

Kansas Food*A*Syst Helps Ensure Your Safety

*Kansas Food*A*Syst – A Food Safety Risk Management Guide for the Consumer*, is a self-assessment program you can use to evaluate your food safety risks in buying and preparing food for yourself and your family. The purchase and preparation of food in the home are discussed through a series of risk assessment charts and in related information and resources. You can use the charts to identify higher risks, and the information to decrease those food safety risks. At the end is an Action Plan where you can organize the changes you decide to make.

Most changes are simple things, like organizing your errands so that you buy groceries right before you go home, and minimizing the time items like milk are unrefrigerated. You might find that you can better protect your food by storing cleaning materials differently. If you prepare food for someone less resistant to food borne illness, like an infant or elderly person, *Kansas Food*A*Syst* notes the important steps you can take to reduce potential health problems.

There are no right or wrong answers, only the opportunity to reduce food safety risks for your family.

Authors

Karen Pesaresi Penner, Ph.D., Professor and Specialist, Food Science,
Department of Animal Sciences and Industry

Judy Willingham, M.S., Extension Associate,
Department of Animal Sciences and Industry

Appreciation is expressed to the following who graciously reviewed these materials:

- Karen Blakeslee, Extension Associate, Department of Animal Sciences and Industry, Kansas State University
- Mary Glassburner, Program Director, Kansas Department of Health and Environment, Bureau of Consumer Health, Food Protection and Consumer Safety
- Staff members of the Food Safety and Consumer Protection Division, Kansas Department of Agriculture, Meat and Poultry Inspection Program

Kansas Food*A*Syst Mini Checklist for Consumers

This checklist is a way to quickly scan for some food safety concerns. It will help you evaluate some food safety risks in selecting and preparing food for your family. This booklet is divided into two general areas: **Purchasing Food Safely** and **Food Safety in the Home Kitchen**. The information provided in each section is much more comprehensive than the short checklist below. You will also find a page devoted to the special concerns related to:

- purchasing foods from open air markets, and
- preparing foods for infants, the elderly, and those with low immunity.

When using this simple checklist, remember, this is a self-evaluation. The results are for your eyes only. Be honest with yourself when considering the answer to each question.

Instructions: Using a pencil, answer the questions “Yes” or “No”. If your experience is different, choose the answer that is most likely what you would do.

Purchasing Food Safely	YES	NO
I have bought frozen foods at the grocery store that were partially thawed.		
When I unpack my groceries I have found juice from raw meats on other foods.		
Sometimes I taste fresh produce (like grapes) from the display in the grocery store or at the farmers’ market stand before I decide to buy.		
I have bought groceries that need to be refrigerated, then continued with other errands before going home.		

Food Safety in the Home Kitchen	YES	NO
There is no thermometer in my refrigerator.		
I thaw frozen foods on the counter until soft.		
We eat fresh apples and oranges without washing them.		
Cleaning supplies are stored in the same cabinets as foods.		
I use the same cloth towel to wipe the counter and clean my hands when cooking.		
I leave food in the cooking pot when it is put in the refrigerator to cool.		
I dry dishes by wiping them with a towel.		
I look for a brown color in the middle of a ground meat patty to know that it is done.		

Each “Yes” answer indicates where you should look more closely at a food safety issue. If you identify potential concerns using this checklist, please read on for more details in this manual, **Kansas Food*A*Syst – A Food Safety Risk Management Guide for the Consumer**.



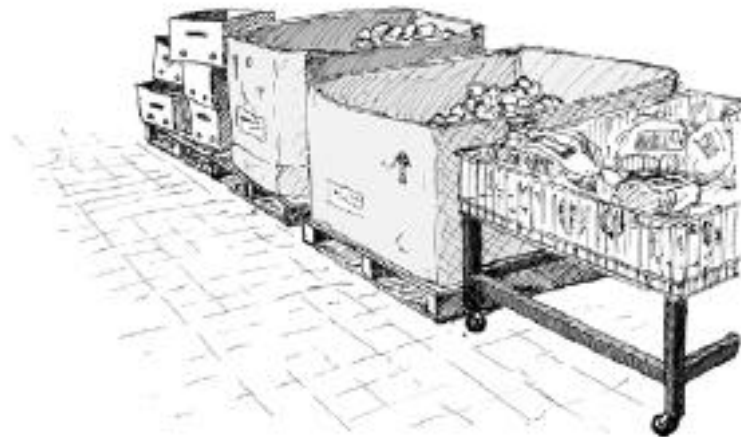
Purchasing Food Safely

Although many people grow vegetables in their own gardens, most of our food is purchased from a grocery store or perhaps the farmers' market. Foods that are commercially processed in cans and jars will be safe on the shelf, unless the container has been opened or damaged, like a dented can. Other foods (like those in the deli) may be cooked or handled during cutting and mixing; their safety depends upon employees' cleanliness and foods being kept steaming hot or chilled and cold. Don't forget the fresh fruits and vegetables in the produce section. We shouldn't expect them to be ready to eat, but they should be sound and wholesome. The shopper can learn much about the store's or market's attitude toward food safety by watching for a few things.

One way to evaluate the store management's attitude about food safety is to look at the condition of the restrooms. The restroom does not have to be new or well decorated, but it should be clean, with hot and cold running water. If fixtures are broken or dirty, or if soap and paper towels are missing, how can employees properly wash hands? Many broken items needing repair would be a symptom of disregard for food safety. The example set by management will be followed by the staff in their behavior on the job.

