water Supplies: extension.okstate.edu/fact-sheets/emergency-water-supplies.html
2. USDA, How to Disinfect Water After a Disaster: climatehubs.usda.gov/.../USDA-CCH_HowtoDisinfectWaterafteraDisasterOct2017.pdf
3. U.S. EPA, Emergency Disinfection of Drinking Water: epa.gov/ground-water-and-drinking-water/emergency-disinfection-drinking-water
4. CDC, Water Treatment Options When Hiking, Camping, or Traveling: cdc.gov/healthywater/drinking/travel/backcountry_water_treatment.html

Check the bleach label for its percentage. The 7.5% column is scaled from EPA's 6% dose (8 drops x 6/7.5 = 6.4, rounded up to 7). Doubled-dose values follow EPA's instruction to double bleach for cloudy, colored, or very cold water; Oklahoma State Extension recommends 16 drops of 5.25% bleach per gallon. Educational information only; follow local public health instructions when available.