

CREATING A CULTURE OF PREPAREDNESS

SURVIVAL BASICS: FOOD

How to Stock Up and Prepare for Natural Disasters

Glenda Hyde, Lauren Kraemer,
Brenda Marty-Jimenez,
Lynette Black and Patrick Corcoran

Disasters are scary and affect us in many ways. To help reduce fear and anxiety, stay informed and on track with your disaster preparedness plan. Food is central to any plan.

The key to being safe is knowing what could happen in your area, so you can prepare basic food, hygiene and water supplies.

One disaster that emergency managers are gearing up for is the Cascadia Subduction Zone earthquake.

Explore the online sessions!

Discover what an earthquake and tsunami are like in OSU Extension's free online training, Preparing for the Cascadia Subduction Zone Event. Videos, virtual reality simulations, interactive maps, a Cascadia checklist and other resources will help you prepare for natural disasters.

FREE at beav.es/Cascadia

After the Cascadia earthquake, you will need a variety of healthy foods and nutrients to better manage the next steps in the disaster. Your brain will need to be well nourished and hydrated so you can keep calm, have an optimistic outlook and make good survival decisions for many days and weeks.

Immediate actions

When the earthquake shaking stops, grab your go bag and carefully exit the building. Those in tsunami

Scientists say there is a 37% chance that a major earthquake will occur along the Oregon Coast sometime within the next 50 years. The earthquake is expected to come from a rupture of the 600-mile fault called the Cascadia Subduction Zone. The fault sits from 30 to 100 miles off the Pacific Coast and runs between Vancouver, British Columbia, and Northern California.



Photo: U.S. Department of Agriculture

Stock up on foods that don't require refrigeration.

Be ready to grab your go bag

Go bags are survival supplies designed for quick evacuations. Plan and pack your go bags in advance so you can move quickly in an emergency. They should include enough supplies to help you survive for a minimum of 24 hours; 72 hours is preferred.

Pack lightweight foods and medications for three days. Carry 1 to 3 quarts of water. You should be able to find additional water that you can make safe. See *Survival Basics: Water*, <https://catalog.extension.oregonstate.edu/em9285>, and *Cascadia Action Steps: It's Time to Get Ready*, <https://catalog.extension.oregonstate.edu/em9284>, for more tips.



Graphic: Made By Made, The Noun Project

Glenda Hyde, associate professor of practice and Extension Disaster Education Network delegate; Lynette Black, associate professor and Extension Disaster Education Network delegate; Patrick Corcoran, associate professor and hazards outreach specialist for Oregon Sea Grant; and Lauren Kraemer, assistant professor of practice in the mid-Columbia region; all of Oregon State University. Brenda Marty-Jimenez, extension agent, Broward County, Florida, University of Florida Institute of Food and Agricultural Sciences.



Oregon State
University

EM 9331
August 2021

or landslide areas need to move immediately to community Assembly Areas or other safe places at higher elevations. Stay there for at least 24 hours to avoid the risks of tsunami surges. Wait until after the surge risk has passed to unite with loved ones.

Once you are in a safe place, check for any injuries and conduct first-aid activities.

Before you try to re-enter your home, assess it from the outside. Take photos to document any damage for insurance or FEMA assistance. Then, if clear, take care re-entering, again taking photos of any damage you note, unless you can see it is unsafe. Avoid unnecessary risks. There likely will not be enough first responders to tend to all injuries. The safety of you and your family is a priority.

There will be many aftershocks over the next weeks and wave surges over the next 24 hours. After the disaster, keep updated on weather reports, supply distributions or other news through local emergency managers or the National Oceanic and Atmospheric Administration's Weather Radio broadcasts. NWR is an "All Hazards" radio network, making it your single source for comprehensive weather and emergency information.

If your house is safe for re-entry, local emergency managers want you to "shelter in place" in your own home. You may be able to use perishable foods in the refrigerator for the next meal and access foods from the freezer for the next few days. Then, you will need to use the nonperishable food you have stocked for an emergency. If your home is in an expected tsunami zone or other high-hazard area, set up a two- to four-week food supply near your family's evacuation meeting site.

Ready.gov, the American Red Cross and other organizations offer suggested supply lists, but there is no one size-fits-all. Every family has unique considerations: food preferences, nutritional needs, cooking equipment and skills.

