

Craven County Health Department  
Division of Environmental Health



# EMERGENCY SHELTER BROCHURE FOR SHELTER MANAGERS



## **NOTE:**

This brochure was designed to assist emergency shelter managers during a hurricane or other emergency event. However, the information may prove useful to individuals and families who find themselves in emergency situations. Please keep this brochure in a safe and easily accessible location for quick reference.



**CRAVEN COUNTY HEALTH DEPARTMENT  
DIVISION OF ENVIRONMENTAL HEALTH  
EMERGENCY SHELTER BROCHURE  
FOR SHELTER MANAGERS**

When a public emergency or natural disaster strikes, a large number of people may be temporarily housed in emergency shelters. It is during these times that the importance of basic provisions such as food, water, shelter, and waste disposal become readily apparent. The residents of the shelters depend on emergency personnel and shelter managers to provide protection and guidance concerning these issues. This brochure is intended to provide shelter managers with some basic information and procedures they may need to ensure that safe food and water and adequate waste disposal are provided, even in an emergency situation.

**WATER**

Provision for a safe water supply should be a high priority during and after a natural disaster or emergency event. This is especially true in shelters, where a large concentration of individuals will be sharing the water supply. Most emergency shelters will be supplied by the public water system. Occasionally a location served by its own well is chosen to be used as a shelter.

Shelters served by a well may experience an electrical power loss due to the emergency which renders the well pump(s) inoperative, unless a generator is available. In addition, the well head (top of well) may be submerged by flood waters, which can contaminate the well. Contamination can also occur if the well is opened for repair or primed with contaminated water during or after the emergency event, making the water supply of questionable quality. Unless one or more of the above occurs, it is generally safe to continue using the well during the emergency event.

For shelters served by public water, it is typically safe to continue using the shelter's usual water supply during the emergency event. However, if the health authorities have issued health warnings concerning the public water supply, the supply is interrupted or loses pressure, or if you suspect that the water supply has become contaminated, then you should use bottled water or purify any water used. The following guidelines should be used:

I. **BOTTLED WATER:** In the event the public water supply should become contaminated or lose pressure, or if the shelter's well is unusable, emergency personnel will usually provide bottled water to the shelters. If bottled water has been provided to the shelter, this water should be used for all drinking, cooking, hand-washing, tooth-brushing, etc. The water may be provided in the form of tank trucks (e.g. military "water buffaloes"), bottles, jugs, bags, or cans. Properly prepared bottled water is the safest option to use if the public water supply is contaminated or of questionable quality. Only if bottled water is not available should purification and use of possibly-contaminated water be attempted.

II. PURIFICATION METHODS: If bottled water is unavailable, any water used should be purified by one of the following methods. Keep in mind that, unless otherwise stated, these measures will kill microorganisms but will not remove other contaminants such as heavy metals, salts, most chemicals, and radioactive fallout.

NOTE: Before purifying, remove any sediment or floating material by straining the water through clean cloth or folded paper towels.

1. BOILING: Boiling is the safest method of purifying water. Bring water to a rolling boil for no less than 3 minutes. Let the water cool before drinking. Boiled water will taste better if you put oxygen back into it by pouring it back and forth between two clean containers.

2. CHLORINATION: If water cannot be boiled, household chlorine bleach (5.25% chlorine) such as Clorox, Purex, etc. can be used to purify the water. Add 8 drops per gallon of water or 2 drops per quart of water (this is approximately equivalent to 1 teaspoon of bleach per 10 gallons of water). Check the label to be sure that the only active ingredient is sodium hypochlorite. Do not use any bleach that contains soap or is scented with perfumes. Mix the bleach thoroughly into the water and let it stand for at least 30 minutes before using.

3. IODINE: Household iodine will also disinfect water. This method should only be used if bottled water is unavailable and you cannot boil or chlorinate the contaminated water. Add 20 to 40 drops per gallon of water or 8 drops per quart of water of 2% tincture of iodine. Mix thoroughly and let it stand for at least 30 minutes before using.