All types of products are sold from the shelves of a grocery store. We need to be aware of how both food and nonfood items are displayed. In general, liquid nonfoods should be separated from foods and paper goods. Foods, paper goods, or packages of food can be contaminated by leaks from nonfoods. For example, think of a barbecue supply display where the lighter fluid is on a shelf over the napkins and paper plates. Any leaks of lighter fluid will fall onto the paper goods, which are then unsafe to use. If you see any drips or stains that look like something has leaked onto a package, do not buy it. The list below includes some specific items that must not be stored above or with food-related items.

- Liquid soaps
- Liquid cleaning compounds
- Liquid laundry products
- Automotive fluids
- Insect and mouse killers
- Plants and fertilizers
- Snow melters
- Pool chemicals
- Pet treatments



Use the risk assessment table to rate yourself. Circle the description that best defines your usual activities. For each category check your risk level in the right-hand column. Although some choices may not correspond exactly to your situation, choose the one that best fits. Your goal is to lower your risks. Record your medium-high and high risks in the Action Plan on Page 20.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Dry Foods	I always examine shelves & packages for bugs & mice-damage before I buy.	I usually examine shelves & packages for bugs & mice-damage when I buy.	I sometimes examine shelves & packages for bugs & mice-damage when I buy.	I buy without looking for bugs and mice-damaged packages.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High

Dry foods in paper or cardboard packages (like flour, cake mix, pet food) have limited protection from pests. Food debris is an invitation to insects and mice. Broken packages and spilled food must be removed and the spill cleaned up quickly. If you see things like flour dust, dried beans, or dog food on the shelf or floor every time you shop, the store isn't trying to control insects and mice. Check inside the folded ends of paper sacks for insects by looking for little webs, dark specks, and tiny round holes. The grocery store should also regularly check dates on food packages and pull off items with expired dates. You may see these products discounted for quick sale; buy them only if the package is intact and you will use the food quickly.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Canned Foods	I always check for and avoid damaged containers.	I usually check for and avoid damaged containers.	I sometimes check for and avoid damaged containers.	I buy without checking for damaged containers.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High

Cans and jars of food stored at room temperature have a long shelf life. Many now have a "Use By" date stamped on the label or lid, which helps you know how long you can store it. Tart (low pH) foods in cans tend to have a shorter shelf life. Some foods sell quickly year round, and others are in low demand or have limited seasonal demand. Cranberry sauce is seasonal; sauerkraut is generally low demand. Pay close attention to these foods and avoid them if:

- date is expired,
- jar lid button is popped up or pull-top ring is lifted up,
- can end is bulged, even slightly,
- can is dented on seam or edge,
- can is rusty,
- can or container is leaking on shelf, and
- the label is stained.

EXAMPLES OF CANNED FOODS TO EXAMINE WELL

- Sauerkraut
- Sour cherries
- Pickled foods
- Tomato products
- Cranberry sauce
- Ethnic foods (imported)
- Canned juices (tomato, apple, etc.)

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Fresh Produce	I buy only undamaged produce from clean cases; I never taste unwashed produce in the store.	When I buy damaged produce it is cooked; I rarely taste unwashed produce in the store.	Sometimes I cook the damaged produce; cases are not examined; sometimes I taste unwashed produce in the store.	I commonly buy damaged produce; cases are not examined; I commonly taste unwashed produce in the store.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High

You can see some things in all produce sections that help you assess food safety risks. Some produce keeps well at room temperature – e.g., potatoes, onions, and bananas. Other foods stay fresh longer if kept cool. Garlic in oil, sprouts and cut melons must be refrigerated (45°F) or less. Once chilled, fresh foods will store longer if kept refrigerated.

Many fresh fruits and vegetables are displayed in special cases that mist and keep them cool to extend their “shelf life” in the store. Check for thermometers in these cases. The temperature should be above freezing (32°F) so that the produce is not frost damaged. The misters should be clean and not slimy. Look around and under the rack holding the food; the area should be clean. Mold, slime, and rotting debris can contaminate food in the case.

In general, all produce should be at least six inches above the floor and stored so that nothing can drip or splash on them. This prevents contamination during floor cleaning and food is less accessible to mice. When selecting produce, look for firm flesh with smooth, glossy, unblemished skin. Avoid produce with dry, dull skin/stems, mold, bruises (soft, mushy spots), or other damage unless you plan to cook them soon. Breaks in the skin allow entry to spoilage organisms and bacteria that may make the food less safe or reduce produce quality. If damaged fruits are exposed to pesticides during routine pest control spraying in the store, the chemical cannot be washed out of the damaged portions. From the time the food is harvested to the time you buy it, many hands have touched it. Although fruit may look clean, NEVER eat fresh produce without washing as described in Section III (on page 13), *Food Safety in the Home Kitchen*, and don’t allow your children to sample unwashed fruits in the store.

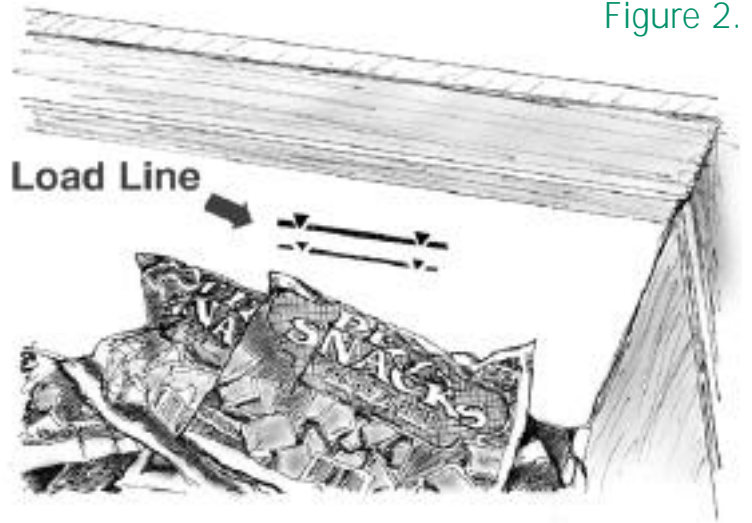
	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Fresh Meat	I buy meats from clean, cold, separated displays; raw meat packs are also bagged.	I buy meats from clean, cold, separated displays but don’t bag.	Sometimes I consider temperatures and separation of displays; I don’t bag.	I have not considered temperature, cleanliness, or separation of meats; I don’t bag.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High

