



At-Home Safe Food Handling: It's in Your Hands

When it comes to safe food handling and preparation in your home, you're in control. Your home is the final stop in the farm-to-table continuum, and safely handling food is your best protection against foodborne illnesses.

To stop microorganisms, follow these four food safety concepts:

- Clean.** Wash hands and surfaces often.
- Chill.** Refrigerate promptly.
- Separate.** Don't cross-contaminate.
- Cook.** Cook to proper temperatures.

This publication outlines food handling practices from store to table, plus the use of leftovers. The four food safety concepts above are important in several of these steps, so watch for the symbols marking Clean, Chill, Separate, and Cook. Most instances of foodborne illnesses are preventable, so remember, you control at-home food safety. It's in your hands!

Understanding Foodborne Illnesses

Why use food handling precautions at home? Because bacteria that we cannot see, smell, or taste can multiply to millions within a few hours at warm kitchen temperatures. Although most bacteria cause illness when they increase in large numbers, some (such as *E. coli* O157:H7) need only be present in small numbers to cause illness.

Most instances of foodborne illnesses can be prevented by properly handling, storing, and cooking food to control and kill harmful bacteria such as *Salmonella*, *E. coli* O157:H7, and *Listeria*; parasites such as *Toxoplasma* and *Cyclospora*; and viruses such as hepatitis A. Proper handling will also prevent development of toxins produced by *Staphylococcus aureus* and other bacteria.

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Shopping

At-home safe food handling begins with grocery shopping. Bacteria grow well in warmer temperatures, so it's important to not allow cold or frozen foods to increase in temperature before you reach home.

- Grocery shop last to avoid leaving food in a hot car.
- Take food straight home after shopping and immediately refrigerate cold items. In hot weather, pack cold foods in ice if the time from the store to home will be more than one hour.
- Place raw meat, poultry, fish, and seafood inside plastic bags found in the meat aisle to avoid contamination from drippings. Keep them separate from other food items in your cart.
- Watch food condition. Don't buy canned goods with large dents, cracks, or bulges. Be sure refrigerated food is cold to the touch and frozen food is rock-solid.
- Avoid buying fresh meat, poultry, fish, or shellfish from informal (not regulated) stands. Ask the vendor what licenses they have and about their food safety practices to learn more.

Quick Tip. Watch for these dates on food:

"Sell by" is the last date a store should sell a product with its best quality.

"Best by" or **"Use by"** is the manufacturer's estimate of how long a product will keep at its best quality.

Dates are quality indicators, not safety dates.

Storing

Refer to Chart #1: Refrigerated Storage Guidelines

- To slow bacterial growth, keep your refrigerator running at 40°F, or even colder, without freezing your milk or lettuce. Keep freezers at 0°F for best food quality. Check the temperature of your refrigerator and freezer with an appliance thermometer.
- Place raw meat, poultry, fish, or shellfish on a plate or in a plastic bag, and on the lowest refrigerator shelf, to avoid contaminating other foods with drippings.



- Cover all foods to protect them from drips and to hold quality.
- Freeze fresh meat or poultry immediately if you won't use it within a few days.
- Thaw meat or poultry in the refrigerator, microwave or under cold running water in your kitchen sink. Then, cook immediately.
- Use acrylic cutting boards instead of wooden boards. Acrylic boards can be washed in the dishwasher. Replace when surface becomes rough.
- Marinate raw meat and vegetable products in the refrigerator. Never reuse marinade; dispose of it down the drain.
- Keep raw meat and its juices away from other foods.
- Do not wash raw meats, poultry, fish, or shellfish before cooking. This could splash bacteria to other foods and surfaces.

Preparing

- **Handwashing** is one of the best ways to help prevent foodborne illnesses. Always wash and rub your hands in hot, soapy water for 20 seconds, rinse well, and dry:
 - Before, during, and after preparing any food.
 - Before eating.
 - Before and after caring for someone who is sick or treating a wound.
 - After blowing your nose, coughing, or sneezing.
 - After handling raw meat, fish, seafood, or poultry.
 - After using the toilet.
 - After changing a diaper.
 - After handling pets, pet food, or cat litter.
 - After handling the trash.
- Frequently wash and change kitchen towels, sponges, and cloths.
- Wash cutting boards, dishes, utensils, and countertops with hot, soapy water after preparing different food items, especially raw meats and poultry. Spray surfaces with a simple solution of 1 tablespoon regular chlorine bleach in 1 gallon water. Label spray bottle “sanitizer.”

Quick Tip. Encourage proper handwashing with younger children by having them sing the “Alphabet Song” once. Washing hands for 20 seconds is effective in removing germs from hands.