4. PURIFICATION TABLETS: Water purification tablets may be available at sporting good stores, some drug stores, or from the military. They typically release either chlorine or iodine. Follow the package directions.

5. DISTILLATION: The methods described above will only remove microorganisms from the water. Distillation will remove heavy metals, salts, most chemicals, and radioactive fallout in addition to microorganisms. However, it requires more preparation and processes smaller quantities of water than those above. This method involves boiling water and then collecting the vapor, which condenses back to a liquid as clean purified water. To distill, fill a pot halfway with water. Flip the pot's lid upside down and tie a cup to the handle on the lid so that the cup will hang right-side-up just above the water level in the pot. Boil the water for 20 minutes or more depending on the size of the pot. The water that drips from the lid into the cup will not contain salt, chemicals, microorganisms, or other impurities. Allow the water in the cup to cool before drinking, as discussed in the boiling method above.

## WASTE DISPOSAL

While this topic may be uncomfortable to discuss, it is nevertheless something for which shelters must be prepared. While most shelters will be connected to a public sewer system, some shelter locations may have individual sewage treatment facilities or individual on-site septic systems. During a natural disaster or emergency event, it is conceivable that high water tables, physical damage, electrical outages, or interruption of the water supply may render these systems inoperable.

If the waste disposal system is operating normally, continue to use it as usual. However, if it is not working, or if the shelter's water supply is cut off so that there is no water pressure with which to flush toilets, the following options should be used:

I. **PORTABLE TOILETS:** Vault-type portable toilets (e.g. "porta-potties") are sometimes provided by emergency service personnel or the military as a temporary means of sewage storage/disposal. However, these types of toilets require a service company to be able to reach the shelter locations every 24 to 48 hours (depending on usage) to service and pump out the holding tanks, which may prove difficult during or after a natural disaster or emergency.

II. **HOW TO FLUSH A TOILET WITH NO WATER SUPPLY:** If the shelter is on public sewer or an individual wastewater system, but the water supply has been interrupted so that there is no water pressure with which to flush the toilets, the toilets may be able to be flushed manually. Try the following:

1. Do not let waste accumulate to the point of clogging or stoppage. However, since water conservation during the emergency is a high priority, it may be possible to use the commode more than once before flushing.
2. Pour one to two gallons of water all at once into the bowl, the toilet should flush itself down. Alternatively, if the toilet has a water closet (water tank) on the back with a removable lid, you may be able to pour the water into this and use the handle to flush as usual.

NOTE: You should try this on an unused commode first to make sure it works. Keep in mind that the water used to flush the toilet does not need to be potable (drinkable) water. Collected rain water, salt water, etc. can be used for this purpose to conserve potable water.

III. **AS A LAST RESORT:** If the above methods and resources are not available, and the emergency event continues, more severe methods may become necessary. A "field toilet" may be improvised by taking a container such as a large bucket or small garbage can and double-lining it with two sturdy plastic garbage bags. The inner bag should be tightly closed and twist-tied after each use, while the outer bag serves as backup protection and as a support for the inner bag. Make sure that the bags have no rips or holes in them. The inner bag should be removed when full or every few hours and placed in a larger, tightly

sealed garbage can for storage. If the waste disposal system becomes functional again during or very soon after the emergency event, then the stored waste can be dumped from the bags into the functioning toilets and flushed away. The empty bags should then be re-sealed and removed to a sanitary landfill. Otherwise, the bathroom waste must be treated as "septage" and go to a septage hauler (such as a septic tank pumper) where it can be lime stabilized and properly disposed of.

The method described above may also prove useful for diapers and personal hygiene products, since these items cannot be disposed by flushing down the toilet, particularly if the disposal system is not completely functional. However, a separate "field toilet" and storage container distinct from that used for bathroom waste should be used. The bags containing the diapers and hygiene items should be removed to a sanitary landfill as solid waste when the disaster event is over.

## FOOD PROTECTION

Food safety should be a very high priority in emergency shelters, since a large concentration of individuals will be sharing the same food supply. Meals in emergency shelters are usually prepared by emergency workers (Red Cross personnel, etc.). When the shelter is located in a school building, the food may also be prepared by the school cafeteria staff. The workers making and serving these meals should be well trained for food safety in emergency situations. The meals will usually consist of simple, easily prepared foods such as soup, sandwiches, potato chips, etc.

