

Water, Sanitation & Hygiene – Household Preparation

provided by EVC and NBWA (Emergency Volunteer Corps & Nehalem Bay Wastewater Agency)

What will you do when disaster disrupts the water & sewer pipes to your neighborhood, a long time? No clean water for drinking or cooking. No showers. Toilets don't flush. Before long life becomes intolerable, and diseases can spread. Here are some inexpensive ways to prepare now to improve that quality of life for your household in the weeks or months following a disaster.

YOU NEED THESE, FOR HOUSEHOLD WaSH (Water, Sanitation & Handwashing):

- Bottled drinking water for immediate needs.
- Plastic 5 gal. buckets with lids, at least 7 of them (2 for a water filter, 3 for toilets & 2 for a handwash device)
- Food grade water storage containers, like “Jumbotainer” or “Aquatainer” (available from Manzanita Lumber) - enough for at least 3 gallons per person in your household (3 to 7 day supply)
- Ceramic water filter made by JustWater (available from Manzanita Lumber)
- Ordinary household bleach (fresh, unopened – *not newer scented type*), plus an eye dropper & teaspoon
- “Wag Bags” (available online and from Emergency Volunteer Corps)
- Two toilet seats to fit buckets (available from Manzanita Lumber, camping stores and online)
- Supply of *dried* organic materials, like pine needles, leaves, or crushed wood pellets (can be collected later)
- Alcohol-based hand sanitizers and soap, preferably foaming liquid soap
- Washcloths, clean dry towels & toilet paper, and
- Plastic spigot, 2 split rings, string, plus a board to use as a foot pedal for the DIY handwash station.

CLEAN WATER

Quantity. You need *at least* one gallon per day per person for drinking, cooking and handwashing. Be prepared for at least 30 days or more before water/sewage services are restored. That's a lot of water! You can store water, or you can treat water obtained from outside sources such as streams, springs or rainwater.

Store water. Bottled drinking water is good for immediate needs, but is expensive for a large quantity.

We recommend 5 or 7-gallon food-grade plastic containers, Reliance “Jumbo-Tainer” or “Aqua-Tainer”, available on order from Manzanita Lumber, camping stores like REI, or at Amazon.com. Get enough for 3-7 days for whole household.



Fill containers with city water, label “Clean Water” with date filled, then store in a cool place. Use a “drinking water safe” hose, not a garden hose (they have dangerous chemicals and heavy metals); or at least run it lots before filling. Every year replace the water with new - follow the sanitizing procedure “Procedure For Changing Out Stored Water” on EVC site evcnb.org.

Treat water. Storing months of water isn't practical, so be prepared to treat the water you get from outside sources to make it safe to drink. This can be done by (a) boiling, (b) chemical treatment, (c) distillation or (d) filtration. See references below for (a) to (c). Is the water cloudy? Let it settle and decant; or use t-shirt or multiple coffee filters, to make it clear. Containers for storage & drinking must be clean, sanitized with bleach.

Summary on Treatment, here:

(a) *Boiling.* Bring water to a rolling boil for 1 full minute, keeping in mind that some water will evaporate. Let the water cool. Boiling kills bacteria, micro-organisms and viruses, but no help for chemicals or heavy metals.

(b) *Chemical treatment.* Household liquid bleach can kill most microorganisms. Use only regular household liquid bleach that contains 5.25 to 6.0 percent sodium hypochlorite. Do not use scented bleaches, colorsafe bleaches, or bleaches with added cleaners. Use only a newly opened or unopened bottle, as potency of bleach diminishes quickly with time (12 months if unopened). Add 16 drops (1/8 teaspoon) of bleach per gallon of water, stir and let stand for 30 minutes. The water should have a slight bleach odor. If not, repeat the dosage and let stand another 15 minutes. If still does not smell of bleach, discard and find another source of water.



(c) *Distillation.* This allows a household to make drinking water from seawater. However, it's not practical as we have other fresh water sources in our area. Boil, collect condensate, drip into a closed jug.

(d) *Filtration.* You need two plastic buckets with lids, a ceramic water filter, and a plastic spigot. We recommend “Just Water” filters (www.justwater.me) which are available through Manzanita Lumber. “Berkey” water filters (www.berkeyfilters.com) are also good but more expensive. These filters remove bacteria, micro-organisms, bleach smell, viruses in “hosts”; but not chemicals or heavy metals.

Follow the instructions in “Ceramic Filter Drip System” on the EVC web site to assemble your two-bucket filtration system. You pour untreated fresh water into the top bucket, then the water passes through the filter into the lower bucket, and is stored there for drinking! You can store the system disassembled to save space.



SANITATION.

With sewer pipes destroyed by earthquake, flush toilets are useless. Diseases like cholera and diarrhea will spread unless all of us contain our waste, handle it safely, and keep it from contaminating our water sources.

Toilets. Prepare three 5 gallon buckets, with snap-on lids. Label them PEE, POO & COVER. Snap a matching toilet seat onto the first two. Just like our bodies do, at home in a disaster we will separate pee from poo.

Urine smells but is quite safe, has few or no bacteria, is a ready fertilizer, is easily disposed of. We generate a lot more pee than poo. Separating our waste reduces disposal problems significantly. Designate one bucket for Pee. You will dilute it with water before disposal on the ground; the ratio is 1 part urine to 4 or 5 parts water.

Poo is packed full of harmful bacteria, so we need to dispose of it very carefully. The military uses “Wag-Bags” (Waste Alleviation & Gelling kit), and we recommend each household buy a supply of these plastic bags. They are about the size to be placed inside the bowl of your home toilet. Use tape or the toilet seat to hold the WAG bag in place. Each kit contains a chemical that makes it gel, plus a wipe and a bag for disposal. Buy them online, or from the Emergency Volunteer Corps. Get plenty! Store used bags in a separate bin or garbage can until you are directed how to dispose of them safely, by NBWA or the local government.



Poo Buckets. After Wag-Bags, a longer term solution is to use a “POO” bucket. Cover each lump of poo with a layer of organic material from the “COVER” bucket. Suitable organic materials are (1) dried minced leaves & pine needles, (2) firepit ashes, (3) tiny wood chips or sawdust (not planer shavings), or crushed wood pellets, and in a pinch either 4) dry healthy soil or 5) shredded grayboard. The cover material helps to dry the poo, and eventually the mixture decomposes into fertilizer, but until then only dispose as directed by local government.

Neighborhood Poo Containers. When poo buckets are full, local agencies will designate where to empty them. See EVC website for how to construct a poo container from 4x8’ sheets of plywood, using ordinary tools.

HYGIENE

Handwashing is critical to avoid sickness. Especially in a disaster, as disease spreads more easily. A debilitating stomach upset could be life-threatening in an emergency situation. In your emergency kit have alcohol-based sanitizers, foaming hand soap and clean dry towels, or paper towels. Wash hands frequently, and *always wash before* preparing or eating food, after going to the bathroom, or changing diapers. Construct a simple handwash station with a bucket & plastic spigot, as described in “Handwash System” on <http://evcnb.org>. When you wash hands, use soap -- and be thorough: scrub every surface, front, back, thumbs, wrists, in-between fingers – take 20 seconds, or sing “Happy Birthday” twice.



MORE INFORMATION & REFERENCES:

EVC Nehalem Bay: www.evcnb.org. See references under Preparedness Tools / Water Sanitation & Hygiene. [Food and Water in an Emergency](#) by FEMA (Pub. FEMA 477) and American Red Cross (Pub. A5055) at www.fema.gov or www.redcross.org