PNW 612

Storing Food for Safety and Quality

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The goal of home food storage *is to ensure safe and high-quality food. Proper storage extends the shelf life of food, which depends on the food type, packaging, and storage conditions, particularly temperature and humidity. Food quality should not decrease significantly during storage if you follow the recommended conditions and storage times in this bulletin.*

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TIPS FOR STORING ALL FOODS

Choose foods to store. When grocery shopping, purchase fresh foods (check freshness dates on packaged food) with packaging in good condition. Make sure refrigerated foods are cold, and frozen foods are solid. Select cold food items just before check-out, and store them properly after reaching home. If more than half an hour will elapse before cold and frozen foods can be stored, consider taking an insulated container with a frozen container of water or gel pack to maintain a cold storage environment during transportation. Stock only the kinds and amounts of food that can be stored properly.

Practice first-In, first-out. When stocking your food storage areas, place recently purchased items behind existing food. This will help ensure food is consumed before spoilage occurs, and before the expiration date passes.

How foods spoil. Food spoilage is a natural process that starts when plants and animals are harvested. Bacteria, yeasts, and molds are the most common causes of food spoilage. Processing food by canning and drying, and storing food at a cold temperature via refrigeration and freezing, are ways to delay or prevent food spoilage. Enzymes naturally present in foods can also cause spoilage, such as excessive softening of fruits, or can cause the flavor of some vegetables to deteriorate if those vegetables are not blanched prior to frozen storage. Heat inactivates enzymes, and freezing and drying can reduce their activity to acceptable levels. Air and light can cause flavor and color changes in food, so packaging should be chosen to minimize exposure.

Quality and safety. Quality is not the same as safety. A poor-quality food such as stale cereal or meat with freezer burn may be safe to eat. An unsafe food can appear visually fine, but may contain a food-borne pathogen. The presence of pathogens cannot be detected by appearance or smell. However, food should be discarded if it has off-odors, extensive slime (on meat, for example), or mold growing on it. One exception is mold on hard cheeses, which may be trimmed off 1 inch from the moldy surface.

Safety of stored food. In general, food stored in the cupboard or pantry is safe if packaging is kept intact. Frozen foods, if kept frozen, remain safe over extended periods of time. The quality of these items will go down with excessive frozen storage time, but safety is not compromised. However, fruits, vegetables, and bakery items stored at room temperature and in the refrigerator may develop mold growth over time. Those foods should be discarded, since some molds are toxic. Only purchase fresh produce that can be consumed in a reasonable time. The safety of refrigerated foods, including leftovers, can also be compromised by excessive storage time. Some food-borne pathogens, such as *Listeria*, grow slowly at refrigeration temperatures, and can multiply to an illness-causing number of cells when storage times are excessive. See page 11 for more on *Listeria*.

Cleanliness. Since bacteria frequently get into food through careless food handling, it is important that everything—hands, cupboards, refrigerator, freezer, storage containers—be kept clean. Consider using disposable paper towels to clean up kitchen surfaces. If you use dishcloths, wash them often in the hot cycle of the washing machine and dry them in a clothes dryer. Kitchen sponges are not recommended because they provide excellent places for microbes to grow. However, sponges can be sanitized by dampening generously and heating in a microwave oven until steaming hot.

Storage materials. Food should only be stored in its original packaging or in food-grade containers. Food-grade storage materials are approved by the U.S. Food and Drug Administration as not containing or transferring chemicals hazardous to human health into food. Examples of containers *not* approved for food contact include trash bags and plastic or fiberboard containers that have previously held non-food materials. Storage materials that are intended for food contact use are generally clearly labeled for food use. These include glass and ceramic containers; plastic bags and rigid containers; and plastic, paper, and foil wraps.

Predicting storage times. The exact length of time that foods can be stored depends on a number of factors; thus the times identified in the food storage tables in this publication are only guidelines. The storage life of food is affected by its freshness when it reached the market, the length of time and the temperature at which food was held before purchase, storage temperature and humidity in the home, storage container or packaging, and the characteristics of the food item. Generally, food will maintain quality longer at cooler storage temperatures.

Storage contradictions. For a few foods, optimum storage conditions for maintaining flavor or texture may differ from optimum conditions for maximum shelf life. For example, storing bread in the refrigerator extends the time before mold grows, but causes bread to go stale more quickly. Tomatoes stored in the refrigerator will last longer, but flavor will be lost. However, once sliced or cut, tomatoes need to be refrigerated within 2 hours.

DECIPHERING PACKAGED FOOD DATES

For most foods, product dating is not required by law. An exception is infant formula and some baby foods for which open dating is required. Open dates are calendar dates that are clearly understood by consumers, as opposed to coded dates that are sometimes used by food manufacturers for their own tracking. Infant and baby foods are dated for nutrient retention as well as quality, since these foods often provide the sole source of nutrition. Do not buy or use infant formula or baby food after its "use by" date (figure 1).

Many food manufacturers choose to label packaged foods with some type of date. However, there is no universal system for expressing the date. Commonly used date terminology is explained below. These dates are not related to product safety. See figure 2 for examples of product dating.

Date of pack or manufacture. Refers to when the food was packed or processed for sale. These are not "use by" dates. Instead, they are printed on canned or boxed goods that are shelf-stable items to identify and locate products if there is a recall.

Freshness, pull, or "sell by" date. Tells the store how long to display the product for sale. The date allows for home storage and use within a reasonable period of time, as predicted by the manufacturer. The product may be safely consumed after the sell-by date. Often used on breads, baked goods, and dairy products.

"Use before" or "Best if used by" date. Gives the recommended shelf life for best flavor or quality. The food can be safely used past this date. Often used with frozen foods, fried snack foods such as chips and crackers, cereals, canned foods, pasta, and rice.

"Freeze by" date. Similar to a "use before" date. Indicates the product should be used or frozen for longer-term storage by the date shown. Seen on some meat products.

Figure 1. Do not buy or use infant formula or baby food after its "use by" date.

Figure 2. Examples of product dating

Figure 3. Home dating of food

Expiration date. The last day the product should be used for best quality. Yeast and baking powder have expiration dates.

Home dating. It is a good practice to mark the date on purchased foods that do not have open dates and that you plan to store for an extended time. Likewise, marking the date on stored home-prepared foods or leftovers is the best way to keep track of stored food. Keep a marker or pen and small self-stick labels handy, and date these foods when you put them into storage. A computer template for printing storage labels on commercially available self-stick labels (Avery 5971) is available at http://www.agls.uidaho.edu/foodsafety/docs/Food%20Storage%20Labels.pdf (see figure 3).

CUPBOARD OR PANTRY STORAGE

Cupboard or pantry storage is for dry food staples such as flour, crackers, cereals, cake mixes, pasta, seasonings, and canned goods. To maximize food quality:

- Keep food in original containers or in metal, glass, or plastic containers with tight-fitting lids. These protect contents from insects, and are especially important when the humidity level is greater than 60%. Dry foods that are not stored in airtight containers may absorb moisture, resulting in powders that clump, and loss of crispness in crackers. (Crispness can be restored by heating the item on a cookie sheet for a few minutes in a 425°F oven.)
- Maintain a storage temperature below 85°F (optimum is 50°F to 70°F). Cooler temperatures help preserve food quality, so avoid cabinets near the oven, stove, hot pipes, or refrigerator exhaust.
- Store food in dark areas. Light that shines through transparent packaging can cause flavors to deteriorate more quickly.