Think nutrition, hydration and health

These tips to support optimal nutrition, adequate hydration and food safety will help ease your mind.

Avoid procrastination and denial to get your plan in place. A large earthquake could damage roads and bridges and cause landslides, blocking supply routes for weeks or months. Supply drops may begin in some areas within about three days for some of the most severely impacted regions.

Having routine meals with familiar foods will help improve moods and boost optimism. Balanced nourishment will help you take steps for recovery and rebuilding. Think about favorite, healthy meals your family enjoys. How can you include these in your emergency supply?

Menu and meal planning

There are many ways to plan meals. You can find helpful ideas for simple, inexpensive, menus at MyPlate.gov. MyPlate's five food groups help you select foods for balanced meals; just pick foods from each group. Vary the colors of fruits and veggies for maximum nutrients, and think about the recommended daily servings for your meals and snacks.

Meal planning can be daunting, so start by planning for a short time span at first. Then reuse or vary the menu cycle moving forward. This will give you enough variety and nutrients to help you be at your best in stressful times. A manageable plan for novices includes meals for 72 hours, or three days. For more variety, some may want to make a plan for a full week and then replicate it. The minimum goal for the state is meals for two weeks, but many local emergency managers recommend four weeks' supply. This ensures that you have enough food and water until community needs are assessed and supply drops can arrive for distribution.

Try to choose the healthiest options when available. Comfort foods are important to include, too. They can help keep spirits up.

Use www.MyPlate.gov or the app from your smart phone store, Start Simple with My Plate. Determine the number of servings and portion sizes for you and your family. These factors vary with age and activity level. After a disaster, survivors may have greatly increased outdoor activity levels. Download menu-planning sheets from <https://www.myplate.gov/myplate-plan> to help you develop menus and a shopping list. Print hard copies if you prefer.

A tip borrowed from those who plan meals in hurricane regions: Put your meal items for the first three days in labeled, paper shopping bags. Staple or tape the bags shut. Store them in waterproof crates labeled for each day. This can help keep family members from eating these supplies before a disaster. It will also help you establish mealtime routines more easily after the disaster. Regular mealtimes during stressful times can benefit all family members but especially children.

Plan for breakfast, lunch, dinner and snacks

Remember special dietary considerations when planning. Tailor menus to the nutritional needs and preferences of your family. This is not the time to surprise young children with new foods. Save your menus in a watertight zip-style bag. This way, you can easily assemble your meals, even when you are highly stressed.

Try to choose foods from each food group for meals and snacks using the MyPlate planning tools. These suggested pantry items are organized by food group to give you ideas for a variety of tasty, nutrient-rich foods.

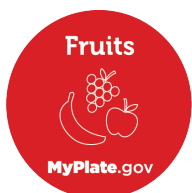
MyPlate Plan for 2,000-calorie portion sizes, ages 14+



Vegetable group 2½ cups

1 cup counts as:

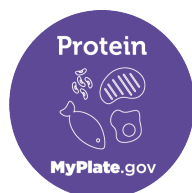
- 1 cup raw, frozen or cooked/canned vegetables; or
- 2 cups leafy salad greens; or
- 1 cup 100% vegetable juice



Fruit group 2 cups

1 cup counts as:

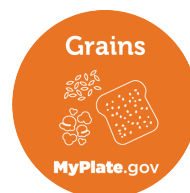
- 1 cup raw, frozen, or cooked/canned fruit; or
- ½ cup dried fruit; or
- 1 cup 100% fruit juice



Protein group 5½ ounces

1 ounce counts as:

- 1 ounce cooked or canned lean meats, poultry, or seafood; or
- 1 egg; or
- 1 tablespoon peanut butter; or
- ¼ cup cooked beans or peas; or
- ½ ounce nuts or seeds



Grains group 6 ounces

1 ounce counts as:

- 1 slice bread; or
- 1 ounce ready-to-eat cereal; or
- ½ cup cooked rice, pasta or cereal



Dairy group 3 cups

1 cup counts as:

- 1 cup milk; or
- 1 cup yogurt; or
- 1 cup fortified soy beverage; or
- 1½ ounces natural cheese or 2 ounces processed cheese

Choose foods from each food group

VEGETABLES GROUP

Vary your veggies and make half your plate fruits and vegetables.

