

## Guidelines For Long-Term Storage Of Water In Containers

Circumstances may occur where households or organizations may wish to store drinking water for long periods of time in preparation for a future emergency. Studies by the U.S. Environmental Protection agency indicate that potable water stored for several years in clean 55-gallon drums in civil defense shelters can become contaminated over time. Sterility of water cannot be maintained when a container is filled. Initially insignificant populations of microorganisms in the water store in a container can, over time, grow on the minute nutrients in the water to the point of degrading the water quality.

The concern arises as to how to assure the safety of water that is intended to be stored for a length of time. Several options are presented below. Regardless of the options used, containers of water are best stored in cool areas away from sunlight.

- A. Bottled water – Commercially bottled water comes from sources that are licensed by the Department of Health and Senior Services. Standards for purity must be satisfied, including sample analysis, in order for the source to be licensed. The water is usually disinfected with ozone, and can remain safe for an extended time, provided the container remains intact.
- B. Fill jugs– The homeowner can fill clean containers with water for extended storage. The following steps should be used to help assure suitable quality of water.
  1. Containers should be clean and sanitary. Often the homeowner will use plastic jugs that previously held milk. Because of the high nutrient content of milk and difficulty of cleaning milk residue from the hollow of the jug handle, special care must be taken to assure the jug has been thoroughly cleaned and sanitized. Jugs that are new and empty, or jugs that previously held water are preferred to jugs that previously held milk. Plastic “jerry cans” or other containers specifically designed for water or beverage storage may also be considered. Metal containers are discouraged due to the corrosive effect of chlorine.
    - a. Jugs should be cleaned in a manual wash-rinse-sanitize procedure in a three-vat sink operation. A mechanical dishwashing machine will not adequately clean the jugs due to the small openings of the jugs and the tendency of the pressure from the water jets to bounce the jugs round in the dishwasher.
    - b. Wash water should have hot water with soap or detergent;
    - c. Rinse in clear hot water; and
  2. Sanitize by immersion
    - a. 1 (one) minute in a sanitizing solution containing 50-200 ppm (2-4 tablespoons of unscented liquid bleach per gallon of water) available chlorine as hypochlorite at a temperature  $\geq 75^{\circ}\text{F}$  or
    - b. other effective sanitizer as recognized by the health authority and used according to label instructions.
    - c. Jugs should be inverted and allowed to drain.

- d. Once jugs are cleaned and sanitized, several options exist for filling the jugs.
  - a) Disinfect the water before filling the jugs. Methods for disinfecting the water are described in Subsection 4.4 of this manual. Generally, this water may be stored up to six months. After that time, the jugs should be emptied, re-cleaned and re-sanitized, and refilled with treated water; or
  - b) Use clean water, without added disinfectants.
    - i. Prior to using the water for potable uses, the water must be disinfected as described in Subsection 4.4 of this manual; or
    - ii. The filled jugs may be stored in the home freezer. Care should be taken to not completely fill the jugs, to allow headroom for expansion as the water freezes to ice. The advantage to this option is that in the event of an electrical outage, the jugs of ice can be placed in ice chests to keep perishable foods cold. As the ice in the jug melts, the water can then be disinfected as described in Subsection 4.4 of this manual, and used. The disadvantage is that water that has been frozen into ice is not immediately available for use for drinking or cooking