Canned foods. Canned foods have a long shelf life, but color, flavor, and nutritive value deteriorate over time. Acidic canned foods, such as tomato products, fruits, sauerkraut, and foods in vinegar-based sauces, have a shorter shelf life than low acid items. Bulging cans indicate the food is spoiled and must be discarded. Small dents in cans do not harm contents. However, cans with dents that affect the side or rim seams should not be purchased or used, because they may have an invisible leak. Rusty cans should be carefully inspected to make sure rust has not penetrated the can. Food in a can that has frozen once and thawed may have poorer texture, but as long as the can has not bulged and seams are intact, safety is not affected.

Insects and rodents. A variety of insects can infest cupboard or pantry foods stored for long periods (more than 2 months). Pests feed on or breed in flours, cereals, grains, dried fruit, nuts, candy, and other stored food, such as dry dog and cat food. Control of stored-food pests is described in the University of Idaho bulletin, "Controlling Stored-food Pests in the Home": http://info.ag.uidaho.edu/pdf/CIS/CIS0850.pdf.

Cleaning out the pantry. Cupboards should be cleaned periodically to remove crumbs and food particles on shelves and in corners or cracks, because these attract insect pests. Helpful tips on how to decide which foods should be discarded and which to save are provided in a University of Nebraska online publication, "Cleaning the Kitchen Cupboard: Toss or Save": http://lancaster.unl.edu/FOOD/CleaningCupboard.pdf.

Small dents in cans do not harm contents. However, cans with dents that affect the side or rim seams should not be purchased or used, because they may have an invisible leak.

Table 1. Approximate Cupboard Storage Times for Best Quality
The storage times listed in the chart below are intended as useful guidelines, not set rules.

PRODUCT	At 70°F	COMMENTS
----- FOOD STAPLES -----		
Baking powder	18 months or expiration date on can	Keep dry and covered.
Baking soda	18 months – 2 years	Keep dry and covered.
Bouillon cubes or granules	2 years	Keep dry and covered.
Bread, room temperature	2-4 days	Refrigeration can retard mold growth, but speeds staling. Freeze for longer storage. Store in moisture- and vapor-proof wrap.
Bread crumbs, dried	6 months	Keep dry and covered.
Cereals:		
Ready-to-eat, unopened	6-12 months	
Ready-to-eat, opened	2-3 months	Refold package liner tightly after opening.
Hot cereal, dry	6 months	
Chocolate:		
Semi-sweet	18 months – 2 years	Keep cool.
Unsweetened	18 months – 2 years	
Pre-melted	12 months	
Chocolate syrup:		
Unopened	2 years	
Opened	6 months	Cover tightly. Refrigerate after opening.
Cocoa mixes	8 months	Cover tightly.
Coffee, ground:		
unopened package	2 years	Refrigerate after opening; keep tightly closed. Use dry measuring spoon. Freeze to extend shelf life.
opened package	2 weeks	
Coffee, instant, unopened	1-2 years	
opened	2-3 months	
Coffee – powdered creamers:		
unopened, dry	9 months	
opened, dry	6 months	Keep tightly covered.
Cornmeal	12 months	Keep tightly covered. Freeze for indefinite storage.
Cornstarch	18 months	Keep tightly covered.
Flour:		
white	6-12 months	Keep in airtight container.
whole wheat	6-8 months	Keep refrigerated or freeze. Store in airtight container.
specialty	6-8 months	Keep in airtight container.

Table 1. Approximate Cupboard Storage Times for Best Quality (cont.)
The storage times listed in the chart below are intended as useful guidelines, not set rules.

PRODUCT	At 70°F	COMMENTS
----- FOOD STAPLES -----		
Gelatin, all types	18 months – 3 years	Keep in original container.
Grits	12 months	Store in airtight container.
Honey	12 months	Cover tightly. If it crystallizes, warm open jar in a pan of hot water.
Jellies, jams	12 months	Cover tightly. Refrigerate after opening.
Molasses:		
unopened	12 months	
opened	6 months	Keep tightly covered. Refrigerate to extend storage life.
Marshmallow cream, unopened	3-4 months	Refrigerate after opening to extend storage life. Cover tightly. Serve at room temperature.
Marshmallows	2-4 months	Keep in airtight container.
Mayonnaise, unopened	3-4 months	Refrigerate after opening. Check package date.
Milk:		
condensed or evaporated, unopened	12 months	Invert cans every 2 months to prevent separation.
nonfat dry, unopened	6 months	Store in airtight container.
nonfat dry, opened	3 months	
Pasta:		
spaghetti, macaroni, etc.	1-2 years	Once opened, store in airtight container.
egg noodles	6 months	
Pectin, liquid or dry	1 year or expiration date	
Rice:		
brown	1 year	Keep tightly covered.
white	1-2 years	
flavored or herb	6 months	
Salad dressings:		
bottled, unopened	10-12 months	Refrigerate after opening.
Shortening	8 months	Refrigeration not needed. Store in cool, dark place in tightly closed container.
Sweeteners, artificial	2 years	Cover tightly.
Sugar:		
brown	4 months	Put in airtight container. Cover tightly.
confectioners	18 months	
granulated	2 years	
Syrups	12 months	Refrigerate to extend storage life. Cover tightly.

Table 1. Approximate Cupboard Storage Times for Best Quality (cont.)
The storage times listed in the chart below are intended as useful guidelines, not set rules.

PRODUCT	At 70°F	COMMENTS
----- FOOD STAPLES cont. -----		
Tea:		Put in airtight container.
bags	18 months	
instant	3 years	
loose	2 years	
Vegetable oils:		
unopened	6 months	
opened	1-3 months	Refrigeration extends shelf life. Store in cool, dark place in tightly closed container.
Vinegar:		
unopened	2 years	
opened	12 months	Keep tightly covered. Slightly cloudy appearance doesn't affect quality.
----- MIXES AND PACKAGED FOODS -----		
Biscuit, brownie, muffin mix	9 months	Keep cool and dry.
Cakes:		
purchased	1-2 days	Refrigerate if whipped cream or custard filling.
mixes, standard	12-18 months	Keep cool and dry.
mixes, angel food	12 months	
Casserole mix:		
complete or add meat	9-12 months	Keep cool and dry. After preparation, store refrigerated or frozen.
Cookies:		
homemade	2-3 weeks	Put in airtight container.
packaged	2 months	Keep tightly closed.
Crackers	8 months	Keep tightly closed.
Frosting:		
canned	10 months	Store leftovers in refrigerator or freezer.
mix	12 months	
Hot roll mix	18 months	If opened, put in airtight container.
Pancake mix	15 months	Put in airtight container.
Piecrust mix	8 months	Keep cool and dry.
Potatoes, instant mix	6-12 months	Keep in airtight package.
Pudding mixes	12 months	Keep cool and dry.
Rice mixes	6 months	Keep cool and dry.
Sauce and gravy mixes	1-2 years	Keep cool and dry.