- Canned or single serving vegetables, soups or juices • Canned three-bean salad
- Salsa • Spaghetti sauce • Dried vegetables • Instant potato products
- Fresh root vegetables like potatoes, carrots, yams, onions and winter squash
- Vacuum-packed chips

FRUITS GROUP

Focus on whole fruits and make half your plate fruits and vegetables.

- Canned or single-serving fruit or fruit cups in its own juice • Dried fruit
- 100% fruit juice • Packaged raisins, apricots, cranberries, etc. • Fruit cocktail
- Unsweetened applesauce • Dried fruit drink mixes • Fresh apples, oranges, and grapefruit • Trail mix with fruit

PROTEIN GROUP

Vary your protein routine.

- Meat soups • Canned tuna, ham, salmon, sardines, chili, corned beef hash, stews, ravioli • Beans (kidney, lima, lentils, etc.) • Peanut butter • Bean spreads
- Nuts and seeds • Beef or turkey jerky • Vienna sausage • Dried eggs
- Flavored gelatin for a warm drink • Trail mix

GRAINS GROUP

Make half your grains whole grains.

- Breakfast cereal • Crackers • Oatmeal • Breakfast/nutrition bars • Rice cakes
- Whole wheat or multigrain bread • Taco shells • Tortillas • Vanilla wafers
- Bread sticks • Muffins • Dry pasta • Graham crackers • Pretzels
- Boston brown bread with raisins • Melba toast • Instant rice

DAIRY GROUP

Move to low-fat or fat-free milk and yogurt.

- Nonfat milk (powdered, canned or shelf-stable) • Puddings • Nutritional drinks
- Hot drink mixes like cocoa • Processed cheese or cheese spread • Pudding
- Cream soups • Dried buttermilk

SAMPLE BREAKFAST MENU

- Orange juice
- Ready-to-eat cereal or oatmeal
- Raisins • Milk • Tea, coffee or water

SAMPLE LUNCH MENU

- Chunky beef and vegetable soup (ready-to-eat style) • Crackers
- Fruit cup • Vanilla wafers • Milk
- Tea, coffee or water

SAMPLE SNACK

- Dried apples • Nuts • Water

SAMPLE DINNER MENU

- Cheese • Canned bean burrito or peanut butter sandwich
- Three-bean salad (with canned beans)
- Pudding cup • Milk
- Tea, coffee or water

EXTRAS

- Bottled water, instant iced tea, instant coffee, teabags, powdered drink mixes • Jelly
- Small packets of ketchup, mustard and mayonnaise • Infant food and formula
- Food for special diets • Staples like salt, pepper, favorite spices and herbs, sugar, honey, flour, baking powder and baking soda • Comfort foods like creamers, chips, treats, soda pop and other boxed drinks • Pet food

Water, preferably unflavored and unsweetened, is not in a food group, but it needs to be in your pantry. Water is essential for your health and wellness. Store at least 1 gallon per day per person (and pet). Half of that water is for drinking. The other half is for food preparation, hygiene and cleaning.

Tips for meal preparation

There are many styles and options for cooking equipment, some you may already have on hand. You may choose ready-to-eat products, but over time some home-cooked options can lift the spirit. You can find lightweight equipment and supplies at outdoor stores in the backpacking department. If using a Dutch Oven, spend some time practicing. If you're cooking over an open flame, allow time for the burning materials to turn to coals for even cooking. Open flames are good for boiling water, but cooking with them usually results in burned food on the outside and undercooked food on the inside. Flames have less heat at higher elevations — you will need more fuel for cooking than you would at lower elevations.

After a disaster, keep updated on supply distributions of additional food, water and other supplies, weather reports, or other news through NOAA Weather Radio or other recommended sources from your local emergency manager.

What is your budget for additional food, water and supplies?

It can be overwhelming — and expensive — to try to stock up on emergency food and water supplies all at once. Add a little extra each time you shop and purchase items that are on sale to save money. Before you know it, you will have a significant supply stocked up. The amount of money you need will vary with the types of foods you choose, your family size and what you have on hand. Buy or store serving sizes that won't need refrigeration once opened.

Shopping tips in times of disasters

Plan now and stock your pantry with foods that can be used in emergencies. Use coupons, watch for in-store sales and BOGOs (buy one, get one free) offers. Stock up before grocery shelves are empty.