Quick Tip. To help avoid cross-contamination of food, use two acrylic cutting boards of different colors or shapes. Use one for raw meats and poultry, the other for fruits and vegetables.

Cooking

Refer to Chart #2: Cooking Temperature Guide for Meats and Eggs

- Cook food thoroughly to kill bacteria. Don't chance illness by eating meat, poultry, fish, shellfish (including oysters), or eggs that are raw or only partially cooked.
- Roast meat or poultry in oven temperatures of 325°F or greater.
- Use a meat thermometer to help you determine doneness. Dial or digital thermometers are also available.
- Place the food thermometer in the thickest part of the food toward the end of cooking time. It should not touch bone, fat, or gristle. Clean the thermometer with hot soapy water before and after each use.
- Keep the temperature chart (Chart #2) in your kitchen and refer to it when you cook.

Serving

- **Don't cross-contaminate.** Keep raw and cooked meat, poultry, fish, and seafood separate. Never place cooked food on an unwashed plate that previously held raw meat, poultry, fish, or seafood.
- **Promptly refrigerate.** Never let food sit out of the refrigerator for more than two hours when preparing, serving, and eating. (At summer outings, when temperatures are 90°F and greater, let food sit out no more than 1 hour.)
- Pack lunches and picnic foods with cold packs in insulated carriers, and don't leave out in direct sun.

Quick Tip. Keep hot foods hot (above 140°F) and cold foods cold (below 40°F). The “Danger Zone” — where bacteria grow rapidly — is between this temperature range. Never let perishable food sit out for more than two hours, even if you intend to eat it later.

Leftovers

- **Divide** large amounts of leftover foods, such as soup, into shallow containers for quick cooling. For larger items, such as a whole turkey, cut meat off bones. Cover and place in the refrigerator or freezer.
- **Date** packages of leftovers and, as a rule, use within four days of refrigeration.
- **Reheat** sauces, soups and gravies to boiling; reheat other leftovers until they are piping hot, 165°F throughout.
- **Cover** leftovers with a lid or vented plastic wrap when reheating by microwave. Stir foods several times to avoid cold spots, and let food stand for several minutes after microwaving.
- **Discard** leftovers and other foods that look or smell strange or are old. Never taste them — harmful bacteria often do not change the taste or odor of food. Be careful with moldy foods; most should be discarded.

Quick Tip. As a rule, if the mold isn't a normal component of the food (as with blue cheese), it shouldn't be consumed.

For more information

Your local K-State Extension office
extension.ksu.edu

K-State Rapid Response Center
www.rrc.ksu.edu

K-State Research and Extension Food Safety
extension.k-state.edu/foodsafety/

USDA Food Safety and Inspection Service
www.fsis.usda.gov

U.S. Food and Drug Administration (FDA)
www.fda.gov

U.S. Government Food Safety Gateway
www.foodsafety.gov

Centers for Disease Control and Prevention
www.cdc.gov/food-safety

National Fisheries Institute
www.aboutseafood.com

American Egg Board
www.incredibleegg.org/

Food Marketing Institute
www.fmi.org

Midwest Dairy Association
www.midwestdairy.com

Chart #1. Refrigerated Storage Guidelines

Use these short, but safe, time limits to keep your refrigerated food (40°F or colder) from spoiling or becoming harmful to eat.

Product	Storage
Fresh Meat (Beef, Veal, Lamb, Pork, Bison, and Goat)	
Steaks, chops, roasts	3 to 5 days
Variety meats (tongue, kidneys, liver, heart, chitterlings)	1 to 2 days
Raw Hamburger, Ground and Stew Meat	
Stew meats	1 to 2 days
Ground beef, turkey, veal, pork, lamb, bison, goat, and mixtures of them	1 to 2 days
Fresh Poultry	
Chicken or turkey, whole or parts	1 to 2 days
Giblets	1 to 2 days
Fish and Shellfish	
Fresh fish and shell fish	1 to 2 days
Meat, Leftovers	
Cooked meat and meat dishes	3 to 4 days
Gravy and meat broth	1 to 2 days
Soup and Stew, Leftovers	
Vegetable or meat-added	3 to 4 days
Cooked Poultry, Leftovers	
Fried chicken	3 to 4 days
Cooked poultry dishes	3 to 4 days
Pieces, plain	3 to 4 days
Pieces covered with broth, gravy	1 to 2 days
Chicken nuggets, patties	1 to 2 days
Ham, Corned Beef	
Corned beef in pouch with pickling juices	5 to 7 days
Ham, canned, labeled "Keep Refrigerated"	
unopened	6 to 9 months
opened	3 to 5 days
Ham, fully cooked, whole	7 days
Ham, fully cooked, half	3 to 5 days
Ham, fully cooked, slices	3 to 4 days