Table 1. Approximate Cupboard Storage Times for Best Quality (cont.)
The storage times listed in the chart below are intended as useful guidelines, not set rules.

PRODUCT	At 70°F	COMMENTS
----- MIXES AND PACKAGED FOODS cont. -----		
Soup mixes	12 months	Keep cool and dry.
Toaster pastries	6 months	Keep in airtight package.
Tortillas	2-4 days	Refrigerate or freeze after opening.
----- CANNED AND DRIED FOODS -----		
Canned fruit juices	9 months	Keep cool.
Canned foods, unopened	Low acid foods, 2 to 5 years *Low acid includes canned meat and poultry, stews, soups (except tomato), pastas, potatoes and other vegetables (except tomatoes)*	Keep cool.
	High acid foods, 12 to 18 months *High acid includes tomato products, fruits, sauerkraut, and foods in vinegar-based sauces.*	Keep cool.
Fruits, dried	6 months	Keep cool in airtight container. Refrigerate if possible.
Vegetables:		
dried	1 year	Keep cool in airtight container.
dehydrated flakes	6 months	Refrigerate if possible.
----- SPICES, HERBS, CONDIMENTS, EXTRACTS -----		
Catsup, chili sauce:		
unopened	12 months	
opened	1 month	Refrigerate for longer storage.
Hot sauce, Worcestershire, etc.	1 year	Refrigerate after opening.
Mustard, prepared yellow:		
unopened	1 year	
opened	1 year	May be refrigerated. Stir before using.
Spices and herbs:		Store in airtight containers in dry places away from sunlight and heat. Check aroma; if faded, replace. Whole cloves, nutmeg, and cinnamon sticks maintain quality beyond 2 years. Can be stored in freezer to extend shelf life.
whole spices	1-2 years	
ground spices	6 months	
herbs	6 months	
herb, spice blends	6 months	
Vanilla and other extracts:		
unopened	2 years	
opened	12 months	Keep tightly closed. Volatile oils escape.
Commercial salsa, unopened	12-18 months	Refrigerate after opening. Use within 1-2 months.

Table 1. Approximate Cupboard Storage Times for Best Quality (cont.)
The storage times listed in the chart below are intended as useful guidelines, not set rules.

PRODUCT	At 70°F	COMMENTS
----- OTHER GOODS -----		
Cheese, Parmesan, grated	10 months	Refrigerate after opening; keep tightly covered.
Coconut:		
shredded, canned or packaged, unopened	12 months	Refrigerate after opening.
Meat substitutes, imitation bacon, etc.	4 months	Keep tightly covered; refrigerate for longer storage.
Powdered breakfast mixes, liquid breakfast formulas	6 months	Store in covered containers or original packages.
Nuts:		
in shell, unopened	4 months	
vacuum can, unopened	12 months	Refrigerate after opening; freeze for longer storage. Unsalted and blanched keep longer than salted.
package or can, opened	1 month	
Peanut butter:		
unopened	6-9 months	Refrigeration not needed.
opened	2-3 months	Keeps longer if refrigerated. Use at room temperature.
Peas, beans, dried	12 months	Store in airtight container.
Popcorn	2 years	Store in airtight container.
microwave popcorn	1 year	
Whipped topping, dry	12 months	Keep cool and dry.
Yeast, dry	Expiration date on package	Refrigerate or freeze after opening to extend shelf life.

Table adapted from materials prepared by Kansas State University, USDA, University of Missouri Extension Service, and the Tri-State Fruit and Vegetable Consortium.

REFRIGERATOR AND FREEZER STORAGE

Refrigerator or freezer storage is necessary for meat, dairy products, eggs, and cut fruits and vegetables. Refrigerator and freezer temperatures do not destroy pathogenic or spoilage microorganisms, but freezer temperatures do stop their growth.

Even when frozen foods are stored properly, they will lose color, texture, flavor, and nutritional value with excessive storage time, although they will not cause food-borne illness. Preparing foods for frozen storage requires some care. The following publications can assist you:

- "Freezing Convenience Foods That You've Prepared at Home": http://extension.oregonstate.edu/catalog/pdf/pnw/pnw296.pdf.
- "Freezing Fruits and Vegetables": http://extension.oregonstate.edu/catalog/pdf/pnw/pnw214.pdf.

To optimize your refrigerator conditions:

- Maintain your refrigerator between 34°F-40°F. Thermometers are available to monitor the temperature inside your refrigerator (figure 4.).
- Keep some foods, including milk, meats, and leftovers, colder than others. The coldest part of the refrigerator is usually the area nearest the freezer compartment, but a refrigerator thermometer will provide an accurate check for each appliance.
- Food placement in the refrigerator affects air circulation and efficiency. Don't stack foods tightly, and do not cover refrigerator shelves with foil or any material that prevents air circulation from quickly and evenly cooling the food. Refrigerators with glass shelving have air spaces at the back for circulation that should not be blocked.
- Wrap food with appropriate plastic or foil wraps, or use airtight containers to reduce transfer of odors between foods.
- Wrap raw meat and poultry securely and place it in a tray or pan to prevent leaking that would contaminate other foods.
- Store raw meats in a separate location from cheeses or ready-to-eat meats, such as deli meats. The meat drawer should be designated for either raw meats, or ready-to-eat meats – not both. This practice helps to minimize cross-contamination between raw meats, which frequently contain pathogens, and ready-to-eat foods, which by definition should be pathogen-free.

Figure 4. Refrigerator thermometer

- Clean the refrigerator to remove spills and spoiled foods that provide a place for bacteria to grow.

To optimize your freezer conditions:

- Keep your freezer at 0°F or below (-10°F to -20°F is best) to maintain the quality of frozen foods. At temperatures between 0°F and 32°F, food quality deteriorates more rapidly. If your freezer unit cannot maintain 0°F, do not plan to store frozen foods for the maximum suggested storage time. Fluctuating freezer temperatures that occur in self-defrosting freezers to clear ice build-up may also reduce food quality.
- Use moisture-proof, freezer-weight wrap. Examples are foil, freezer bags, and freezer paper.
- Label and date all packages.

Solving refrigerator and freezer odors. If food has been allowed to spoil in a refrigerator or freezer, the strong odors may be extremely difficult to remove. If mold gets into the insulation, the refrigerator may be impossible to clean. Some general recommendations include:

- Clean the appliance with a gentle household cleaning solution and water.
- Use a bleach solution (one tablespoon chlorine bleach per gallon of water) to rinse inside surfaces.
- Unplug the unit and leave the door open for a day or two to air it out.

Figure 5. One way to get rid of freezer odors is to pack the shelves with newspaper.