Anyone involved in the preparation or serving of food in an emergency shelter should be familiar with the following food safety guidelines:

### I. Types of Foods To Use and To Avoid:

1. Food to Use:
  - a. Use simple foods (easy to prepare and easy to store hot or cold).
  - b. Use sandwiches, soups, canned foods, etc.
  - c.
    1. Canned foods, which have been submerged under flood water or otherwise contaminated can be washed and sanitized.
    2. Remove labels, mark contents on can with indelible ink pen, scrub can with soapy water and a brush, and sanitize can for 1 minute in chlorine solution (1 tablespoon household bleach per gallon of water).
    3. Keep on hand enough canned food for 4-5 days and a hand-operated can opener.
  - d. Use canned or powdered milk and mix with potable water only as much as can be consumed within the next 2 hours.
  - e. Boil all water used in food preparation for 3 minutes prior to placing food in it.

- f. Hard cheese usually keeps well at room temperature. Cream cheese, opened containers of cheese spreads, and cottage cheese spoil quickly.
- g. Fresh eggs can be kept several days in a cool place without refrigeration; throw away cracked eggs!
- h. Potatoes can be washed, peeled, and boiled.
- i. Fresh fruits and vegetables such as apples, oranges, bananas, carrots, etc. do not require refrigeration and can be eaten raw. Wash fruits and vegetables well and do not use any that have been exposed to flood waters.
- j. Whenever possible, use foods that can be prepared in and eaten from their original container.

2. Food to Avoid:

- a. Do not use foods that require a lot of manual contact (salads, casseroles, seafood items, chicken, etc.).
- b. Do not use gravies, salads with meat items, custards; any items made with meat, poultry, fish, or eggs; chopped meats, creamed foods.
- c. Do not use foods that have thawed out or been held at above 45<sup>0</sup>F. Thawed foods still below 45<sup>0</sup>F can be refrozen, or should be cooked immediately and then either held below 45<sup>0</sup>F or over 140<sup>0</sup>F till served. Do not depend on smell of foods to determine safety. Do not refreeze food that has warmed above 45<sup>0</sup>F.

NOTE: Harmful microorganisms that can cause illness grow very rapidly in foods that are in the temperature range between 45<sup>0</sup>F and 140<sup>0</sup>F. That is why you should hold cold foods at below 45<sup>0</sup>F and hot foods above 140<sup>0</sup>F so that the foods do not stay in the temperature range that allows microorganisms to grow. In other words, keep cold foods cold and hot foods hot!

- d. Pork, fish, and poultry spoil quickly. Dispose of them if they have been in a refrigerator without power and have warmed above 45<sup>0</sup>F.
- e. Do not use foods in plastic bags, cardboard, or paper which have been submerged. They should be discarded. Vegetables, cabbage, and lettuce that have been submerged should be discarded.
- f. Do not use any food that has been exposed to chemical or industrial type wastewater. It cannot be salvaged safely!

II. Protection of Food:

- 1. Keep all foods below 45<sup>0</sup>F or above 140<sup>0</sup>F; except when being prepared. Foods should be consumed quickly after preparation. Have a stem thermometer on hand.

