



DID YOU KNOW?

Less than half of shoppers are diligent about thawing meat in the refrigerator.

– FMI Trends, 2009



BAC Down! Refrigerate Promptly and Properly

Refrigeration at 40°F or below is one of the most effective ways to reduce risk of foodborne illness. Microorganisms grow more rapidly at warmer temperatures, and research shows that keeping a constant refrigerator temperature of 40°F or below helps slow growth of these harmful microbes.



LISTERIOSIS

*The bacterium *Listeria monocytogenes* can grow at refrigerator temperatures. Listeriosis has the second highest fatality rate among all infections caused by foodborne pathogens.*

Reduce your risk of listeriosis and other foodborne illnesses. Keep your fridge at 40°F or below as measured with an appliance thermometer.

The Cool Rules

Use This Tool to Keep It Cool

Use a refrigerator thermometer to be sure the temperature is consistently 40°F or below.

The Chill Factor

Refrigerate or freeze perishables, prepared foods and leftovers within two hours of purchase or use. Always marinate foods in the refrigerator.

The Thaw Law

Never defrost food at room temperature. Thaw food in the refrigerator. If you will cook food immediately, for a quick thaw, defrost in the microwave or enclose the food in an airtight package and submerge it in cold water.

Divide and Conquer

Separate large amounts of leftovers into shallow containers for quicker cooling in the refrigerator.



Avoid the Pack Attack

Do not overstuff the refrigerator. Cold air must circulate to keep food safe.

Rotate Before It's Too Late

Use or discard chilled foods as recommended in the USDA Cold Storage Chart found at www.fightbac.org/coldstorage.

Don't Go Too Low

As you approach 32°F, ice crystals can begin to form and lower the quality of foods such as raw fruits, vegetables and eggs. A refrigerator thermometer will help you determine whether you are too close to this temperature.



Always refrigerate or freeze meat, poultry, eggs, and other perishables as soon as you get them home from the store. Never let raw meat, poultry, eggs, cooked food, or cut fresh fruits and vegetables sit at room temperature more than two hours before putting them in the refrigerator or freezer. Reduce that to one hour when the temperature is above 90° F.

Serve & Preserve

When serving cold food at a buffet, picnic or barbecue, keep these “chilling” tips in mind:

- Cold foods should be kept at 40°F or below.
- Keep all perishable foods chilled right up until serving time.
- Place containers of cold food on ice for serving to make sure they stay cold.
- It's particularly important to keep custards, cream pies and cakes with whipped-cream or cream-cheese frostings refrigerated. Don't serve them if refrigeration is not possible.



The Big Thaw

There are three safe ways to defrost food: in the refrigerator, in cold water, and in the microwave.

DEFROSTING DO'S

- Defrost food in the refrigerator. This is the safest method for all foods.
- Short on time? Thaw meat and poultry in airtight packaging in cold water if it will be used immediately. Change the water every 30 minutes, so the food continues to thaw in cool water.
- Defrost food in the microwave only if you are going to cook it immediately.

DEFROSTING DON'TS

- Never defrost food at room temperature. Food left out at room temperature longer than two hours may enter the Danger Zone—the unsafe temperatures between 40°F and 140°F. Bacteria can multiply rapidly between 40°F and 140°F.
- Don't defrost food in hot water.

BUY SOME PEACE OF MIND:

Refrigerator thermometers are available at grocery, hardware and discount stores.

Hit the Road Cold!

When traveling with food, be aware that time, temperature and a cold source are key.

- Always use ice or cold packs, and fill your cooler with food. A full cooler will maintain its cold temperatures longer than one that is partially filled.
- If you've asked for a doggie bag to take home leftovers from a restaurant, it should be refrigerated within two hours of serving.



- If you have questions or concerns about food safety, contact:
- The U.S. Department of Agriculture (USDA) Meat and Poultry Hotline at 1-888-MPHotline (1-888-674-6854). TTY 1-800-256-7072.
- The Fight BAC!® Web site at www.fightbac.org.
- Gateway to Government Food Safety Information at www.foodsafety.gov.

The Partnership for Food Safety Education is a non-profit organization and creator and steward of the FightBAC!® consumer education program. The Partnership is dedicated to providing the public with science-based, actionable recommendations for the prevention of foodborne illness.