If the odor remains, you may want to try one of the following methods:

- Place trays of activated charcoal, clean kitty litter, or baking soda on the shelves of the refrigerator or freezer. Run the appliance empty for two or three days. Activated charcoal can be purchased from stores that sell aquarium and terrarium supplies.
- Spread freshly ground coffee on cookie sheets in the refrigerator or freezer, close the door, and run the appliance empty for two or three days. A slight coffee odor may remain, but will disappear after washing and rinsing.
- Pack each refrigerator or freezer shelf with crumpled newspaper. Set a cup of water on the top shelf, or sprinkle the newspaper with water. Allow the refrigerator or freezer to run for approximately five or six days. This method is time-consuming, but effectively removes strong odors (figure 5).
- Use commercial products that are available for removal of refrigerator and freezer odors. These products may be purchased at hardware, grocery, discount, and variety stores.

Re-freezing foods. Once food is thawed in the refrigerator, it is safe to refreeze it without cooking. However, there may be some reduction in quality due to the moisture lost through defrosting. Previously frozen raw foods that have been cooked can be safely frozen. If previously cooked foods are thawed in the refrigerator, you may refreeze the unused portion. If you purchase previously frozen meat, poultry, or fish at a retail store, you can refreeze if it has been handled with food safety as a top priority.

If the power goes out. To ensure the safety of your food during a power outage:

- Keep the refrigerator and freezer doors closed as much as possible to maintain the cold temperature. The refrigerator will keep food safely cold for about 4 hours if it is unopened. A full freezer will hold the temperature for approximately 48 hours (24 hours if it is half full), if the door remains closed.
- Obtain dry or block ice to keep your refrigerator as cold as possible if the power is going to be out for a prolonged period of time. Fifty pounds of dry ice should hold an 18-cubic-foot, full freezer for 2 days. Plan ahead and know where dry ice and block ice can be purchased.
- Freeze refrigerated items such as leftovers, milk, and fresh meat and poultry that you may not need immediately.
- Re-freeze food that still has ice crystals or is below 40°F.
- Discard food that is above 40°F for more than two hours.

For additional recommendations and a list of foods to save or throw out during a power outage see the USDA Fact Sheet "Keeping Food Safe during an Emergency": http://www.fsis.usda.gov/Fact_Sheets/keeping_food_Safe_during_an_emergency/index.asp.

Special concerns with refrigerated ready-to-eat foods. Ready-to-eat perishable foods are foods that are prepared to be eaten without heating, such as deli meats and salads. *Listeria* is a pathogenic bacterium that can grow on perishable foods at refrigerator temperatures, and is occasionally found in ready-to-eat foods. Consumers can reduce the risk of illness by:

- Using perishable items that are precooked or ready-to-eat as soon as possible;
- Cleaning their refrigerators regularly; and
- Using a refrigerator thermometer to make sure that the refrigerator always stays at 40°F or below. See table 2 for refrigerator and freezer times for common foods.

Listeria can cause serious infection and illness in susceptible (at-risk) people. In pregnant women, it can result in miscarriage, fetal death, or severe illness or death of a newborn infant. Elderly adults and individuals with a weakened or suppressed immune system are also at risk. Additional precautions are recommended to these at-risk consumers for foods that have a greater likelihood of containing *Listeria*:

- Do not eat hot dogs and luncheon meats, unless they are reheated until steaming hot.
- Do not eat soft cheese such as feta, Brie, Camembert, blue-veined cheeses, and Mexican-style cheeses such as "queso blanco fresco," unless they're made with pasteurized milk. Cheeses that may be eaten include hard cheese; semi-soft cheeses such as mozzarella; pasteurized processed cheeses such as slices and spreads; cream cheese; and cottage cheese.
- Do not eat refrigerated pates or meat spreads. Canned or shelf-stable pates and meat spreads may be eaten.
- Do not eat refrigerated smoked seafood, unless it is in a cooked dish, such as a casserole. Refrigerated smoked seafood, such as salmon, trout, whitefish, cod, tuna, or mackerel, is most often labeled "nova-style," "lox," "kippered," "smoked," or "jerky." These kinds of fish are found in the refrigerator section or sold at deli counters of grocery stores and delicatessens. Canned or shelf-stable smoked seafood may be eaten.
- Do not drink raw (unpasteurized) milk or eat foods that contain unpasteurized milk.

Table 2. Approximate Refrigerator and Freezer Storage Times for Best Quality
The storage times listed in the chart below are intended as useful guidelines, not set rules.

PRODUCT	REFRIGERATOR AT 35°-40°F	FREEZER AT 0°F	COMMENTS
----- BREADS, PASTRIES, CAKES -----			
Unbaked rolls and bread	2-3 weeks. For tube cans, follow 'Use by' date.	1 month	Longer storage inactivates yeast, weakens gluten. For commercial products, follow 'use by' date.
Partially baked cinnamon rolls		2 months	
Baked quick breads		2 months	
Baked muffins	1 week	6-12 months	
Baked breads (no preservatives)	1-2 weeks	2-3 months	Store in refrigerator to inhibit mold growth, but will stale more rapidly.
Waffles		1 month	
Unbaked fruit pies	1-2 days	2-4 months	
Baked fruit pies	4-5 days	6-8 months	
Pumpkin or chiffon pies	1-2 days chiffon 3-4 days pumpkin	Chiffon not recommended 1-2 months pumpkin	
Baked cookies	Not recommended	6-12 months	Cupboard storage is best. Store 2-3 weeks in airtight container.
Cookie dough		3 months	
Frosted baked cakes	1 week	1 month	
Unfrosted baked cakes	1 week	2-4 months	
Angel cakes	1 week	6-12 months	
Fruit cakes	6 months	12 months	
----- DAIRY -----			
Butter	3 months	6-9 months	Freeze in original carton, overwrap with plastic freezer bag.
Buttermilk	1-2 weeks	3 months	Check date on carton. Will keep several days after date. Will form curds when frozen.
Cheese:			Freezing changes texture of soft cheeses. Becomes crumbly when frozen; can be used in cooking when creaminess is not important.
cottage, ricotta	5-7 days	1 month	
cream cheese	2 weeks	1 month	
Natural, aged cheeses: (cheddar, Swiss, brick, Gouda, mozzarella, etc.)			Natural and processed cheeses can be frozen, but natural cheeses are likely to become more crumbly. Defrost in refrigerator; cheese will be less likely to crumble. Use soon after thawing.
large pieces, packaged or wax-coated	6 months		
slices or opened packages	1 month	6-8 months	
parmesan, romano (grated)	1 month	3-4 months	
Pasteurized process cheese	1-2 months	6-8 months	Freezing changes texture.
Coffee whitener (liquid)	3 weeks	See package	

Table 2. Approximate Refrigerator and Freezer Storage Times for Best Quality (cont.)
The storage times listed in the chart below are intended as useful guidelines, not set rules.

