

Emergency Purification of Water

Water to be purified by these methods should be as clear as possible. If the water is cloudy or dirty because of suspended solids, let it sit in buckets for a day or so to allow the solid materials to settle to the bottom. Siphon clear water from the center and middle of the bucket, leaving the solids and the water just above them in the bottom. Put this water through several layers of coffee filters or clean cloth. Then treat it by one of these methods. Make purified water taste better by adding a bit of lemon juice or a powdered drink mix; also, pouring back and forth between two clean containers helps.

Boil for 10 minutes. "Boiled" means a rolling boil, not simmering. At higher altitudes, increase the boiling time to 15 minutes. To improve the taste, add a pinch of salt to each quart of boiled water and pour it back and forth between two containers.

Treat with chlorine or iodine. Use plain, old-fashioned chlorine bleach (the label says "sodium hypochlorite at 5.25%", Clorox bleach is this strength, don't use scented or colored bleach). Add 16 drops to each gallon of water. Mix thoroughly and let it stand for 30 minutes. It should have a slight chlorine odor. If it doesn't, repeat the procedure.

To purify with iodine, use "2% U.S. Pharmacopoeia (USP) strength" (ordinary household or medicinal iodine). For clear water, add 20 drops per gallon, 40 drops if the water is cloudy. Cover and let it stand for 30 minutes. If you are using water purification tablets; follow the directions on the label. Bleach and iodine kill micro-organisms, if there are chemical pollutants in the water, they will remain.

Distillation. Put 3 tuna cans on the bottom of a large pot and place a smaller pot on top of the tuna cans. Put unpurified water in the larger pot (make sure the smaller pot does not float off of the tuna cans.) Turn the lid upside down and place it on the large pot. Bring the pot to a boil. The vapor will condense on the under side of the upside-down lid and flow down the lid to drip into the smaller pot. To hasten the process, you can put a bit of cool water in the lid, but make sure the cool water can't drip through the lid into the water below.

Your household plumbing. (1) close the main shutoff valve. If the gas and electricity are still on, turn off the hot water heater. (2) Open the faucets, one by one, collecting any water that comes out. Do this until all the faucets in the house have been opened and their water drained. (3) Open the drain valve on your main water line. If there is no valve, disconnect a water pipe at the lowest point in your system, and drain the water. **To tap the water heater,** close the cold water inlet pipe (on top of the heater). Open a hot water tap and let the water run until it stops. Attach a hose to the drain cock in the base of the heater, open the valve and drain into a container. The plumbing of large buildings will contain a lot of water. The building maintenance supervisor would know how to access this water. Waterbed water is not safe to drink due to the toxic anti-algae treatments, but it is a great source for water for flushing toilets. Treated swimming pool water is a judgment call based on what it has been treated with.

Wells. Many cities have artesian wells in parks and other public places. Studies indicate that ground water that has filtered through 2 meters (a little more than six feet) of sand or loam is free of bacteria, parasites, and other water-borne problems, but there could be problems such as a leaky sewer pipe or

industrial contamination with the water. Unless announced otherwise, purify the water.

Rain. Most houses and buildings have gutters that collect and channel rain to down spouts. When it rains, let the water run for about 10 or 15 minutes, and then catch the runoff from the down spouts in barrels or buckets. (If the roof is in bad repair, cover it with tarps or plastic.) Rainwater can be caught on flat roofs by tarps that channel the water into buckets. Rainwater is very pure, but if the roof or gutters are in bad condition or dirty, purify the water before drinking.

Streams, rivers, lakes. All surface water must be purified before drinking. Just because animals and birds may drink it doesn't make it safe for humans. Water-borne diseases & parasites are grave threats from such water, even if it looks sparkling clean and pure.

Rivers. Dig a hole at least 3 feet deep below the level of the water, about 12 feet from the river's edge, in a spot that is only a foot or so above the level of the river. You may need to shore up the sides of this hole to keep it from collapsing. Water will seep into this hole from the river, and will be relatively clean water, but it must be purified before using.

Snow and ice melt. Fresh, clean, just-fallen snow can be melted and used without further purification. Older snow must be purified. Don't eat snow; you'll have a net water loss due to the energy required to melt the snow. Use a candle, a camp stove, wood stove, or the sun. Two ways to melt snow with the sun are: (1) Pack clear containers (smaller containers, like a 2 liter bottle with the top cut off) with snow. Place them on a black background in full sun. (2) Put two poles in the ground and drape a couple of black trash bags so their ends are in a bucket. Put some snow on the black plastic. Orient this so the snow is exposed to full sun. The melted water trickles down the plastic into the bucket.

Bleach Method:

When boiling water is not possible, filter water, letting particles settle out. Pour off clear water. Add regular household liquid bleach (such as Ultra Clorox Regular bleach -- not scented or colorsafe), as follows:

4 drops regular liquid bleach per quart of water

16 drops regular liquid bleach per gallon of water

1 teaspoon regular liquid bleach per 5 gallons of water. Mix well; wait 30 minutes. Water should have a slight bleach odor. If not, repeat and wait 15 more minutes.

Clorox Bleach toll-free "consumer hotline" 1-800-292-2200.