Meat cases should be kept cold, 41°F or less. Again, check for thermometers. Look for a line marked on the inside wall of the display case, called a fill or load line. If packages are piled up in the case higher than this mark, it is overloaded and the packages on top will not be kept cold. Packages should be clean, sealed, and not leaking meat juices. The meat cases should be even cleaner than the produce cases. Testing of different meats and meat products has shown that some are more likely to have higher levels of bacteria. In order to lower the possibility of bacteria-laden juices from one meat getting onto another, meats should be displayed grouped by animal source and separated from each other by partitions. Ready-to-eat foods (like luncheon meats) must always be stored or displayed separately or above uncooked foods so contaminated juices from raw products can’t fall onto products that will not be cooked at home. In other words, raw foods should always be at lower levels than ready-to-eat foods.

When selecting a package of raw meat, place it into a new plastic bag (available at many meat counters) before adding it to your food basket. Any drips are contained and will not contaminate other items you have in your cart.

Cold temperatures are even more important for storage of dairy products. Experiments have shown that milk stored at 35°F stays fresh for 20 days, storage at 41°F drops the time to 10 days, and milk may last only five days at 45°F! Be sure to check the dairy case thermometers as well as the “Sell By” date on the container. Temperatures should be no higher than 41°F; close to 35°F is better yet. In addition, cleanliness in the dairy case is very important; your nose will tell you if the area is not clean.

Figure 2.



	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Describes Where I Buy Fresh Seafood:	Temperature less than 35°F; cooked separated from raw; employees clean & actions good.			Temperatures above 35°F; no separation of cooked and raw; hands not washed or gloved, employees sloppy.	<input type="radio"/> Low <input type="radio"/> High

Fresh seafood is the most temperature sensitive food in the store. Temperatures must be close to freezing (32°F). Separation of cooked from raw seafood is critical. Cooked shrimp or crab must be in a container that keeps it away from everything else and is best covered. If ice is used in the display, the product should be nestled into and surrounded by ice. Cooked and raw seafood should NEVER be combined in the same mound of ice.

Utensils must be kept clean and cold and used only for one type of seafood. A good way to bag seafood is for the employee to place his/her gloved hand inside a new plastic bag and grasp the item with the bottom of the bag. While holding the product, the bag is pulled over the hand and around the food so the food is never touched. You want to see employees washing their hands and using new gloves before they touch cooked seafood. There should NEVER be a strong odor around the fish market; if you smell a “fishy” odor, things are not clean and sanitary – a good signal not to buy seafood there.

Some tips for purchasing safe seafood:

- Odors should not have a strong “fishy” smell.
- Whole, fresh fish – look for clear eyes, red or bright pink gills, smooth scales and no slimy feel.
- Mollusks (clams, oysters) – shell tightly closed or will close when tapped.
- Cooked seafood is separate from raw.
- Thermometers show temperature close to 32°F.
- Avoid buying fish and seafood from temporary vendors in parking lots or by the roadside.



	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Frozen Foods	I buy only foods that are rock hard; fruits and vegetables are loose in bag. (Temperatures 0°F)	I mostly buy foods that are rock hard; fruits and vegetables are mostly loose in bag (Temperatures 0°F-10°F)	I usually buy foods that are rock hard; fruits and vegetables are usually in large clumps. (Temperatures 10°F-20°F)	I have bought some foods that are not rock hard. (Temperatures > 20°F)	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High

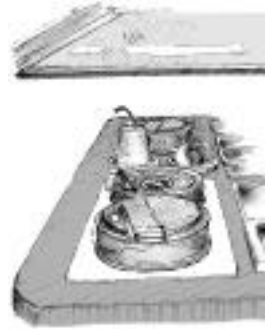
Frozen foods should be hard, not mushy. You should not see ice crystals inside the package. Vegetables and fruits in bags should be mostly loose and not frozen in a single clump. Look for thermometers reading 0°F or less. Occasionally the freezer case will defrost for 15 minutes or so. The temperature will go up, but the food should not thaw. A modern freezer case should not have ice buildup; ice and frost accumulate where warm air leaks in and foods in this area may be partially thawed. Open freezers are commonly used to display seasonal items like frozen turkeys or store specials. Look for the fill or load line on these units (see Figure 2). If you always see packages piled above this line, food safety risks increase. This practice means the foods on top of the pile are likely to thaw and then refreeze for the unsuspecting customer to buy.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Deli Foods and Food Bars	Foods are steaming hot or chilled; protected by lids or shields; there is a utensil in each food container.	Foods are hot or cold; covers may be missing and utensils may be used for different foods.	Foods are hot or cold, but I have not considered food covers or employee cleanliness.	I have not looked for food temperatures, protection, or employee cleanliness.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High
Employee Practices	Wash hands and use gloves always; wear clean uniforms, hair coverings.	Use gloves, sometimes hands are washed.	Use gloves, hands not washed; employees look sloppy, hair loose.	I have not looked for gloves or hand washing; I see employees putting hands to face.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High



Ready-to-serve foods are popular for last minute meals or party foods. Stores have embraced this service, which varies from a minimum of cold prepared sandwiches, to self-serve salad bars, to a variety of hot foods in a deli case, some made to order. Thermometers are not usually visible, so the careful shopper should look for good employee practices and evidence of the store’s efforts to provide safe food. You should be able to see deli employees wash their hands. If they touch food, they should wear gloves, which are discarded and replaced periodically. Aprons should be clean, without food stains and head gear should hold hair in place.