PRODUCT	REFRIGERATOR AT 35°-40°F	FREEZER AT 0°F	COMMENTS
----- DAIRY cont. -----			
Cream, light or half & half			
(UHT processed-unopened)	4 weeks	4 months	
(UHT processed-opened)	1 week		
Cream, heavy or whipping	1 week	Not recommended unless whipped first	Whipping cream will not whip after thawing. Whipped cream may be frozen and stored for 1 to 2 months.
Dip, sour-cream:			
commercial	2 weeks	Not recommended	
homemade	3-4 days	Not recommended	
Margarine	6 months	12 months	Leave in original foil and carton, overwrap in plastic bag for freezer storage.
Milk:			Milk can be frozen, but some curds will form on thawing.
evaporated, opened	3-5 days	Not recommended	
whole or low-fat	1 week	Not recommended	
reconstituted nonfat dry	1 week	Not recommended	
sweetened, condensed, opened	3-5 days	Not recommended	
Sour Cream	2-3 weeks	Not recommended	Sour cream will separate if frozen.
Whipped topping:			
in aerosol can	3 weeks	Not recommended	
prepared from mix	3 days	Not recommended	
frozen carton (after thawing)	2 weeks	Re-freezing not recommended	
Yogurt	1 month	Not recommended	Yogurt will separate if frozen.
----- EGGS AND PRODUCTS CONTAINING EGGS -----			
Eggs, in shell, fresh	2-5 weeks	Not recommended	
Eggs, fresh yolks or whites	4 days	12 months	To freeze, break eggs out of shell and stir until yolk is well blended with white (or with other yolks). Adding small amount of salt, sugar or corn syrup will improve keeping quality.
Eggs, in shell, hard-cooked	2 weeks	Not recommended	Decorated Easter eggs: If you intend to eat them, keep refrigerated. Eggs should not sit out for more than 2 hours. Within 2 hours either reheat or refrigerate.
Egg-containing products:			
custards, custard sauces, puddings, custard-filled pastries or cakes	1-2 days	Not recommended	
Canned puddings, opened	1-2 days	Not recommended	

Table 2. Approximate Refrigerator and Freezer Storage Times for Best Quality (cont.)
The storage times listed in the chart below are intended as useful guidelines, not set rules.

PRODUCT	REFRIGERATOR AT 35°-40°F	FREEZER AT 0°F	COMMENTS
----- FRUITS -----			
See table 3 (page 18) for information about fresh, frozen, and canned fruits.			
----- MEATS, FRESH -----			
Roasts:			
beef	3-5 days	4-12 months	Meats may be left in the supermarket packaging for refrigerator storage or for very brief freezer storage (2 weeks maximum).
veal or pork	3-5 days	4-12 months	
lamb	3-5 days	4-12 months	
Steaks, beef	3-5 days	4-12 months	For frozen storage beyond 2 weeks, rewrap in moisture- and vapor-proof wrap or freezer bags.
Chops:			
pork	3-5 days	3-4 months	
lamb, veal	3-5 days	6-9 months	
Ground beef, stew meat, ground pork	1-2 days	3-4 months	
Sausage, pork	1-2 days	1-2 months	
Bratwurst, fresh	2-3 days	2-3 months	
Variety meats (tongue, liver, brains, heart, kidneys)	1-2 days	3-4 months	
----- MEATS, COOKED -----			
Canned meat, opened	2-3 days	Not recommended	
Cooked meat and meat dishes	3-4 days	2-3 months	Quickly refrigerate all cooked meats and leftovers. Use as soon as possible. Cut large roasts into halves to cool in the refrigerator.
Gravy and meat broth	1-2 days	2-3 months	Fats tend to separate in homemade gravies, stews and sauces, but usually recombine when heated. Cool leftover gravy and broth quickly in shallow containers in refrigerator.
----- MEATS, PROCESSED AND CURED -----			
Bacon	7 days	1 month	Keep processed meats in original package. For best quality, use within 1 week of "sell by" date.
Frankfurters	7 days (storage time after vacuum-sealed package is opened)	1-2 months	Frozen, cured meats lose quality rapidly; use as soon as possible.
Ham, whole	7 days	1-2 months	
half	3-5 days	1-2 months	
canned (unopened)	8-12 months	Not recommended	Small pieces of canned ham (opened) may be frozen for 4 to 6 weeks.

Table 2. Approximate Refrigerator and Freezer Storage Times for Best Quality (cont.)
The storage times listed in the chart below are intended as useful guidelines, not set rules.

PRODUCT	REFRIGERATOR AT 35°-40°F	FREEZER AT 0°F	COMMENTS
----- MEATS, PROCESSED AND CURED cont. -----			
Luncheon meats	3-5 days	1-2 months	Refrigeration storage time is after vacuum-sealed package is opened. When freezing, emulsion may be broken and product will "weep."
Sausage, smoked	7 days	1-2 months	
Dry and semi-dry sausage	2-3 weeks	6 months	
----- POULTRY, FRESH -----			
Chicken and turkey (whole)	1-2 days	12 months	
Chicken (pieces)	1-2 days	9 months	
Turkey (pieces)	1-2 days	6 months	
Duck and goose (whole)	1-2 days	6 months	
Giblets	1-2 days	3-4 months	
----- COOKED POULTRY -----			
Canned poultry, opened	2-3 days	4 months	Quickly cool meat and broth separately in shallow containers. Add ice cubes to concentrated broth to speed cooling and to aid fat removal.
Cooked poultry dishes	3-4 days	4-6 months	
Pieces (covered with broth)	1-2 days	6 months	
Pieces (not in broth)	3-4 days	4 months	
Fried chicken	3-4 days	4 months	
----- WILD GAME -----			
Venison	3-5 days	6-12 months	
Rabbit, squirrel	1-2 days	12 months	
Wild duck, pheasant, goose (whole)	1-2 days	6 months	
----- SEAFOOD -----			
Canned fish, seafood, opened	3-4 days	4-6 months	
Clams, oysters (shucked) and scallops	1-2 days	3-4 months	Store in coldest part of the refrigerator. Do *not* use if liquid is frothy.
Crab	1-2 days	4 months	
Shrimp	1-2 days	3-6 months	
Lobster (shelled or not)	1-2 days	6 months	
Freshwater fish, cleaned	3-5 days	6-9 months	
Fillets:			
cod, flounder, haddock, pollack, mullet, ocean perch, sea perch, sea trout, striped bass	1-2 days	4-6 months	
Salmon steaks	1-2 days	2 months	
Cooked fish	3-4 days	1-3 months	
----- VEGETABLES -----			

See table 3 (page 18) for information about fresh, frozen, and canned vegetables.

Table 2. Approximate Refrigerator and Freezer Storage Times for Best Quality (cont.)
The storage times listed in the chart below are intended as useful guidelines, not set rules.