Be proactive! Shop now and regularly to avoid last-minute panic and large crowds. Shop early when it is easier to avoid crowds. Spread costs over several weeks or months. Seasonally available foods are often of superior quality and cost less to preserve at home and use later.

Cooking supplies

Consider what kind of preparation, cooking or heating method you need for your menu plans. Make a list and gather the equipment and supplies: bowls, measuring cups and spoons, utensils, knives,

Which foods to eat when

As much as is possible in the aftermath of a natural disaster, order your consumption of perishable foods.

FIRST: Eat as many foods from your refrigerator as you can, continuing to monitor the internal temperature and discarding foods once the temperature exceeds 40°F for more than two hours.

Follow cooking guidelines to ensure food safety.

NEXT: Eat foods from the freezer, again paying careful attention to temperatures and discarding foods as necessary. If your situation allows, consider canning or dehydrating frozen goods that would otherwise spoil. This might be an impossible task following an earthquake. But in some regions, damage may be limited and loss of power is the only issue. Some families may find it conceivable to can meats, veggies and fruits rather than let them go to waste.

LAST: Use your fresh garden produce and nonperishable foods and staples.



Graphic: Shakeel Ch.,
The Noun Project

sauce pans, griddles, stove, aluminum foil, tongs, thermometer, hot mitts, fuel, etc. Remember a can opener, unless you can manage the fold-out tool in a pocket knife. Include plates, bowls, cups and eating utensils. If you are using freeze-dried food, you will need more water to rehydrate and digest it.

Cleaning supplies

Include hand soap, dish soap, laundry detergent, paper or reusable towels, unscented regular household bleach with medicine dropper, and kitchen gloves. Look for hand sanitizer with at least 60% alcohol. Stock at least three reusable face coverings per person. Include three N95 or KN95 masks per person; these work well for dust and smoke.

Think food safety

You will likely have a fair amount of food on hand already. Work your way through refrigerated and frozen supplies first, keeping food safety in mind. Consider variety, balance and moderation. Will foods need to be cooked? While you could survive on freeze-dried foods or MREs (Meals Ready to Eat) for two full weeks, you will feel better with some familiar foods each day. Lastly, store foods that your family will eat. This will ensure that you can regularly cycle through the foods in your emergency supply kit to ensure the freshness of the stored foods. Pantry lists can give you some ideas.

Stock canned or nonperishable foods. Foods should not require refrigeration. Limit cooking foods that need additional water or special preparation unless you have the supplies, space, skills and experience to be successful. Leftovers can become

unsafe without refrigeration. Foods held in the “Danger Zone” (40°F to 140°F) for over two hours can cause someone to become sick.

Consider how you might use a wood stove, gas or charcoal barbecue, Dutch oven, propane camp stove, rocket stove, solar oven, fondue pot or fire pit to heat water or cook food. Determine how much extra fuel (propane, butane, wood, charcoal briquettes, etc.) you need to prepare food for two to four weeks.

Keep seasonal or weather variations in mind when cooking outdoors. Solar cookers will not work well in cloudy regions during Pacific Northwest winters. Gas stoves might not work during cold or windy days. A windbreak made of safe materials could help. Practice using these tools before it becomes a necessity. Follow the manufacturer’s recommendations when using grills and other cooking equipment. Use them in well-ventilated areas. See *No Power? No Problem: Tips to Help You Thrive in the Face of Disaster*, <https://catalog.extension.oregonstate.edu/em9278>, for more information.

Power outages

Foods that can be stored without refrigeration and risky foods to discard

When the power goes out, keep refrigerator and freezer doors closed as much as possible. All foods in a refrigerator can be safe for four hours if the door is kept closed. When the temperature in the refrigerator rises above 40°F, most refrigerated foods can be stored for no longer than two more hours. Dispose of risky foods. Keep other foods that benefit from refrigeration for extended quality in a cool, dark, dry and ventilated location. Watch for signs of spoilage such as off-odor, mold or sliminess. Immediately dispose of food showing signs of spoilage.

Full freezers can keep food safe for 48 hours. Half-filled freezers keep food safe for 24 hours. Before a disaster, fill empty freezer space with water in clean, sanitized food-safe containers. Fill containers halfway, then freeze. The ice will expand. Add another inch of water and freeze again. Repeat until there is 1-inch headspace, then replace the lid. The extra ice will help the freezer run more efficiently and keep the freezer colder longer in an emergency. When it melts, it will provide safe, drinkable water.