DID YOU KNOW?

It is important to consistently wash hands and kitchen surfaces before and after preparing food. 67 percent of Americans report they “always” wash cutting boards, utensils, and countertops after preparing each food.

– 2004 Consumer Survey, Partnership for Food Safety Education



Wash hands and surfaces often.

You can't see, taste or smell them. They're sneaky little critters, and they can spread throughout the kitchen and get onto cutting boards, utensils, countertops, and food. They're foodborne bacteria—and if eaten, they can cause foodborne illness. So on your mark, get set, go . . . CLEAN!



Wash!

Always wash hands with warm water and soap:

- before handling food;
- after handling food;
- after using the bathroom;
- after changing a diaper;
- after tending to a sick person;
- after blowing nose, coughing, or sneezing; and
- after handling pets.

THE BIG 3: To Fight BAC!® always...

1

Rub-a-Dub

Wash your hands with warm water and soap for at least 20 seconds before and after handling food and after using the bathroom, changing diapers and handling pets. For best results, use warm water to moisten hands, then apply soap and rub hands together for 20 seconds before rinsing thoroughly.

2

Keep your Scene Clean

Wash your cutting boards, dishes, utensils, and countertops with hot water and soap after preparing each food item and before going on to the next food.

3

Towel Toss

Consider using paper towels to clean up kitchen surfaces. When done, throw away the towel. If you use cloth towels, wash them often in the hot cycle of your washing machine. If you use kitchen sponges, replace them frequently.

Surface Cleaning Tips

Using a mixture of 3/4 teaspoon liquid chlorine bleach per quart of water (or one tablespoon bleach per gallon of water) can provide some added protection against bacteria on surfaces. Flood the surface with the bleach solution and allow it to stand for several minutes, then rinse with clean water and air dry or pat dry with fresh paper towels. Bleach solutions can lose their effectiveness over time, so discard unused portions after one week.

Fruit & Veggie Handling



REUSABLE SHOPPING BAG TIPS

- If you use cloth shopping bags, make sure to wash them in the washing machine frequently.
- For reusable grocery bags that are not machine washable, wash by hand frequently with hot water and soap.
- When shopping, put meat, poultry and fish in separate plastic bags. This will help prevent the juices from leaking out and contaminating your reusable bags and your food.

PREP THE KITCHEN

Before preparing fruits and vegetables, wash your hands with warm water and soap and use hot water and soap to clean your cutting board, countertop and utensils.

USE WATER – Thoroughly rinse fresh produce under running tap water, including those with skins and rinds that are not eaten. Packaged fruits and vegetables labeled “ready to eat”, “washed” or triple washed” need not be washed. Never use detergent or bleach to wash fresh fruits or vegetables. These products are not intended for consumption.

SCRUB THOROUGHLY – Rub firm-skin fruits and vegetables under running tap water or scrub with a clean vegetable brush while rinsing with running tap water.

BAC! Attack

How long should you wash your hands to send bacteria down the drain?

- a. 5 seconds b. 10 seconds c. 15 seconds d. 20 seconds

Answer: d – 20 seconds

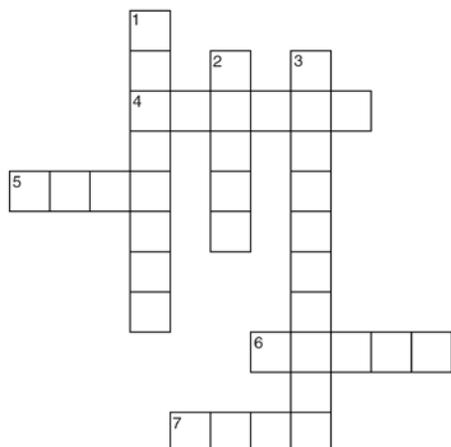


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Clean Crossword Puzzle

How much do you know about keeping your scene clean?



DOWN

1. Place your _____ on the floor, not on the kitchen counter or table.
2. Always use clean knives, spoons, plates, and _____.
3. Use cold water to wash fruits and _____.

ACROSS

4. Place _____ food on a clean plate.
5. Wash your hands with warm water and _____.
6. Counters should be _____ if you put food on them.
7. Wash your hands after playing with _____.