At food bars, sneeze guards should be in place and clean. Soup pots should have hinged covers with a slot for the ladle's handle to come through. Every food container should have the proper utensil used for that food only.



An employee should check the food bar to clean up spills, remove empty containers, provide clean, freshly filled replacements, and otherwise maintain safe dispensing. The foods should be very cold to the touch or steaming hot. Disposable take-home containers should be presented upside-down, and cups should be in dispensers or protected by plastic sleeves. Employees should wear clean gloves and their uniforms should be clean. Hair should be in a net or otherwise restrained.

Consumers have a responsibility too. Keep small children from grabbing things. And, never taste from the food bar unless the sample is provided to you by an employee.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Transportation	I collect cold foods last in the cart; groceries taken home immediately.	I collect foods in no particular order; groceries taken home immediately.		My groceries may be carried for over an hour; cold foods not in cooler.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> High

Make grocery shopping the last errand so that you can go home immediately afterward. As you fill your cart, think about the storage concerns previously discussed. Cleaning compounds should be separate or below your food. Raw meats should be bagged and placed in the cart so that meat juices don't drip on other foods. If not available in the meat department, get plastic bags from the produce area to hold meat packages and their drips. Plan to get cold items like meats, milk, or frozen foods last. When sacking, be sure to put all the cold items in the same bag, remembering that the double-bagged raw meats go on the bottom or in a separate bag. If the weather is hot or you have a long trip home, put one paper bag inside another for extra insulation. Better yet, use an insulated cooler or collapsible bag with cold packs to keep your cold foods as cold as possible. Once home, put cold and frozen foods away immediately.

Farmers markets

As our grandmothers once did, buying fruits and vegetables directly from the farmer is again becoming possible through Farmers Markets, from roadside stands, and at the farm place. Many of the markets are cooperatives with rules governing what can be sold and how the vendors operate. We can expect the produce to be recently harvested, usually by the seller. Some markets are under cover; most are open air without electricity so foods cannot be refrigerated. You may find “homemade” foods too.

In any case, these markets or roadside stands are NOT a place to buy seafood or dairy products. Many markets and grower cooperatives prohibit the sale of eggs, and Kansas regulations prohibit the sale of these items at farmers markets:

- fresh meats,
- all home-canned products, except jams and jellies,
- cream type or custard/pumpkin pies,
- cut fruit or vegetables,
- dairy products, and
- cooked foods like hamburgers, burritos, hot dogs, etc.



Here are some safe food practices for buying at open-air markets:

- Although flies will be present, they should be few in number—clusters of many flies are an indicator of poor sanitation, rotting produce, and possibly contamination with manure.
- Never eat fruits or vegetables until they have been thoroughly scrubbed and washed under running water—you don't know what may be on the food.
- Any pre-cut samples of fresh melon or fruits should be kept in a covered container nestled in ice.
- Buy early before the sun is overhead—quality deteriorates with heat exposure.
- Be very cautious of meat purchases—the conditions of slaughter, processing, and storage may be questionable; each package of wrapped meat from an inspected source will bear the mark of inspection and the weight in pounds; meat must always be frozen at 0° F or less, and in a mechanically powered freezer.
- The safest “homemade” foods are canned fruit jams/jellies and baked goods like breads, cookies, cakes, and fruit pies—avoid other “homemade” foods.
- “Homemade” foods should be sold prepackaged—portioning on site leaves the food open to dust, flies, and sneezes.
- Eggs (if allowed) should be clearly labeled with the producer's contact information, kept under refrigeration at 45°F or less, be clean and uncracked, and in clean (preferably new) containers—anything less means higher risk.
- Avoid produce with bruises or other damage—bacteria can enter at the damage point.
- Any coolers or bins with ice should be draining into a bucket—food floating in melted ice is more likely to be contaminated.
- All food should be at least 18 inches above the ground—food on the ground is unnecessarily exposed to dirt and germs.
- Produce like strawberries, blackberries, and raspberries should be displayed in covered containers—these foods are difficult to wash well and need protection from dust, etc.



Food Safety in the Home Kitchen

INTRODUCTION

Although invisible to us, bacteria exist everywhere. Most are harmless, but some bacteria cause illness – we call them pathogens. Food can sometimes carry these pathogens, and when we eat them we may become very sick. Luckily, following some simple steps can prevent illness from food. We all want to provide safe, high quality food for our families and ourselves. This exercise will help you think about how you can handle food safely. For example:

- Are you careful to wash your hands before touching food?
- Do you cook food to the proper temperature?
- What is the proper temperature?
- Do you store food in the right place in the refrigerator?
- Do you put leftover food in shallow containers so it cools faster in the refrigerator?

You may decide to make some changes so that you can better protect your family’s health.

Let’s start with our food supply.

Most foods are safe, but even in this country there can be health risks from unsafe food. Some foods with lots of bacteria, like raw meats, must be cooked to make them safe. You should also know that some foods may have chemicals on them, and chemicals may still remain even after cooking. Washing fruits and vegetables is a good way to remove harmful bacteria and chemicals.

Who is most likely to get sick?

Some people can eat harmful bacteria, and they don’t get sick. Others experience mild symptoms like diarrhea or stomach pains. But others can become very ill. Small children, older adults, pregnant women and people on medication are more likely to get very sick from harmful bacteria. These people, or those who care for them, must handle food very carefully. (See page 19.)

