

Emergency Water Supply Treatment Options

Treatment of water depends primarily on the extent of pollution. Water can be polluted many ways including natural sources, chemical & sewage spills/dumping. Polluted water can lead to both acute and chronic illnesses from either disease causing microorganisms or toxic chemicals. A local Environmental Health Specialist should be consulted whenever new water sources are considered.

Boiling

Vigorously boiling water for 1 to 2 minutes will kill most disease causing microorganisms. A pressure cooker is needed to sterilize water (250°F for 15 minutes). However, boiling will not eliminate chemical pollutants. In fact, boiling water contaminated with arsenic can actually make the problem worse. Also, toxic algae release additional toxins when their cell walls are damaged from boiling or chlorination.

Chlorination

Chlorine is an effective way of eliminating most disease causing microorganisms in water that is not grossly polluted. However, it is ineffective against several protozoa (including Giardia and Cryptosporidium) commonly found in surface waters potentially polluted with human or animal waste. These protozoa can only be eliminated by boiling or filtration. Chlorine is also ineffective against chemical pollution (which may not be eliminated by filtration either).

Use a 'Food Grade' chlorine product containing sodium hypochlorite (bleach). Somewhere on the label it will say if it may be used on 'food-contact-surfaces' or for 'water treatment'. Let the water stand for 30 minutes before using it. Double the dose if the water is turbid or colored.

Sodium Hypochlorite Source	Dose for 1 gallon of water	Quantity of solution to treat 1000 gallons of water
Household Bleach (5.25%)	6 drops	1 quart

Always read the label for specific directions for your product.

Filtration

Portable camping water filters can be excellent at removing larger microorganisms like protozoa. They are acceptable for treating water likely to be free from chemical pollutants (including natural toxins) so long as the water is also chlorinated.

For long-term treatment situations, a slow sand filter could be constructed using barrels and/or drums. This requires a good understanding of water sanitation and treatment. It is essential to ensure that the rate of effective filtration does not exceed 50 gpd/ft² (gallons per day per square foot). Again, the filtered water should also be chlorinated.

Solar Still

A solar still can be constructed with nothing more than a plastic sheet, and a cup. It purifies water via distillation and will remove both microorganisms and chemical pollution.

Dig a large shallow hole and place a cup in the center. Cover the hole loosely with the plastic sheet and place a rock on top of the sheet (directly over the cup). Condensation from the ground will drip into the cup.

Wastewater (from cooking, etc.) can be recycled with this system too. You simply pour the water into the hole (remove your cup first). The sun will warm the ground and clean distilled condensation will drip back into your cup.