PRODUCT	REFRIGERATOR AT 35°-40°F	FREEZER AT 0°F	COMMENTS
----- MISCELLANEOUS -----			
Baby food	2-3 days	Not recommended	Store covered. Do not feed baby from jar. Reheat only enough for one feeding. Freeze homemade baby food in ice cube trays, covered, 2-4 weeks.
Soups, stews	2-3 days	4-6 months	
Sandwiches	2-3 days	1 month	
Casseroles	1-2 days	1 month	
Ground spices	6 months (refrigeration is not necessary, but will help keep flavor fresher)	6-12 months	Can be stored in cupboard.
Candies	Not necessary	3-6 months	Chocolates may discolor.
Salad dressings, opened	Several months	Not recommended	

Table adapted from materials prepared by Kansas State University, USDA, and University of Wisconsin Extension Service: http://www.oznet.ksu.edu/library/fntr2/L805.pdf

FRESH FRUIT AND VEGETABLE STORAGE

To maintain the freshness and flavor of the produce you buy at the market or grow in your garden, you should know how to store it at home. Information on storing fresh fruits and vegetables for better taste can be found in "Storing Fresh Fruits and Vegetables for Better Taste": http://homeorchard.ucdavis.edu/FVStorage.pdf. See table 3 for storage times for fruits and vegetables.

Tips for selecting fresh fruits and vegetables. When possible, try to purchase produce when it is in season. Listed below are some general time frames for seasonal fruits and vegetables. Recommendations will vary depending on your location.

Spring: asparagus, green onions, leeks, lettuces, new potatoes, peas, red radishes, rhubarb, spinach, strawberries, watercress

Summer: apricots, blueberries, blackberries, cherries, eggplant, fresh herbs, green beans, hot peppers, melons, okra, peaches, plums, sweet corn, sweet peppers, tomatoes, zucchini

Fall: apples, broccoli, Brussels sprouts, cauliflower, collards, grapes, kale, pears, persimmons, pumpkins, winter squash, yams

Winter: beets, cabbage, carrots, citrus fruits, onions, rutabagas, turnips, winter squash.

Ask your store's produce manager for delivery days so you can get to your favorite fruits and vegetables before quality declines. Many communities offer weekly farmers' markets. Fruits and vegetables grown by local farmers may be fresher and tastier than those that have been shipped long distances from larger farms.

Selection. Vegetables that show characteristic color, shape, and size generally have the best taste and texture. However, less-than-perfect produce is very acceptable. Most bananas, for example, have a fuller flavor if they are speckled. In general, produce that is very soft is too ripe; if it is very hard, it is probably not ripe enough. Some fruits, like peaches and melons, have a strong scent when they are ripe. If you purchase fruit that is not ripe you can speed up the ripening process by placing your fruit in a brown paper bag at room temperature, out of direct sunlight. The ethylene produced by the fruit in the closed bag will cause the fruit to ripen faster than if simply left on the counter to ripen. If you want to speed up the process even more, place an apple or a banana inside the bag with the other fruit.

Wax coatings. Many fruits and vegetables make their own natural waxy coating that is removed during the extensive washings they go through to clean off dirt and soil. Therefore,

waxes are applied to some produce items at the packing shed to replace the natural ones that are lost. Waxes are applied to:

- help retain moisture during shipping and marketing,
- help inhibit mold growth,
- protect from bruising,
- prevent other physical damage and disease, and
- enhance appearance.

The government requires that wax coatings must meet the food additive regulations of the U.S. Food and Drug Administration. Produce shippers and supermarkets are required by federal law to label produce items that have been waxed. Waxes may turn white on the surface of fruits or vegetables if they have been subjected to excessive heat and/or moisture. This whitening is safe to eat.

Washing. Fresh fruits and vegetables should be stored unwashed. Storing the produce unwashed will help prevent spoilage and mold growth during storage. If fruits and vegetables are very dirty after harvest, brushing or rinsing and drying may be necessary before storing. Wash produce just before preparation or eating. Food safety experts recommend that consumers use the six FightBAC!™ procedures for handling fresh fruits and vegetables: Check, Clean, Separate, Cook, Chill, Throw Away, as explained in the the FightBAC!™ brochure on safe handling fresh fruits and vegetables: http://www.fightbac.org/images/pdfs/producefactsheet.pdf.

Washing ready-to-eat leafy greens/lettuce: A panel of scientists with expertise in microbial safety of fresh produce evaluated recent research and regulatory guidelines and came to the following conclusions:

- Lettuce/leafy green salad in sealed bags labeled "washed" or "ready-to-eat" does not need additional washing.
- Additional washing of ready-to-eat green salads will not enhance safety.
- The risk of cross-contamination during washing may outweigh any safety benefit of further washing.

Harvesting and storing fresh garden vegetables. Harvesting vegetables at the proper stage of maturity is essential for peak flavor and nutrition. Morning is the best time to harvest vegetables, because they are at their coolest and will take handling better. Vegetable quality deteriorates rapidly after harvest, so keep fresh produce out of direct sunlight, and cook, process, or place it in the proper storage conditions as soon as possible. There are five main types of storage for garden vegetables:

- ***Method 1***: Cold, moist storage—32-40°F, 90-95% relative humidity. The colder part of a refrigerator generally provides this range of temperatures. To maintain a high relative humidity, place vegetables in plastic bags, or place them unbagged in the crisper, which should be half or more full. (Examples: asparagus, fresh lima beans, beets, broccoli, carrots, cauliflower)
- ***Method 2***: Cool, moist storage—45-50°F, 80-90% relative humidity. A special refrigerator kept at these warmer temperatures may be warranted for storing large amounts of vegetables. Vegetables needing this type of storage are sensitive to chilling injury at temperatures below 45°F. Storing certain immature vegetables under these conditions will allow ripening that would not occur at a lower temperature. Vegetables should be in plastic bags or in the crisper (as in method 1) to maintain the humidity of the surrounding air. (Examples: cucumbers, eggplant, Swiss chard, Crenshaw and honeydew melons)
- ***Method 3***: Cool, dry storage—35-55°F, 50-60% relative humidity. Use cool rooms and buildings. Pack vegetables in something other than plastic to maintain reduced humidity levels, such as in mesh or brown paper bags or in cardboard boxes. (Examples: garlic, onions, shallots)
- ***Method 4***: Warm, moist storage—55-60°F, 80-85% relative humidity. Basement areas, garages, and semi-heated outbuildings, combined with plastic bags or damp soil, sand, or sawdust, often satisfy these conditions. (Examples: sweet potatoes, mature green tomatoes)
- ***Method 5***: Warm, dry storage—55-60°F, 60-70% relative humidity. Store in basement areas, garages, and semi-heated outbuildings in packaging other than plastic to maintain reduced humidity levels, such as in mesh or brown paper bags or in cardboard boxes. (Examples: pumpkins, winter squash)

For more detailed information on storage methods see the University of Idaho publications "Harvesting and Storing Fresh Garden Vegetables": http://info.ag.uidaho.edu/pdf/BUL/BUL0617.pdf and "Options for Storing Potatoes at Home": http://info.ag.uidaho.edu/pdf/CIS/CIS1153.pdf.

Storage in root cellars. If you have an interest in storing fruits and vegetables in an appropriate pit, cellar, or basement without refrigeration, information can be found in publications from the University of Alaska Fairbanks, "Vegetable Storage in Root Cellars": http://www.uaf.edu/coop-ext/publications/freepubs/HGA-00331.pdf, and Washington State University, "Storing Vegetables and Fruits at Home": http://cru.cahe.wsu.edu/CEPublications/eb1326/eb1326.pdf.