What can we do to keep from getting food poisoning?

Let’s look around the kitchen and think about what we usually do when we fix food. As you read each set of statements, choose the one that is most like what you do. There are no wrong answers, only chances to improve the health of your family. Complete each chart by selecting the description that best describes your habits, and check your risk level in the right-hand column. An Action Check list on Page 20 can be used to summarize the medium-high and high risks, along with your plans for improvement.

I. Cold Food Storage

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Cold Foods	I immediately refrigerate meat, fish, eggs, milk and cheese when I bring them home from the grocery store.	I refrigerate these foods within 1 hour after I bring them home from the grocery store.		I refrigerate these foods when I think about it.	<input type="radio"/> Low <input type="radio"/> Low–Med <input type="radio"/> High

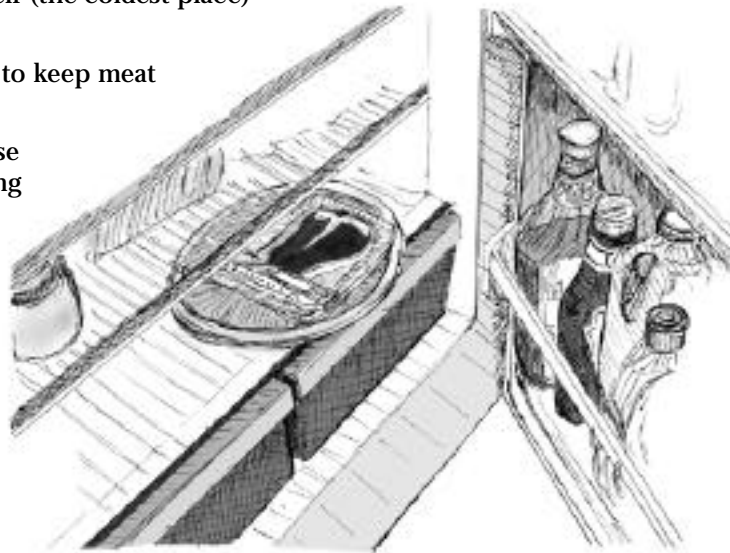
- Cold foods will spoil more quickly if they get warm.
- Leaving food on the counter can help bacteria to grow.
- Never leave cold foods out of the refrigerator for more than 2 hours.
- **REMEMBER:** Keep cold foods cold!

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Temperature	I keep my refrigerator temperature between 34°F and 40°F.	I keep my refrigerator temperature between 40 °F and 45°F.	My refrigerator temperature is sometimes above 45°F.	My refrigerator temperature is usually above 45°F, or I don't know what my refrigerator temperature is.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High

- Put a thermometer in your refrigerator to check temperature.
- Harmful bacteria can grow in foods kept in a warm refrigerator.
- Food spoils more quickly in a warm refrigerator.
- To control bacteria, set the temperature of your refrigerator so the thermometer reads between 34° and 40°F.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Location	I refrigerate fresh meat, and poultry on the lowest shelf, and use them within 3 days.	I refrigerate fresh meat, and poultry on the lowest shelf, and use them within 5 days.	I refrigerate fresh meat, and poultry on the lowest shelf, and use them within a week.	I put fresh meat, and poultry wherever it will fit in the refrigerator; it may be more than a week before they are used.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High
	I refrigerate fresh fish on the lowest shelf and use within 2 days.			Fresh fish is held in the refrigerator for more than 2 days before use.	<input type="radio"/> Low <input type="radio"/> High

- Store meat, fish and poultry on the lowest shelf (the coldest place) in your refrigerator.
- Store these items in plastic bags or on a plate to keep meat juices from dripping.
- Fresh meat, fish and poultry spoil easily, so use these items within a few days once you bring them home from the grocery store.
- If you don't plan to cook meat and fish within a few days, freeze them for later use.
- Make sure the package is well wrapped and labeled before storing in the freezer. The packaging from the store is not sufficient for long-term freezer storage. Plan to use frozen food within one year.



	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Thawing	I thaw frozen meats still packaged, in the refrigerator, never on the counter.		I partially thaw frozen foods on the counter before putting in the refrigerator.	I usually thaw frozen foods on the counter.	<input type="radio"/> Low <input type="radio"/> Med-High <input type="radio"/> High

- Carefully thaw frozen meats in the refrigerator.
- Thawing foods in the refrigerator helps control harmful bacteria growth in food as it thaws.
- Place frozen meats on a plate, or in a plastic bag on the lowest shelf of the refrigerator to thaw.
- If food is thawed in the microwave, be sure to cook immediately.

II. Storing Canned Goods and Dry Foods

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Dating	Before putting canned foods away, I write the date on the lid.	I sometimes date cans and try to remember to use older cans soon.		I don't date cans and some labels are missing.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> High

- Cans of food will not spoil quickly, but they will lose quality over time.
- Every so often go through your cabinets and stack older cans of food at the front of the shelf so that you will remember to use them. For best quality, use canned foods within a year of purchase.
- Some dry cereals or packages of food like juice boxes or salad dressing have a "Best By" or "Purchase By" date on the label. These foods are safe to eat after this date, but for best quality eat them before the date on the label.
- Freezing bags and boxes of dry foods for at least 3 days helps them last longer because insect eggs are destroyed.