Foods that will be SAFE without refrigeration unless you DETECT SPOILAGE

Risky foods should be eaten immediately or discarded.

Some foods that are commonly refrigerated to maintain quality can be shelf stable for short times. These foods (see page 6) could be consumed in early days or weeks after the Cascadia earthquake or other lengthy power outage.

Fresh foods

Fresh foods require refrigeration, freezing or consumption within a relatively short time to avoid spoilage. These include fruits, vegetables, protein and dairy foods. Rinse and rub fruits and vegetables that will be consumed raw in cool, clean water.

Dehydrated foods

Dehydrating is a method of food preservation in which the moisture in food is removed using a dehydrator, oven, sun/solar dryer or smokehouse. (Examples: dried fruits, nuts, vegetables, jerky and meals or meal ingredients).

Home-canned foods

Use up-to-date, tested recipes from reliable resources for best quality, safety and to avoid risk of botulism. Boiling water canners are used to preserve most fruit, salsa (only tested recipes), pickles, jams, jellies and spreads. All vegetables, meat, fish, poultry and wild game must be pressure canned. See safe recipes and directions at <https://beav.es/OSUFoodPreservation>. Vacuum-sealing low acid foods and storing them at room temperature can create an environment for botulism toxin to grow if these foods would normally be refrigerated or frozen. Do not can water, butter, dairy products, grains, leftovers, cakes, quick breads or cured meats.

Commercially canned foods

Canning is a method of food preservation in which the foods are processed and sealed in an airtight container (usually a tin can or a glass jar). The seams of “pop-top” cans are fragile and may not withstand the shaking and jostling during an earthquake with extended shaking. (Examples: canned fruits, vegetables, soups, sauces and meats).

Meals Ready-to-Eat

MREs are a self-contained complete meal. MREs are the main food ration for the U.S. armed forces.

Freeze-dried foods

Freeze-drying is a process that involves freezing food then removing the moisture in a vacuum chamber. Most freeze-dried food is then stored in an airtight, moisture-resistant container. (Examples: Freeze-dried fruits, vegetables, meats and meals or meal ingredients.)

Store some of your food in portable containers in case you must leave your home. This way you can easily take some of your food and supplies with you. Transport perishable foods in a container filled with ice, if possible. After the Cascadia earthquake, the best transportation available for some time may be wagons or cargo bikes.

Food safety and your food supply

FRUITS AND VEGETABLES

- ✓ **SAFE UNLESS YOU DETECT SPOILAGE:** In general, fresh, uncut fruits and vegetables will be safe to eat; keep them until they otherwise spoil. We often refrigerate many produce items to extend their quality. But most fruits and vegetables will last for quite a while without refrigeration. You can keep onions, potatoes, winter squash, cabbage, apples, pears, avocados and tomatoes unrefrigerated for a week or more. The same goes for root vegetables (carrots, beets, turnips and rutabagas). Also safe: fresh mushrooms, herbs, spices, dried fruit, fruit syrup, opened fruit juices, opened canned fruits, fruit pies and pastries (without cream filling). Produce that is harvested fresh and has never been refrigerated stays fresh longer.
- ✗ **RISKY:** Discard cut or cooked fruits and vegetables. Also discard opened cartons of vegetable juices or vacuum-packaged vegetables. Use immediately or discard homemade raw or cooked garlic, vegetables or herbs in oil.

DAIRY

- ✓ **SAFE UNLESS YOU DETECT SPOILAGE:** Most hard cheeses — cheddar, colby, Swiss, Parmesan, provolone and Romano), grated Parmesan, Romano or a combination (usually in a can or jar) — and processed cheeses will also be safe to keep until they show signs of mold. Butter and margarine are also safe to keep. Unopened canned or boxed milks are safe.
- ✗ **RISKY:** Soft, grated and low-fat cheeses (blue/bleu, Roquefort, brie, Camembert, cottage, cream, Edam, Monterey Jack, ricotta, mozzarella, Muenster, Neufchatel, queso blanco, queso fresco). Discard these. Also discard milk, cream, sour cream, buttermilk, evaporated milk, yogurt, eggnog, soymilk, nut milks, opened baby formula and cream-filled pastries and pies.