Table 3. Approximate Storage Times for Best Quality Fresh Fruits and Vegetables
The storage times listed in the chart below are intended as useful guidelines, not set rules.

PRODUCT	ROOM TEMPERATURE	REFRIGERATOR AT 35°-40°F	COMMENTS
----- FRUIT -----			
Apples	1-2 days	1-4 weeks	Ripen apples at room temperature. Once they are ripe, store them unwashed in plastic bags in the crisper.
Apricots	Until ripe	2-3 days	
Avocados	Until ripe	3-5 days	
Bananas	2-3 days or until ripe	2 days, skin will blacken	
Berries (blackberries, blueberries, strawberries, raspberries), and cherries		1-2 days	Before storing berries, remove any spoiled or crushed fruits. Store the berries unwashed in plastic bags or plastic containers. Do not remove the green tops from strawberries before storing.
Citrus fruit	10 days	1-2 weeks	Best stored at cool room temperature. Wrap cut surfaces to prevent loss of vitamin C.
Coconuts, fresh	1 week	2-3 weeks	
Grapes	1 day	1 week	
Kiwi fruit	Until ripe	3-4 days	
Melons (watermelon, cantaloupe, honeydew)	1-2 days	3-4 days	For best flavor, store melons unwashed at room temperature until ripe. Store ripe, cut melon covered in the refrigerator.
Papaya, mango	3-5 days	1 week	
Peaches, nectarines	Until ripe	3-4 days	
Pears, plums	3-5 days	3-4 days	
----- VEGETABLES -----			
Artichokes, whole	1-2 days	1-2 weeks	
Asparagus		3-4 days	
Beans, green or wax		1 week	
Beets	1 day	7-10 days	
Bok choy		2-3 days	
Broccoli, raab, rapini		3-5 days	
Brussels sprouts		3-5 days	
Cauliflower		3-5 days	
Cabbage		1-2 weeks	
Carrots, parsnips		3 weeks	
Celery		1-2 weeks	
Corn on the cob		1-2 days	For best flavor use corn immediately.
Cucumbers		4-5 days	

Table 3. Approximate Storage Times for Best Quality Fresh Fruits and Vegetables (cont.)
The storage times listed in the chart below are intended as useful guidelines, not set rules.

PRODUCT	ROOM TEMPERATURE	REFRIGERATOR AT 35°-40°F	COMMENTS
----- VEGETABLES cont. -----			
Eggplant	1 day	3-4 days	
Garlic	1 month	1-2 weeks	
Ginger root	1-2 days	1-2 weeks	
Greens		1-2 days	
Herbs, fresh		7-10 days	
Leeks		1-2 weeks	
Lettuce, iceberg		1-2 weeks	Store in bag or lettuce keeper.
Lettuce, leaf		3-7 days	Store in bag or lettuce keeper.
Mushrooms		2-3 days	Do not wash before refrigerator storage.
Okra		3-5 days	
Onions:			Store dry onions loosely in a mesh bag in a cool, dry, well-ventilated place away from sunlight. Store green onions unwashed.
dry (red, white, yellow)	2-4 weeks	1 month	
green		1-2 weeks	
Parsley, cilantro		1 week	
Peas, lima beans, unshelled		3-5 days	Store unshelled in refrigerator until used.
Peppers, bell or chile		4-5 days	
Potatoes	1-2 months	1-2 weeks	Store unwashed potatoes in a cool, dry, well-ventilated area away from light, which causes greening. Storing in the refrigerator reduces sprouting. However, starches will turn to sugar (causing fried potatoes to darken.) For more information see "Options for Storing Potatoes at Home": http://info.ag.uidaho.edu/pdf/CIS/CIS1153.pdf
Radishes		10-14 days	
Rutabagas	1 week	2 weeks	
Spinach		3-7 days	
Squash, summer		4-5 days	
winter	1 week	2 weeks	Cured winter squash will last 2 to 6 months in cool temperatures (55-60°F).
Turnips		2 weeks	
Tomatoes	Ripen tomatoes at room temperature away from sunlight.	5-6 days	For best flavor, store unwashed at room temperature and eat immediately when ripe. Store fully ripened tomatoes unwashed in the refrigerator.

Table adapted from materials prepared by the Food Marketing Institute and Cornell University Institute of Food Science: http://www.fmi.org/consumer/foodkeeper/Food_Keeper_Brochure.pdf

STORING LEFTOVERS

Leftovers are cooked foods that have not been eaten within 2 hours of cooking. The following are specific guidelines regarding leftover use and storage:

- Observe the 2 hour rule by discarding any perishable foods (foods that decay rapidly if not refrigerated) left at room temperature longer than 2 hours total. This time is reduced to 1 hour in hot weather.
- To cool foods more quickly, use shallow containers (3 inches tall or less) when refrigerating or freezing foods. Alternatively, moisture-proof, freezer-weight wraps are good choices for freezer storage.
- Keep your refrigerator at 40°F or below, and your freezer at or below 0°F.
- Label leftovers with a date and the product name.
- Practice "first in, first out" (see page 2).
- Never taste leftovers that are of questionable age or safety.
- Never keep leftovers in the refrigerator for more than 3-4 days. Freeze leftovers that will not be eaten within this time.

Reheating leftovers. Leftovers may be reheated in the microwave, on the stovetop, or in the oven. However, when using the microwave oven, liquid foods should be stirred, and solid foods should rest for 2 minutes after heating, to allow the temperature to equalize throughout. Basic rules for reheating leftovers:

- Heat solid leftovers to 165°F, using a food thermometer to check the temperature.
- Heat sauces, soups, and gravies to boiling.
- Set oven temperature no lower than 325°F.

When to throw out. When leftovers have been in the refrigerator for longer than 3 to 4 days, or if they look or smell unusual, throw them out. Any time you are in doubt about the freshness or safety of any food, dispose of it, using a garbage disposal or a tightly wrapped package so that other people or animals won't eat it. See table 4 for storage times for leftovers.

Using a food thermometer. There are two types of instant-read thermometers commonly available that are useful for checking the temperature of reheated leftovers. An instant-read digital thermometer should be inserted so the bottom ½ inch of the probe or stem is in the center or coldest part of the food. For an instant read dial thermometer, insert the probe or stem 2-3 inches into the center or coldest part of the food.