	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Damaged Goods	I always check and throw away any canned foods with dents or bulges, and jars with lids that have the "button" popped up.	I sometimes check for bulged cans and popped up jar lids; if the can squirts when opened, I throw it out.		I don't worry about using food from dented cans.	O Low O Low-Med O High

- Dented cans may contain spoiled or harmful food.
- Always throw away bulging cans or jars with the lid button popped up.
- If food squirts out when the can is opened, throw it away. Clean the area well and thoroughly wash hands.
- NEVER taste food that you think may be spoiled – WHEN IN DOUBT, THROW IT OUT!
- Do NOT pass on to charitable food programs your out-of-date or dented cans.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Chemicals	I store all chemicals separate from foods and out of reach of children.			Some chemicals may be stored with foods and may not be out of reach from children	O Low O High

- Children can become very sick or die if they drink or inhale cleaning chemicals like soap or bleach.
- Store all chemicals out of reach of children – if possible, in a locked cabinet.
- Never store food and chemicals together under the sink.
 - food can become poisoned from being near the chemicals,
 - children can mistake the chemicals for food and get very sick if they eat these nonfoods.
- Pest control chemicals (mice bait, roach spray) must be used with care so that food, children, and pets are not exposed.

III. Cleanliness and Wash-up

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Fresh Produce	I wash all fresh fruits and vegetables before I eat them or cook with them.	I wash most fresh fruits and vegetables before I eat them or cook with them.	I sometimes wash fresh fruits and vegetables before I eat them or cook with them.	I only wash dirty fruits and vegetables	O Low O Low-Med O Med-High O High

- Wash fresh fruits and vegetables in plenty of running water. Do not use a detergent solution to wash fresh produce. Clear running water is best.
- Wash berries and other delicate fruits in a strainer under gently running water.
- Even melons and produce that will be peeled should be washed to remove pesticides and bacteria before cutting.



	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Surfaces	I promptly clean up spills on the countertop or floor with a paper towel that is then thrown away.	I promptly clean up spills on the counter with a cloth that is then rinsed out. Floor spills are wiped up with a paper towel.	Periodically I clean up spills; cloth rinsed occasionally.	Spills may dry before being cleaned up; the same sponge or cloth may be used on counters and floors.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High

- Spills on countertops and floors can attract animals and pests, and can grow harmful bacteria.
- Clean countertops and stovetops with warm soapy water after every use.
- A good way to kill bacteria on counter tops is to wipe on a mixture of **1 tablespoon bleach to 1 gallon of water**, let it air dry.
- Never use a dishrag or dishtowel to wipe up spills. This will only spread germs from the floor or counter top to your dishes!

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Trash	I empty the wastebasket nightly.	My wastebasket is kept covered; emptied when full.	My wastebasket is uncovered; emptied when full or smells.	Bags of trash and garbage accumulate in the kitchen.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High

- A covered trash can helps to keep pests away.
- Flies, roaches and mice can carry harmful germs and are attracted to trash.
- Empty the garbage regularly to keep these pests away.
- Be sure to promptly clean up kitchen spills.
- After opening, either reseal or put dry food like cereal and pasta into sealed containers.
- Keep cabinets clean; spilled food attracts insects.
- Store full trash bags outside the house in a covered trash can for trash pickup.
- Pets can carry germs, so try to keep them out of the kitchen.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Dishwashing	I wash dishes in hot soapy water, rinse in clean hot water, and then let them air dry – or – I use an automatic dishwasher.	I wash dishes in warm soapy water, rinse, and wipe dry with clean towel.		I wash dishes in soapy water, rinse, and dry with a reused towel.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> High

- Scrape leftover food off of plates and dishes before washing.
- Don't let dirty dishes sit in the sink or on the counter. This will attract insects or rodents.
- Clean dishes, cutting boards and cooking utensils in hot, soapy water. This will remove harmful bacteria.
- If possible, use a clean dishrag each time you wash dishes. Otherwise clean the dishrag with hot soapy water after washing and spread out to let dry.
- Let dishes air dry if possible. Otherwise, use clean towels each time to dry dishes.
- Use *separate towels* for drying dishes and drying hands.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Hand Washing	I <i>always</i> wash my hands with warm soapy water, and dry with a paper towel before touching food and after using the bathroom, coughing or sneezing, petting an animal, changing a diaper or handling raw meat.		I usually wash my hands with warm soapy water and dry with a paper towel before touching food and after using the bathroom, coughing or sneezing, petting an animal, changing a diaper or handling raw meat.	I wash my hands when I think about it or when they feel sticky. I reuse cloth towels to dry my hands until the towel gets damp.	<input type="radio"/> Low <input type="radio"/> Med-High <input type="radio"/> High

- Washing your hands is the best and easiest way to prevent illness.
- Wash hands with warm, soapy water for 20 seconds. And just how long is 20 seconds? The time it takes to sing the "ABC song."
- Wash hands before handling any food, and after using the bathroom, coughing or sneezing, petting an animal, or changing a diaper.
- Use separate towels for drying hands and drying dishes. Don't dry your hands on a towel that you use to mop up kitchen spills.
- Use a paper towel for floor spills.

