

Emergency Water Guidance for Long Term Care Facilities

Current state and federal emergency preparedness regulations for skilled nursing facilities and intermediate care facilities for individuals with intellectual disabilities require providers to have policies and procedures that address the provision of subsistence needs for staff and residents/clients during evacuation and shelter-in-place incidents. This resource has been developed by the California Association of Health Facilities (CAHF) to assist providers in developing policy and procedures to address the water needs of their facilities during an emergency event. Two companion documents are available to assist providers in preparing for water supply disruptions: a sample policy and procedure template and a planning checklist for emergency water.

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The new regulations require that health facilities' external disaster plans should include provisions to independently manage the essential health, safety, and personal needs of the individuals in their care during an emergency. These provisions should include:

- Enough food and water for residents of the facility, and for the staff who will be required to stay and care for them. Facilities must stock food and water for individuals the facility has agreed to shelter, such as staff's family members or other facility or community members.
- Systems and supplies for the use of alternative water sources including the purification of water, if potable water is lost, and a method to transport water from its source to the resident care areas.

These requirements and many positive practices are addressed in this guidance document, sample policy, and procedure, and the emergency water checklist.

1. **SUGGESTED POLICY LANGUAGE:**

To provide safe water for residents/clients, staff and visitors during an emergency, our facility maintains:

- An emergency water supply that is safe, adequate and accessible
- An emergency water supply that is stored in accordance with applicable standards
- Methods and supplies for water treatment procedures to be used when necessary due to disruption and/or contamination
- Arrangements for re-supply

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2. **CONSIDERATIONS FOR DETERMINING EMERGENCY WATER NEEDS:**

The Center for Medicare/Medicaid (CMS) expects all providers to have the flexibility to determine what is an adequate amount of potable and non-potable water for their facility's needs.

The Center for Disease Control (CDC) recommends that facilities conduct a water use audit to determine water usage under normal operating conditions and identify essential functions and minimum water needs. Considerations should include water for residents/clients, staff, and visitors for:

- Drinking water
- Hand washing and hygiene
- Food preparation
- Flushing toilets
- Bathing patients
- Laundry and other services
- Fire suppression sprinkler systems
- Patient care such as water-cooled medical gas and suction compressors (a safety issue for patients on ventilation)
- Heating, ventilation, and air conditioning (HVAC)
- Any other water needs specific to your facility and resident/client needs

The facility's water needs should be based on the location, all-hazards analysis, individual characteristics of the facility, and the population they serve. For additional details, please refer to the [Emergency Water Supply Planning Guide for Hospitals and Health Care Facilities](#) by the American Water Works Association (AWWA) and the CDC.

3. **AGENCY RECOMMENDATIONS AND AMOUNTS:**

Each facility should determine the amount of water to store for emergencies to include the total bed capacity and additional amounts for staff, visitors and predicted surge or emergency influx of admissions. How much water should be available for each individual is not described in the regulations but community standards have been established as follows:

- Recommendations from the American Red Cross, the Federal Emergency Management Agency (FEMA), and the CDC state that individuals should plan to be self-sufficient for a minimum of 72 hours in the event of a wide spread disaster, and suggest at least one gallon per person per day for 3 days. This allows two quarts for drinking water and beverages and two quarts for food preparation and hygiene per person per day.

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- The nursing department may want to designate a specific amount of water for nursing procedures, such as enteral feeding flushes, sterile dressing uses, or any other nursing procedure needing bottled or distilled water.

In addition to a plan for potable water, the facility should evaluate their essential water needs for environmental cleaning, flushing of toilets, and other critical activities that may require water but could utilize non-potable sources or be met by some alternate plan that does not require water (i.e. environmental wipes, paper supplies for meals, portable toilets).

When calculating the minimum amount of water needed on hand for emergencies, facilities should also consider a strategy to monitor water use during an incident to avoid waste and ensure the supply lasts for the projected duration. Consider assigning a specific person to track and monitor the amounts of stored water used during an emergency event.