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Product	Storage
Bacon and Sausage	
Bacon	7 days
Sausage, raw from meat or poultry	1 to 2 days
Smoked breakfast links, patties	7 days
Summer sausage labeled "Keep Refrigerated"	
unopened	3 months
opened	3 weeks
Hot Dogs and Lunch Meats	
Hot dogs	
opened package	1 week
unopened package	2 weeks
Lunch meats	
opened package	3 to 5 days
unopened package	2 weeks
Deli and Vacuum-Packed Products	
Store-prepared (or homemade) egg, chicken, tuna, ham, macaroni salads	3 to 5 days
Pre-stuffed pork and lamb chops, chicken breasts stuffed w/dressing	1 day
Store-cooked convenience meals	3 to 4 days
Commercial brand vacuum-packed dinners w/ USDA seal, unopened	2 weeks
Mayonnaise (commercial)	
Refrigerate after opening	2 months
Eggs	
Fresh, in shell	3 to 5 weeks
Raw yolks, whites	2 to 4 days
Hard cooked, then refrigerated	1 week
Liquid pasteurized eggs or egg substitutes	
opened	3 days
unopened	10 days
Cooked egg dishes	3 to 4 days
Dairy Products	
Milk	10+ days
Butter	1 to 2 weeks
Cheese	
Harder cheeses	several months
Softer cheeses, after opening	1 to 3 weeks
Sour cream	1 month
Yogurt	10 days

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Product	Storage
Fruits (whole)	
<i>Storage time may vary depending on the condition of fresh fruit when purchased.</i>	
Apples	1 month
Bananas (only refrigerate ripe bananas)	few days at room temp.
Berries	2 to 3 days
Citrus fruit	2 weeks
Grapes	few days
Melons	5 to 7 days
Peaches	2 to 3 days
Pears	5 days
Vegetables	
<i>Storage time may vary depending on condition of fresh vegetables when purchased. Store in moisture-resistant bags and do not wash until ready to use.</i>	
Beans	1 to 2 days
Broccoli	3 to 5 days
Carrots	2 weeks
Cauliflower	1 week
Celery	1 week
Cucumbers, whole	1 week, unpeeled
Green onions (scallions)	7 to 10 days; use as soon as possible
Leafy greens	3 to 5 days
Lettuce	
whole	1 week
precut (bagged)	3 to 5 days, opened 7 to 10 days, unopened or date on bag
Mushrooms	1-2 days
Onions	will keep for weeks in a cool, dry, dark place; refrigerate cut onions in a covered container
Peppers	5 to 7 days
Potatoes	do not refrigerate; will keep in a cool, dry, dark place for up to 2 months
Radishes	up to 2 weeks
Squash	
Summer	3 to 5 days
Winter	Store in a cool dry place
Sweet corn	keep refrigerated; use as soon as possible
Tomatoes	for best quality, do not refrigerate whole tomatoes; store at room temperature until ripe, then eat immediately; refrigerate cut tomatoes

For more information see Safe Food Storage: The Refrigerator and Freezer, MF3130 at <https://www.bookstore.ksre.ksu.edu/pubs/MF3130.pdf>

Chart #2. Cooking Temperature Guide for Meats and Eggs

Note: These are minimum endpoint cooking temperatures for safety. You may choose to cook some cuts to higher temperatures for a greater degree of doneness or because you prefer the flavor. After cooking, allow meat to rest at least three minutes before carving or serving.

Raw Food	Internal Temperature	Raw Food	Internal Temperature
Ground Meat and Sausage Products		Poultry — Chicken, Turkey, Wild Game Birds	
Beef, veal, lamb, pork, goat, bison	160°F	Whole birds and all pieces	165°F
Chicken, turkey	165°F		
Beef, Veal, Lamb, Goat, Bison		Fish and Shellfish	
Roasts and steaks	145°F	Fish: flesh is opaque and flakes easily	145°F
		Shellfish: flesh is opaque and shells open	145°F
Pork		Eggs	
Chops, steaks, roasts, ribs	145°F	Fried, poached	yolk and white are firm
Ham, fresh	145°F	Casseroles, sauces, custards	160°F
Ham, fully cooked, as purchased	140°F		
Venison		Leftovers, Casseroles, Stuffing	
	160°F		165°F

This chart has been adapted for home use and is consistent with consumer guidelines from the U.S. Department of Agriculture and the U.S. Food and Drug Administration.

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