PROTEIN

- ✓ **SAFE UNLESS YOU DETECT SPOILAGE:** Nuts, peanut butter and other nut butters are safe. Eggs kept safely at room temperature for up to six days unless they were washed or cooked. You can extend the shelf life of eggs by storing them in a mixture known as “water glass.” Eggs stored in lime water or coated with Vaseline are of poor quality. Meat that was thawing in the fridge but has ice crystals present should begin cooking within two hours. Dried beans stored for more than three years may not rehydrate as expected or at all.
- ✗ **RISKY:** Most commercially purchased eggs have been washed and should be discarded. Discard egg dishes and hard-cooked eggs, including custards, puddings and quiches. Discard raw or leftover cooked meat, poultry, fish or seafood, as well as soy meat substitutes. Discard meat, tuna, shrimp, chicken or egg salads as well as opened canned meats and fish or opened vacuum-packaged meat or seafood. Lunchmeats, hot dogs, bacon, sausage and smoked seafood should be discarded. Discard meat that was thawing in the fridge but has reached over 40°F for longer than two hours (no ice crystals present).

GRAINS

- ✓ **SAFE UNLESS YOU DETECT SPOILAGE:** Bread, rolls, cakes, muffins, quick breads, tortillas, breakfast foods (waffles, pancakes, bagels).
- ✗ **RISKY:** Discard cooked grains and pasta and refrigerated doughs (biscuits, rolls and cookie dough) as well as pasta or grain salads and mixtures.

CONDIMENTS AND OTHER FOODS

- ✓ **SAFE UNLESS YOU DETECT SPOILAGE:** Jam, jelly or fruit spreads, taco sauce, mustard, ketchup, olives, pickles, relish, Worcestershire, soy, barbecue and Hoisin sauces. Opened vinegar-based dressings. Mayonnaise, if not contaminated with other foods. Fats, oils, shortening. Syrup and ground coffee.

Food safety tips

■ **CLEAN:** Wash your hands and surfaces often

Germs that cause food poisoning can survive in many places and spread around your kitchen. Practice proper hand washing before you touch or handle food. Wet your hands, add soap, lather for 20 seconds, then rinse. Wash again after you touch risky foods like raw meat or poultry or raw eggs. Clean hands are healthy hands. Clean hands can save lives. Wash your utensils, cutting boards and countertops. Clean and sanitize food preparation surfaces often with hot, soapy water. Keep eating utensils, grills and stoves clean. Remember to clean and sanitize knobs and handles, too. Rinse fresh fruits and vegetables in water.

■ **SEPARATE:** Don't cross-contaminate

Raw meat, poultry, seafood and eggs can spread germs to ready-to-eat foods — unless you keep them separate. Use separate cutting boards and plates or clean and sanitize between uses for raw meat, poultry, seafood and ready-to-eat foods. Keep raw meat, poultry, seafood and eggs separate from all other foods while shopping and in the fridge.

■ **COOK:** To the right temperature

Food is safely cooked when the internal temperature gets high enough to kill germs that can make you sick. The only way to tell if food is safely cooked is to use a food thermometer. You cannot tell if food is safely cooked by checking its color and texture.

A digital metal stem thermometer has the sensor in the tip, while dial metal stem thermometers need to be inserted 2 inches into the meat, stew or other food.

Minimum temperatures for food safety	
Whole cuts of beef, pork, veal, lamb or fin fish	145°F (or cook fish until it is opaque)
Ground meats, such as beef and pork	160°F
Poultry, including ground chicken and turkey	165°F
Leftovers and casseroles	165°F

■ **CHILL:** Refrigerate promptly

Bacteria can multiply rapidly if left at room temperature or in the Danger Zone between 40°F and 140°F. Never leave perishable food out for more than two hours (or one hour if it is hotter than 90°F outside). Keep your refrigerator at 40°F or below and know when to throw food away. Refrigerate perishable food within two hours.

Food storage

In general, food will maintain a longer shelf life if kept in a cool, dry, dark location. However, that location may not be the best to withstand an earthquake. Basements and root cellars can be excellent places for long-term food storage. But if your home collapses, you will not be able to access your food supply. A corner of the garage near a window or entry door or a root cellar may be a better location in terms of easy access following an earthquake. In some areas, homes that are considered or have been made earthquake-safe are likely to be safe to re-enter. In small homes, consider storing food in bedroom or coat closets, under beds or behind furniture. Monitor food supplies for water, insect and rodent damage. When in doubt, throw it out.