2. Without power:
  - a. As soon as you hear a storm, flood, hurricane, etc., may be possible, turn settings as low (cold) as possible on refrigerators and freezers to build up "cold" reserves.
  - b. Keep doors shut on refrigerators and freezers. Foods in a closed refrigerator may be safe for 6 hours. Foods in a closed freezer should be safe for 12 hours. Wrap refrigerators and freezers with blankets for insulation. (Do not cover air vents or openings.)
  - c. Be aware of sources (dairies, locker plants, power companies) of dry ice and stock up if time allows.
    - Handle with gloves. (Dry ice is -216<sup>0</sup>F and can cause severe frostbite.)
    - Provide some ventilation of gases from dry ice (open a window or door to the room).
    - Upright freezers require dry ice on each shelf (more than horizontal freezers). Allow 2 1/2-3 pounds of ice per cubic foot of freezer space.)
    - Full, large, well-insulated freezers with meat items stay colder longer than do half-full, small, poorly insulated freezers filled with bakery or vegetable items.
3. Avoid manual contact. Use clean disposable gloves, tongs, spatulas, etc., or wash and chlorine dip hands frequently. Do not smoke or use tobacco in any form; if coughing or sneezing, stay out of foodhandling areas and do not handle food.
4. Foods that have been submerged should not be washed and used except for canned items that are intact. The labels should be removed, the can scrubbed with a brush and warm soapy water. The can should then be submerged in a bleach and water solution (1 tablespoon household bleach to a gallon of potable water) for 1 minute.
5. Use the most perishable foods first. (Use food in the refrigerator first, then food in the freezer.)
6. Use single service items for eating. (ie. plastic/styrofoam cups, plates, forks, spoons, etc.- use once, then throw away.)
7. Keep household bleach on hand. Also keep chlorine test strips available to test the strength of bleach solutions that you make for sanitizing. The strip should indicate that the solution is at least 50 ppm strength to properly sanitize surfaces (school cafeterias, if used as shelters, may already have test strips available from their usual kitchen activities, but do not assume this is the case).
8. Post a list of freezer contents on the freezer door, to minimize the number of times you open the door.



9. Individuals with special diets and allergies, as well as babies, toddlers and the elderly will need particular attention. Canned dietetic foods, juices and soups may be helpful for the ill or elderly. (Be sure to have a can opener.)

### III. Handwashing:

1. Under normal conditions, proper handwashing before handling food is necessary. In disaster situations, where facilities are primitive, proper handwashing is critical and essential. Handwashing is the single most important means of preventing the spread of infection and foodborne illness. However, since potable water may be at a premium during an emergency event, each shelter should have waterless hand sanitizers (such as ISAGEL<sup>®</sup>, CAL STAT<sup>®</sup>, Alcare Plus<sup>®</sup>, etc.) on hand. Use the waterless sanitizer according to the the product's directions if there is not enough potable water to allow normal handwashing as described below.
2. Proper handwashing includes the following:
  - a. Clean, potable water (preferably warm).
  - b. An antibacterial soap or regular soap followed by a chlorine dip (1 tablespoon of household bleach per gallon of water).
  - c. Wash hands thoroughly for 30 seconds, scrub especially well around fingernails.
  - d. Rinse well with clean water and dry thoroughly with paper towels.
3. Hands should be washed/sanitized after or before:
  - a. Beginning handling food.
  - b. After eating, smoking, coughing, or sneezing on hands.
  - c. When switching from raw to cooked food items.
  - d. After touching contaminated surfaces such as trash can lids, dirty utensils, ash trays, handkerchiefs, etc.
  - e. After visiting the toilet.
4. Single use plastic gloves are recommended whenever possible. They do not eliminate the necessity for proper handwashing.
5. Do not handle food if you have cuts, sores, or open wounds on your hands or fingers. Likewise, if you are coughing, sneezing, or have a runny nose, you should not handle food.

### IV. Cross Contamination/Protection of Food:

1. Cross Contamination  
Be careful not to use the same utensils or surfaces for cooked and raw items, without washing and sanitizing them first. Likewise, hands must be washed thoroughly between handling raw and cooked items. Vegetables,

lettuce, cabbage, etc., must be kept separated from raw meat items. Raw meats should be kept separated from cooked food items and different kinds of raw meats should be kept separated (chicken from beef, etc.).

### FOR MORE INFORMATION . . .

For more information about preparing for emergencies, contact Craven County Emergency Services (919) 636-6608, The Craven County Health Dept. (919) 636-4936, your State Office of Emergency Management, or write to the Federal Emergency Management Agency (FEMA) at P.O. Box 70274, Washington, DC 20024.

**Emergency Shelter Brochure for Shelter Managers.doc**

Created 8/28/96; Revised 9/4/96; Revised 9/11/96; Revised 10/2/96; Revised 6/11/97.