4. **SOURCES OF POTABLE WATER:**

When planning for emergency water needs, it may be useful to talk to the local response authorities (i.e. public health, emergency services authority, local healthcare coalitions) and the municipal water organization about community-specific resources and processes for accessing emergency water supplies. The local authorities can also advise on how they will alert the community when they identify an anticipated disruption, as well as send recommendations on purification methods and testing. A combination of bottled water and large storage containers may be included in the emergency supply inventory. Other internal sources of water to consider to meet facilities' needs are ice machines, hot water storage tanks, boilers, or toilet storage tanks (not bowls).

5. **STORAGE AND ROTATION:**

Facilities should designate emergency water storage location and procedures. Healthcare facilities need to follow directions provided by manufacturer of the storage container, as well as guidance from local and state health departments on how to store the water. Facilities should determine the rotation schedule for commercially bottled water based on the guidance below.

Bottled Water

Bottled or distilled water for emergency purposes should be stored and labeled "FOR EMERGENCY USE ONLY". Commercially prepared bottled water is recommended. If used, keep the water in its original sealed container and stored in a cool, dry area away from heat sources. Replace the water per manufacturer directions. Once opened, use it and do not store it further.

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To make sure that all water is safe to drink, the U.S. Environmental Protection Agency (EPA) and the U.S. Food and Drug Administration (FDA) set drinking water standards. EPA sets standards for tap water provided by public water suppliers; FDA sets standards for bottled water based on EPA standards. Bottled water and tap water are both safe to drink if they meet these standards, although people with severely weakened immune systems or other specific health conditions may wish to further treat their water at home or purchase high quality bottled water. FDA regulates bottled water as a packaged food under the Federal Food, Drug and Cosmetic Act, and has established standards of identity and quality for bottled water.

According to the FDA, commercially bottled water is considered to have an indefinite safety shelf life if it is produced in accordance with CGMP and quality standard regulations, and it is stored in an unopened, properly sealed container. Therefore, the FDA does not require an expiration date for bottled water. However, long-term storage of bottled water may result in aesthetic defects, such as off-odor and taste, and most bottlers voluntarily put expiration dates on their labels.

The American Red Cross and FEMA recommend changing bottled water every 6 months. In the United States, manufacturers often mark a “sell by” date on the bottle which is for supermarket product rotation. According to the [Emergency Water Supply Planning Guide for Hospitals and Health Facilities](#) by the AWWA and the CDC, it does not imply that the product becomes compromised or that the water quality deteriorates after that date.

An agreement from a local bottled water company or supplier to provide bottled water in emergencies may be part of the facility disaster plan.

Temporary Water Storage Containers

A variety of temporary storage drums or barrels are available commercially. If possible a new tank should be used because tanks that have contained chemicals can have harmful residue. Tanks should be cleaned and disinfected before and after use, and meet NSF/ANSI Standard 61 for potable water use. For planning purposes, the location and weight of the container should be considered. A siphon or pump can be used to dispense water from the container and food grade tubing must be used for siphoning. Manufacturer guidelines must be followed in terms of tank location, protection from the elements, testing, purification, and rotation of the water.

Stored water should be checked regularly to ensure inventory and integrity of the supplies. Staff should be instructed not to use the emergency water supply for any purpose other than an emergency situation.

- Should an emergency occur, dispense water from storage containers following manufacturer guidelines.
- A food-grade (FDA approved) drinking water hose should be used to fill water containers from the water storage tank and to distribute water in an emergency.
- Transport water in food-grade (FDA approved) emergency water containers.

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- Ensure the emergency water supplies and the hose and containers are accessible 24 hours a day and every day of the week, and that staff know the location of these supplies.

6. **TESTING AND PURIFICATION:**

Immediate action must be taken after an emergency is declared to preserve the water already present in a facility, (pipes, water heaters, etc.). Assuming it is not contaminated, this water can augment stored water supplies. Check with local authorities to confirm water in the pipes is safe. If you are unable to contact the authorities, assume the water in the pipes is contaminated and use for non-potable purposes, (i.e. toilet flushing) or purify for potable use. Filtration and purification go hand-in-hand; a combination of methods usually yields the best results.