Use only food-grade containers designated for food storage. Harmful chemicals may leech into the food from containers not meant for food storage, making it unsafe to eat. While glass can be an excellent food storage medium, it is also fragile and may not withstand the shaking of an earthquake or falling debris. Protect canning jars in boxes with cardboard strips or crumpled newspaper between the jars. Commercial canning jar crates made of hard plastic can protect the jars from breakage. Canned foods can become dangerous if stored in temperatures above 95°F.

Consider reinforcing food storage shelving. Line open shelves with rope, trim boards or other materials. This can prevent jars from shaking off the shelves. You can add child locks to cabinets to keep food from falling out and becoming damaged or turning into a projectile during an earthquake.

Food storage methods and considerations

Food preservation is an economical way to store bounty from your garden and from local farmers. Home-preserved foods can maintain flavor, quality and nutritional content. They contain fewer additives or allergens than commercial equivalents.

Use up-to-date, tested recipes from reliable resources such as Oregon State University Extension at <https://beav.es/OSUFoodPreservation>. Check with your local OSU Extension county office for upcoming food preservation workshops and resources.

Additional considerations when planning an emergency food and water supply

- Consider what type of preparation will be necessary. Is the food ready to eat or will it need to be cooked? How will you cook it?
- Consider whether you need additional water to prepare some foods. If so, how much extra will you need to store? Some dehydrated and freeze-dried

foods call for boiling water to reconstitute food. You will need additional fuel to heat the water to boiling.

- Consider the shelf life of the food you are storing. Some packaged foods need to be rotated every few months, annually or every few years to maintain optimum quality. Freeze-dried foods may boast a 20- to 30-year storage life, but don't ensure quality. When opened, they will spoil quickly if exposed to moisture and humidity. Smaller packages may be a better option. Inspect all stored food for pests every six months. Set an alert on your calendar or cell phone as a reminder to check for freshness or damage.
- Consider how much you and your family will eat in one meal. Buy or package bulk food in those quantities. You more than likely will not have refrigeration for leftovers and will not want to waste food or worry about food spoilage and food poisoning.
- Consider the dietary restrictions of members of your family as well as likes and dislikes. Consider medical conditions when planning your food supply, if necessary. Many canned, boxed and dried foods contain high amounts of sodium as a preservative. Account for the impacts of a higher sodium intake on some family members.
- Consider storing some of your family's favorite granola bars, trail mixes and candy or the ingredients for s'mores if you think you will be cooking outdoors. These foods will keep up your spirits and give you quick energy.
- Good nutrition will promote resiliency. Include naturally colorful fruits and vegetables in your meals and snacks, which provide a variety of important nutrients.

- Throw out contaminated food from floodwaters.
- Do not eat foods from damaged cans.
- Discard food that shows signs of spoilage.
- Do not use charcoal grills or gas stoves indoors, or in garages or unventilated areas. Avoid inhaling smoke or carbon monoxide.
- Be aware of dates on labels. Food from undamaged cans with sell-by dates is still safe to eat. Quality changes in color, flavor and texture may be noticeable in some foods a year after the date on the cans, and some nutrition may diminish. While it's still safe to feed babies formula past its expiration date, the nutrients that fortify the formula will no longer be adequate.

Some overly stressed people may react by binge-eating several days of food or liquids before the first meal. Practice activities that will help you stress less now to help manage "stress eating" during the disaster later. See *Survival Basics: Stress Less*, <https://catalog.extension.oregonstate.edu/em9287>, for more information.

Think broadly about your existing food and water resources. These can include food already in your cupboards, refrigerator and freezer as well as your garden. Do you have chickens or other livestock that can provide food for you? Some aspects of your food supply vary by season, so consider how your resources will change throughout the year and what will be available.

Plan your work and work your plan. Being prepared helps people survive emergencies with better resiliency and well-being.

Resources

2 Weeks Ready. Oregon Office of Emergency Management.

<https://www.oregon.gov/OEM/hazardsprep/Pages/2-Weeks-Ready.aspx>

Creating and Storing an Emergency Water Supply, Centers for Disease Control.