IV. Cooking Food Safely

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Meats	I cook ground meat patties thoroughly, to the proper temperature, using a thermometer.		I cook ground meat patties until they are brown and juices are clear.	I cook ground meat patties so that they are pink in the middle—or—I don't have a thermometer.	<input type="radio"/> Low <input type="radio"/> Med-High <input type="radio"/> High

- Ground meat must be thoroughly cooked to destroy harmful bacteria. The only reliable way to know if meat is done is to use a thermometer.
- Color of meat and clarity of juices are not good indicators of safe cooking temperatures.
- Safe internal cooking temperatures for meats:



- Cook cuts of beef, veal, and lamb at least 145°F (medium-rare).
- Cook chicken to 180°F.
- Cook cuts of pork to at least 160°F (medium).
- Cook ground beef to 160°F, ground poultry to 165°F.
- Cook fish to at least 145°F.
- Cook casseroles, soups and stews to 165°F.
- As a general guideline, cook meat to well-done, although some cuts may be safely cooked less well done. Heat casseroles and soups so they are bubbling. Keep hot food hot and cold food cold.
- Never eat raw or rare meat. Many harmful bacteria can be in raw or rare meat.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Eggs	I cook eggs until the whites and yolk are firm, not soft or runny.			I commonly cook eggs with runny yolks and soft whites or eat foods containing raw eggs.	<input type="radio"/> Low <input type="radio"/> High

- Eggs may contain harmful bacteria. These bacteria are killed when the eggs are thoroughly cooked.
- Do not use recipes in which eggs are not cooked. Use pasteurized eggs in foods like homemade ice cream.
- Never eat raw eggs or products made with raw eggs such as raw cookie dough.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Microwave Use	If I thaw food in the microwave, I cook it right away.	After thawing food in the microwave, I put it immediately into the refrigerator and cook it later that day.	After thawing food in the microwave, it sits at room temperature, but I cook it in an hour.	After thawing food in the microwave, it may sit for a couple hours before I refrigerate it or cook it.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High

- Microwave ovens can be great time savers when cooking for your family, but take care to use them properly.
- Never use a microwave oven to cook meat, fish or poultry unless the meat has been thawed first.
- If you cook meat in the microwave, use a covered casserole dish or roasting bag so that the meat heats more evenly.
- Always stir food well when reheating in a microwave oven because the food heats unevenly. Reheat food until it is bubbling and hot, all the way through, not just warm.
- When microwaving foods, use microwave-safe containers. Some plastic containers should not be used in the microwave. These containers can melt or warp, giving off harmful chemicals into the food. Be cautious about reusing containers provided with frozen entrees – often they are intended for single use only and should be discarded.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Serving Food	I serve food immediately after cooking.	I serve food as soon as possible after cooking, always within an hour.	I usually serve food within an hour after cooking, or keep it in a warm oven until served.	After cooking food, it stands on the counter for a couple of hours until everyone has eaten.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High

- Cooked foods are safest if served immediately after cooking.
- Encourage family members to wash their hands before eating.
- If family members eat at different times:
 - hold hot foods at an internal temperature of 140°F (after two hours the food may not look attractive, but it will be safe), and
 - refrigerate to 40°F, then reheat to 165°F right before serving.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Leftovers	I quickly put hot leftovers into shallow containers to cool in the refrigerator.	It may be an hour before I put hot leftovers into shallow containers and refrigerate.	Sometimes it may be two hours before I put leftovers into shallow containers and refrigerate.	I usually refrigerate a leftover in the serving container or in the pot used for cooking.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High

- Harmful bacteria can grow in leftover soups, stews, and meat dishes if they cool too slowly.
- Put hot leftover soups, stews, and meat in shallow containers. Then put these containers in the refrigerator to cool.
- Refrigerate any leftovers as soon as you are done eating.
- Never leave meat, eggs, milk, or leftovers outside the refrigerator for more than two hours.



V. Cross-Contamination Concerns

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Cutting Boards	I have separate cutting boards for raw foods and cooked foods. Boards are cleaned and sanitized after use.	I clean and sanitize my cutting board after cutting up raw meat, fish and poultry.	I wash my cutting board with hot soapy water after each use.	I wipe off my cutting board with the dishrag after use.	<input type="radio"/> Low <input type="radio"/> Low-Med <input type="radio"/> Med-High <input type="radio"/> High

- Cutting boards of different colors or shapes will help to limit their use only for raw or ready-to-eat foods.
- Clean cutting boards and surfaces after each use – this is especially important after cutting raw meats.
- To clean cutting boards, follow these steps:
 - Wash with hot soapy water.
 - Rinse with clean water.
 - Rinse with a mixture of 1 teaspoon of bleach in 4 cups of water.
 - Air dry.
 - Plastic or acrylic cutting boards can also be washed in the dishwasher.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Separation of Cooked and Raw Foods	I keep raw meat, poultry and fish and their juices away from cooked foods by thawing in a bag or covered pan on the lowest refrigerator shelf and by putting cooked meats on a clean plate.		I thaw raw meats uncovered on the same shelf as ready-to-eat foods.	I find raw meat juices dripping on ready-to-eat foods; I use the same plate to hold both raw and cooked meat.	O Low O Med-High O High

- Use paper towels to clean up raw meat juices and throw away.
- Don't put cooked or grilled meat back on the same plate that held the raw meat.
- Place raw or frozen meat on a covered plate or in a bag on the bottom shelf of your refrigerator. Make sure any meat juices don't drip on cheeses, fresh fruits, and vegetables.
- Store raw meat away from deli meats.

	LOW RISK	LOW-MED RISK	MED-HIGH RISK	HIGH RISK	YOUR RISK
Avoid Spreading Germs	I take care never to cough, sneeze or wipe my nose while I am cooking or serving food.	I cover coughs and sneezes and always wash my hands afterward.		When I do cough, sneeze, or wipe my nose while cooking, I wipe my hands off with a damp dishrag instead of washing my hands.	O Low O Low-Med O High

- Avoid spreading germs from coughing or sneezing on food by covering your nose and mouth.
- Remember that even if you don't have a cold, your nose, mouth, hair and other body parts all carry bacteria.
- ALWAYS thoroughly wash your hands after touching any part of your body, before touching food.
- You can also spread germs by using the same spoon to taste food several times. If you wish to taste food while you are cooking, be sure to wash the tasting spoon after each taste.
- Never smoke while handling food.