- Water sources already in the facility need to be protected from contamination if there are reports of broken water or sewage lines, or if local officials advise the facility of a specific threat.
 - To shut off incoming water, locate the main valve and turn it to the closed position.
 - Be sure all staff members know beforehand how to perform this important procedure and include this information in employee training.
- To use the water in the facility's pipes, let air into the plumbing by turning on the faucet in the facility at the highest level. A small amount of water will trickle out. Then obtain water from the building's lowest faucet – at a single-story facility, this is typically a garden hose spout outside.
- To use the water in the hot-water tank:
 - Be sure the electricity or gas is turned off.
 - Open the drain at the bottom of the tank.
 - Start the water flowing by turning off the water intake valve at the tank and turning on a hot-water faucet.
 - Refill the tank before turning the power back on, or call a professional to turn the gas back on.
- If water in the pipes is suspected to be unsafe, faucets and drinking fountains should be turned off and signs placed explaining that the water should not be used.

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Methods for Purification

In the event of an emergency, purifying water of uncertain quality at the scale a facility needs may not be practical or possible. The instructions below are for treating water of uncertain quality, in the absence of instructions from local authorities during an emergency. If enough water is stored in advance, or water resupply plans are in place, the treatment methods below will not be needed. If chemical contamination is suspected, the water should not be used unless directed otherwise by local authorities.

In addition to having a bad odor and taste, contaminated water can contain microorganisms (germs, bacteria, and viruses) that cause diseases such as dysentery, typhoid, and hepatitis. Treat all water of uncertain quality before using it for drinking, food preparation, or hygiene.

There are many ways to treat water, though none are perfect. Often the best solution is a combination of methods. Boiling or chlorination will kill most microorganisms but will not remove other contaminants such as heavy metals, salts, and most other chemicals. Before treating, let any suspended particles settle to the bottom, or strain them through layers of paper towel, clean cloth, or coffee filter.

Boiling: Boiling is the surest method to kill disease-causing organisms, including viruses, bacteria, and parasites.

- If the water is cloudy, filter it through a clean cloth, paper towel, or coffee filter OR allow it to settle. Then follow boiling guidelines.
- Bring the clear water to a rolling boil for one minute (at elevations above 6,500 feet, boil for three minutes).

Bleach: Small quantities of filtered and settled water can be made safer to drink by using a chemical disinfectant such as unscented household chlorine bleach. Disinfectants can kill most harmful or disease-causing viruses and bacteria, but are not as effective in controlling more resistant organisms, such as the parasites *Cryptosporidium* and *Giardia*.

- Use only regular household liquid bleach that contains 5.25 to 6.0 percent sodium hypochlorite. Do not use scented bleaches, color-safe bleaches, or bleaches with added cleaners.
- Because the potency of bleach diminishes with time, use bleach from a newly opened or unopened bottle.
- 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 it does not have a bleach odor, then repeat the dosage and let stand another 15 minutes. If it still does not smell of bleach, discard it and find another source of water.

Iodine: Iodine or other water treatment products (sold in camping or surplus stores) are not recommended. Iodine and iodine-containing tablets (tetraglycine hydroperiodide) are **not** effective against *Cryptosporidium*.

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Chlorine dioxide tablets: Chlorine dioxide tablets can be effective against *Cryptosporidium* if the manufacturer’s instructions are followed correctly.

- **RESUPPLY PLAN/AGREEMENTS:**

The facility should make arrangements/agreements with local water companies (public and/or private) to acquire water in case of an emergency to meet the facility’s needs. Additionally, in connection with local emergency response personnel, the facility should identify what provisions exist or would need to be installed (e.g., appropriate connections, valves, backflow prevention devices) to enable receipt and use of emergency water supplies (e.g. tanker trucks, water bladders, etc.).