<https://www.cdc.gov/healthywater/emergency/creating-storing-emergency-water-supply.html>

Fires and Food Safety. USDA. Food Safety and Inspection Service. https://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/emergency-preparedness/fires-and-food-safety/ct_index

Food and Water Needs: Preparing for a Disaster or Emergency, CDC.

<https://www.cdc.gov/disasters/foodwater/prepare.html>

Food Safety during a Power Outage U.S. Department of Health and Human Services.

<https://www.foodsafety.gov/food-safety-charts/food-safety-during-power-outage>

Food Storage for Safety and Quality, PNW 612. University of Idaho Extension.

<https://catalog.extension.oregonstate.edu/pnw612>

Food, Water, Sanitation, and Hygiene Information for Use Before and After a Disaster or Emergency, CDC.

<https://www.cdc.gov/disasters/foodwater/index.html>

Four Steps to Food Safety: Clean, Separate, Cook, Chill. Centers for Disease Control.
<https://www.cdc.gov/foodsafety/keep-food-safe.html>

Fruit and Vegetable Safety, CDC. <https://www.cdc.gov/foodsafety/communication/steps-healthy-fruits-veggies.html>

Guidelines for Refrigerated Foods, SP 50-677, Oregon State University Extension. https://extension.oregonstate.edu/sites/default/files/documents/8836/sp50-677guidelinesfortherefrigerationoffoods_0.pdf

How You Can Prevent Foodborne Illness, PNW 250. Oregon State University Extension.
<https://catalog.extension.oregonstate.edu/pnw250>

If Your Home Freezer Stops, SP50-470, Oregon State University Extension.
<https://extension.oregonstate.edu/sites/default/files/documents/8836/sp50470ifyourhomefreezerstops.pdf>

Keep Your Food Safe During Emergencies: Power Outages, Floods & Fires, USDA Food Safety and Inspection Service.
https://www.fsis.usda.gov/wps/wcm/connect/d3506874-2867-4190-a941-d511d3fcae71/Keep_Your_Food_Safe_During_Emergencies.pdf?MOD=AJPERES

MyPlate. U.S. Department of Agriculture. <https://www.myplate.gov/>

Natural Disasters and Severe Weather: Earthquakes, CDC. <https://www.cdc.gov/disasters/earthquakes/index.html>

Natural Disasters and Severe Weather: Tsunamis. <https://www.cdc.gov/disasters/tsunamis/index.html>

No Power? No Problem: Tips to Help You Thrive in the Face of Disaster, EM 9778, Oregon State University Extension.
<https://catalog.extension.oregonstate.edu/em9278>

Preparing for a Weather Emergency. USDA FSIS. https://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/emergency-preparedness/preparing-for-a-weather-emergency/ct_index

Preserve @ Home (online food preservation course), University of Idaho Extension and Oregon State University Extension. <https://extension.oregonstate.edu/deschutes/preserve-home-oregon>

Preserving Eggs for the Home, Circular No. 25, Utah State University (in consultation with Jim Hermes, Poultry Specialist, retired, Oregon State University).
https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1020@context=uaes_circulars

Start Simple with MyPlate. USDA. <https://www.myplate.gov/start-simple-myplate>

Survival Basics: Stress Less, EM 9287. Oregon State University Extension.
<https://catalog.extension.oregonstate.edu/em9287>

Survival Basics: Water, EM 9285. Oregon State University Extension. <https://catalog.extension.oregonstate.edu/em9285>

References

Adapted from: Marty-Jimenez, B. Think Nutrition During Hurricane Season presentation at National Extension Association of Family and Consumer Sciences 2020 Annual Session.

Rabb, C. *Food Storage for Emergencies*, SP 50-833, Oregon State University Extension.

Acknowledgment: Thank you to Jeanne Brandt and Brooke Pyper for their insightful reviews and suggestions.

Project supported by National Institute of Food and Agriculture Smith Lever Special Needs Competitive Grants Program (Award# 2018-41210-28702).

This publication will be made available in an accessible alternative format upon request. Please contact puborders@oregonstate.edu or 1-800-561-6719.

© 2021 Oregon State University. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties. Oregon State University Extension Service offers educational programs, activities, and materials without discrimination on the basis of race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, familial/parental status, income derived from a public assistance program, political beliefs, genetic information, veteran's status, reprisal or retaliation for prior civil rights activity. (Not all prohibited bases apply to all programs.) Oregon State University Extension Service is an AA/EOE/Veterans/Disabled.