FOOD SAFETY FOR SPECIAL POPULATIONS

People who are elderly, immuno-compromised, pregnant, or very young (0-6 months) are at special risk for food borne illnesses. They become sick more easily and are more likely to become very ill if exposed to germs. It is very important that their food be handled carefully to keep it safe. Be sure to observe these guidelines:

- Always wash hands thoroughly before touching food; dry hands with disposable towels.
- Separate ready-to-eat foods from uncooked foods.
- Serve nothing raw – no uncooked seafood, vegetables or fruits, homemade ice cream made with raw eggs.
- Eggs must be cooked until firm throughout – no under-cooked, “sunny-side up” eggs.
- Reheat ready-to-eat foods until steaming hot; this includes foods like hot dogs, luncheon meats, cold cuts, deli-style meat and poultry.
- Don’t serve soft cheeses, unpasteurized milk, or uncooked foods made with them.
- Always sanitize utensils and dishes, cutting boards, and other things their food will touch.
- Boiled drinking water is the safest for immuno-compromised people.

Some notes about safe handling of baby’s food:

- It is not necessary to heat baby’s food. Babies enjoy their liquids and foods either warm or cool. They develop preferences based on how **you** serve their food.
- Never heat baby’s milk in a microwave. The milk can become too hot and burn baby’s mouth. Heat under warm water or in a pan on the stove instead.
- If you use the microwave to heat food for older infants – cereal, meat or vegetables – thoroughly stir the food after heating. Test the food to make sure it is warm and not too hot.
- Heat formula and foods in glass (not plastic) containers.
- Never put a half drunk bottle back in the refrigerator to use later. If baby doesn’t want all of a bottle, discard what baby did not drink. Germs from baby’s mouth can contaminate the milk and make it unsafe for next time – even if you store the milk in the refrigerator.
- Always store breast milk or formula in the refrigerator.
- After removing baby’s serving, close the baby food jar and store the remainder in the refrigerator. If you feed the baby out of the jar, discard the leftover food.
- ALWAYS use COLD tap water to make formula or juice. Hot water may contain lead dissolved from plumbing. If warm or hot water is needed, heat water from the cold tap on the stove, or in the microwave.

For More Information

The following list of K-State Research and Extension bulletins are available from your county extension office:

Clostridium Botulinum and Foodborne Illness, MF-2171

E. coli O157:H7 and Foodborne Illness, MF-2138

Food Irradiation, MF-2426

Microorganisms and Foodborne Illness, MF-2269

Salmonella and Eggs, MF-2139

Food Safety, MF-2293

Safe Food Handling Poster

At Home Safe Food Handling: It's in Your Hands, MF-2465

Other Resources:

HACCP Establishing Hazard Analysis Critical Control Point Programs. Second Edition. Edited by Kenneth E. Stevenson, Ph.D. and Dane T. Bernard. 1995 The Food Processors Institute, Washington, D.C.

Web sites

<http://www.oznet.ksu.edu/extrapidresponse/foodsafety.htm> is a K-State resource for food safety questions. It also has links to on-line bulletins—click on “Publications” at the top of the page.

<http://www.foodsafety.gov/> contains information about food safety and offers consumer advice.

<http://www.foodsafety.ufl.edu/index.html> (University of Florida) contains current information being maintained by food safety experts.

<http://www.ext.colostate.edu/links/linkexte.html> (Colorado State University) is an annotated list of links to Cooperative Extension Web sites around the country, and access each extension office's on-line bulletins.

*Kansas Food*A*Syst Team Members:*

Karen Pesaresi Penner, Ph.D., Project Director,
Professor and Specialist, Food Science,
Department of Animal Sciences and Industry,
Kansas State University

Scott Beyer, Ph.D., Associate Professor and
Extension Poultry Specialist, Department of
Animal Sciences and Industry,
Kansas State University

Donald C. Cress, Ph.D., Extension Pesticide
Coordinator, Department of Entomology,
Kansas State University

Karen L.B. Gast, Ph.D., Associate Professor and
Extension Horticulturist, Department of
Horticulture, Forestry and Recreation
Resources, Postharvest and Marketing,
Kansas State University

George Godfrey, Ph.D., Acting Vice President for
Academic Affairs, Haskell Indian Nations
University

Rhonda R. Janke, Ph.D., Associate Professor and
Extension Specialist, Sustainable Cropping
Systems, Department of Horticulture, Forestry
and Recreation Resources,
Kansas State University

Dan Nagengast, Executive Director,
Kansas Rural Center

Gerald L. Stokka, D.V.M., M.S., Associate
Professor and Extension Beef Veterinarian,
Department of Animal Sciences and Industry,
Kansas State University

Danny H. Rogers, P.E., Ph.D., Extension
Agricultural Engineer, Department of Biological
and Agricultural Engineering,
Kansas State University

Judy Willingham, Project Manager and
Extension Associate, Department of Animal
Sciences and Industry,
Kansas State University

This material is partially funded through the Cooperative State Research, Education, and Extension Service of the U.S. Department of Agriculture, Project Number 99-41560-0781.

Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned.

Publications from Kansas State University are available on the World Wide Web at: <http://www.oznet.ksu.edu>

Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. In each case, credit Karen Pesaresi Penner, Judy Willingham, Kansas Food*A*Syst, A Food Safety Risk Management Guide for the Consumer, Kansas State University, April 2001.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF-2515

April 2001

It is the policy of Kansas State University Agricultural Experiment Station and Cooperative Extension Service that all persons shall have equal opportunity and access to its educational programs, services, activities, and materials without regard to race, color, religion, national origin, sex, age or disability. Kansas State University is an equal opportunity organization. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating, Marc A. Johnson, Director.