- **PORTABLE SUPPLY FOR EVACUATION:**

A portion of the stored water supplies should be easily portable so that supplies can be available to residents and staff along the way in the event of an evacuation. The amount and container type for transport should be determined by the facility based on their assessment of the location, all hazards analysis & individual characteristics of the facility and the population they serve.

- **REGULATORY REFERENCES:**

Federal Regulations

S&C 17-29

Advanced Copy – Appendix Z, Emergency Preparedness Final Rule Interpretive Guidelines and Survey Procedures

E-0004

- **Interpretive Guidance:**
 - Providers must develop and maintain an emergency preparedness plan that must be updated at least annually. Providers must maintain documentation to include the date of the review and any updates to the plan based on the review. The format of the plan is left to the providers' discretion.
 - The plan provides a framework, which includes a facility-based and community-based risk assessment. The risk assessment will identify:
 - Risk at the facility and community-based level.
 - How the business operations will continue during the emergency.
 - How the provider will collaborate with the local emergency preparedness officials.
 - The approach will be specific to the location of the provider and will consider the particular hazards that are most likely to occur in a surrounding area, which will include, but not be limited to:
 - Natural disasters
 - Man-made disasters
 - Facility-based disasters
 - Care-related emergencies

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- Equipment and utility failures
- Interruptions in communication
- Loss of all or part of the facility
- **Interruptions to the normal supply of essential resources**
- **The likely duration of the interruptions**
- The timeframe within which a contractor providing assistance will initiate services
- How services will be procured and delivered
- How contractors will supply services or supplies during the course of the emergency

E-0015

- Interpretive Guidance
 - Facilities must be able to provide subsistence for patients and staff throughout an emergency (or until evacuation). There are no set requirements for the type or amount of provisions needed; including food, pharmaceuticals, and medical supplies. Provisions must be stored to minimize exposure to disaster (e.g., stored above ground level to minimize destruction by flood). In determining the amount of provisions, facilities should consider whether or not volunteers, visitors, or others seeking shelter are likely to come to the facility.

CFR § 483.90(i)(1)

- Interpretive Guidance
 - The facility should have a written protocol which defines the source of water provisions for storing water, both potable and non-potable, a method for distributing water, and a method for estimating the volume of water required.

California Regulations - From CDPH Licensing and Certification AFL 07-31 Page 3 October 24, 2007

The plan must provide for sources of emergency utilities and supplies, including gas, water, food and essential medical supportive material. [CCR T22 §72551 (b)(1), §76563(b)(1), §76928 (b)(1), §73549(b)(1)].

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- **REFERENCES and ADDITIONAL RESOURCES:**

- a. **FEMA Water Guidance:** <https://www.ready.gov/water>
- b. **Emergency Water Supply Planning Guide for Hospitals and Health Facilities:** <https://www.cdc.gov/healthywater/pdf/emergency/emergency-water-supply-planning-guide.pdf>
- c. **Food-grade hoses - Grainger:** <https://www.grainger.com/category/ecatalog/N-1z0du0q>
- d. **Food-grade containers:** <http://www.lexingtoncontainercompany.com/Food-Grade-ContainerJugs.html>; <http://www.epackagesupply.com/buckets/>
<http://www.preparewise.com/water-storage-andfiltration-systems/>
- e. **Purification:**
http://www.redcross.org/images/MEDIA_CustomProductCatalog/m4440181_Food_and_WaterEnglish.revised_7-09.pdf; <http://www.cdc.gov/healthywater/emergency/drinking/making-water-safe.html>
- f. **International Bottled Water Association:**
<http://www.bottledwater.org/education/bottled-water-storage>;
<http://www.bottledwater.org/types/bottled-water>
- g. **FDA site:** <http://www.fda.gov/Food/FoodbornellnessContaminants/BuyStoreServeSafeFood/ucm077079.htm>
- h. **Minnesota Department of Health:**
<http://www.health.state.mn.us/divs/eh/water/factsheet/com/bottledwater.html>