Table 4. Approximate Storage Times for Best Quality Leftovers

FOOD	REFRIGERATOR (40°F)	Freezer (0°)
Eggs, liquid pasteurized or egg substitutes, opened	3 days	Do not freeze
Deli , vacuum-packed, and home-prepared salads: egg, chicken, tuna, ham or macaroni salads	3-5 days	These products do not freeze well
Pre-stuffed pork and lamb chops, chicken breasts stuffed with dressing	1 day	1-3 months
Cooked meat and meat dishes	3-4 days	2-3 months
Soups and stews, gravy and meat broth	1-2 days	2-3 months
Cooked poultry, poultry dishes	3-4 days	4-6 months
Chicken nuggets, patties	1-2 days	1-3 months
Cooked fish	3-4 days	1-2 months
Hot dogs, opened package	1 week	1-2 months (wrapped)
Lunch meats, opened package	3-5 days	1-2 months (wrapped)
Baby food		
strained fruits and vegetables*	2-3 days	6-8 months
strained meats and egg yolks*	1 day	1-2 months
meat and vegetable combinations*	1-2 days	3-4 months

*These storage times are for opened jars or homemade baby food. Follow the "use-by" date for shelf storage of unopened jars.

Table adapted from materials prepared by University of Nebraska Cooperative Extension and University of Georgia Cooperative Extension: http://www.fcs.uga.edu/ext/pubs/fdns/efnep/FDNS-NE-602a.pdf

STORING FOODS FOR EMERGENCIES

In the event of a disaster, you may not have access to food, water, and electricity for days or even weeks. You can provide for your family during such a time by maintaining a stock of goods in your pantry, using the first-in, first-out practice to keep items fresh. Store food on shelves that will be safely out of the way of contaminated water in case of flooding. Be sure to take into account any special dietary needs for diabetics, pregnant women, breast-feeding mothers, babies and toddlers, and pets. Food preferences also need to be considered. For more information about handling refrigerator and freezer foods during a power outage, see "If the Power Goes Out": http://www.fsis.usda.gov/Fact_Sheets/keeping_food_Safe_during_an_emergency/index.asp.

Suggested Grocery List – 3-Day Food Supply for 1 person
(Increase as needed for household size)

- ☐ Dry cereal – one 7-oz. box
- ☐ Crackers – one box (8-oz or larger)
- ☐ Peanut butter – one 12-oz jar
- ☐ Canned juice – one 6-pack
- ☐ Applesauce – one 4 pack of 6-oz containers
- ☐ Peaches – one 8-oz can
- ☐ Fruit cocktail – one 8-oz can
- ☐ Pork and beans – one 8-oz can
- ☐ Corn – one 8-oz can
- ☐ Tuna – one 3 ¼-oz can
- ☐ Processed cheese spread – one 8-oz box or 4 ¼-oz jar
- ☐ Beef stew – one small can or container
- ☐ Chili – one small can or container
- ☐ Tomato or other soup – one can
- ☐ Cocoa – one box of individual packets
- ☐ Pudding – one 4 pack of 4 ¼-oz containers
- ☐ Dried prunes – one 12-oz package
- ☐ Peanuts or other nuts – one package or jar
- ☐ Tea – one box with 16 bags or one 2-oz jar instant coffee
- ☐ Nonfat dried milk – one box
- ☐ Bottled water – 3 gallons
- ☐ Manual can opener

Be sure to rotate supplies. Avoid out-of-date products.

Tips for storing emergency foods

- Keep food in a dry, cool, dark area if possible. If basement flooding is possible, store emergency food in higher locations.
- Open food boxes and other re-sealable containers carefully so that you can close them tightly after each use. Include food wrap or empty storage containers.
- Wrap foods such as cookies and crackers in plastic bags and keep them in sealed containers to prevent moisture and pests.
- Empty open packages of sugar, dried fruits and nuts into screw-top jars or air-tight canisters for protection from pests.
- Inspect all food for signs of spoilage before use.
- Throw out canned goods that become swollen, dented, or corroded.
- Use foods before their use-by dates, and replace them with fresh supplies, dated with ink or marker. Place new items at the back of the storage area and older ones in front.

Disaster Supply Kit:

- ☐ Portable, battery-powered radio or television, and extra batteries
- ☐ Flashlight and extra batteries (check batteries occasionally)
- ☐ First aid kit and manual
- ☐ Sanitation and hygiene items (hand sanitizer, moist towelettes, and toilet paper)
- ☐ Matches in waterproof container
- ☐ Whistle
- ☐ Extra clothing and blankets
- ☐ Kitchen accessories and cooking utensils
- ☐ Photocopies of identification and credit cards
- ☐ Cash and coins
- ☐ Special-needs items such as prescription medications, eye glasses, contact lens solution, and hearing aid batteries
- ☐ Items for infants, such as formula, diapers, bottles, and pacifiers
- ☐ Tools, pet supplies, a map of the local area, and other items to meet your unique family needs

Be sure to rotate supplies. Avoid out-of-date products.

Additional information on preparing for emergencies is available from the Federal Emergency Management Agency: http://www.fema.gov/pdf/library/f&web.pdf.

STORING HOME-PRESERVED FOODS

Safety considerations. Home-canned or dried foods that have been prepared using other research-based procedures such as those recommended by university extension offices are safe indefinitely as long as the packaging remains intact. However, the flavor and nutritional quality of these foods deteriorates over time, and it is best to preserve only the amount that can be consumed within one year. For more information on safe canning, see the USDA Complete Guide to Home Canning: http://www.uga.edu/nchfp/publications/publications_usda.html. For more information, see "Drying Fruits and Vegetables": http://info.ag.uidaho.edu/Resources/PDFs/PNW0397.pdf.

Home-canned foods. Storing home-canned foods is similar to storing commercially-canned foods: cool, dark, dry storage is best. Excluding light is an important storage consideration, since glass jars are used for home-canned foods. Prior to storing home-canned foods, the jars should be wiped clean, dried, and labeled with the contents and the date. Remove the screw bands so it is easier to see if a seal has failed, and so the screw bands don't rust while on the jars. Do not store jars above 95°F or near hot pipes, a range, a furnace, in an un-insulated attic, or in direct sunlight. Under these conditions, food will lose quality in a few weeks or months, and may spoil. Dampness may corrode metal lids, break seals, and allow contamination and spoilage.

Accidental freezing of canned food would not cause spoilage unless it causes jars to become unsealed and contaminated. However, freezing and thawing may soften food, lowering its quality. If jars must be stored where they may freeze, wrap them in newspaper, then place in heavy cartons, and cover with more newspaper and blankets.

Signs of spoilage in home-canned foods. If a home-canned jar has a bulging lid, mold, off-odor, leakage, or spurting liquid when container is opened, it is spoiled and should be discarded.

Storing home-dried foods. Moisture must be kept out of dried foods to prevent mold. Containers suitable for freezer use, such as plastic freezer bags, glass jars with lids, and plastic containers with lids, work well for dried foods. Vacuum packaging is an excellent way to maintain quality of dried foods.
Although dried foods may still be edible after many months or years in storage, they maintain the best quality and nutritional value if they are used within 12 months. The shelf life of dried foods is extended by refrigerator or freezer storage.

The authors consulted food storage extension publications from Arizona, California, Georgia, Indiana (Purdue), Iowa, Kansas, Nebraska, New Jersey (Rutgers), New York (Cornell), South Carolina (Clemson), Utah, Virginia, and Washington states, as well as web pages of the Food Safety and Inspection Service and Federal Emergency Management Agency, in preparing this publication.

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