DID YOU KNOW?
One out of every four hamburgers turns brown before it has been cooked to a safe internal temperature.
 – USDA FSIS



Cook to Safe Temperature

Cooking food safely is a matter of degrees! Foods are properly cooked when they reach a high enough internal temperature to kill the harmful bacteria that cause foodborne illness. How does your safe cooking know-how measure up?



DID YOU KNOW?
Thermy™ says, "It's safe to bite when the temperature is right!"

Cook It Right...

Food is safely cooked when it reaches a high enough internal temperature to kill the harmful bacteria that cause illness as measured with a food thermometer. Refer to the Safe Cooking Temperatures on the next page.

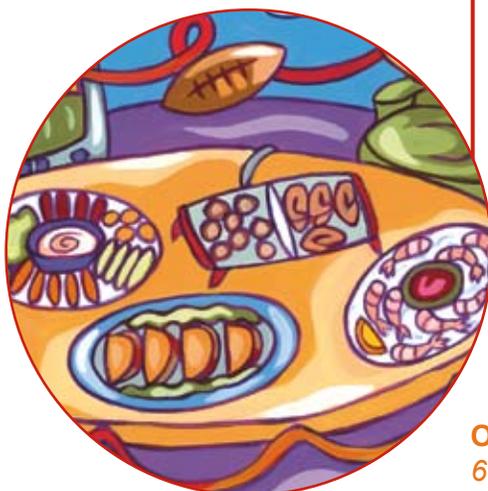
...And Keep It Hot

When serving up hot food buffet-style, remember...

On a buffet table, hot food should be kept at 140°F or higher. Keep food hot with chafing dishes, slow cookers and warming trays.

When bringing hot soup, chili or crab dip to an outdoor party...

Keep it all piping hot before and during serving. Transport hot foods in insulated thermal containers. Keep containers closed until serving time.



OWN IT. USE IT.

69% of Americans surveyed say they own a food thermometer. That is a 21% increase from 1998.

– USDA & FDA survey data 2006



Sizzling Cooking Tips

Is It Done Yet?

Use a clean food thermometer to measure the internal temperature of food to make sure meat, poultry, egg dishes, casseroles, and other types of food are cooked all the way through.

Microwave Musts

When cooking in a microwave oven, make sure there are no cold spots in food because bacteria can survive there. For best results, cover food, stir and rotate for even cooking. If there is no turntable, rotate the dish by hand once or twice during cooking. Observe stand times.

Boil and Bubble

Bring sauces, soups and gravies to a boil when reheating.

AT RISK POPULATIONS

Foodborne illness can strike anyone. Some people are at higher risk for developing foodborne illness, including pregnant women, young children, older adults and people with weakened immune systems. For these people extra care should be taken to follow the four simple steps of clean, separate, cook and chill.



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SAFE COOKING TEMPERATURES

Internal temperature as measured with a food thermometer

Ground Meat & Meat Mixtures

Beef, Pork, Veal, Lamb	160°F
Turkey, Chicken	165°F

Fresh Beef, Veal, Lamb

Medium Rare	145°F
Medium	160°F
Well Done	170°F

Poultry

Whole poultry and poultry parts	165°F
Stuffing (cooked alone or in bird)	165 F

Fresh Pork

Medium	160°F
Well Done	170°F

Ham

Fresh (raw)	160°F
Pre-cooked (to reheat)	140°F

Eggs & Egg Dishes

Eggs	Cook until yolk & white are firm
Egg dishes	160°F

Seafood

Fin Fish	145°F
	or flesh is opaque & separates easily with fork

Shrimp, Lobster & Crabs	flesh pearly & opaque
Clams, Oysters & Mussels	Shells open during cooking

Scallops	milky white or opaque & firm
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Leftovers & Casseroles	165°F
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Fight BAC Evaluation

1. Do you plan to share what you've learned about cooling foods properly with your family?

- Yes No

2. Do you plan to use a food thermometer when cooking meat?

- Yes No

Since participating in this series of Fight BAC lessons, have you:

3. Washed your hands more often before and after handling food?

- Yes No

4. Checked to see if your family has a food thermometer?

- Yes No

5. Told family members what you have learned about food safety?

- Yes No

If yes, what did you share?

6. Changed any of your food handling practices?

- Yes No

If yes, what did you change?

7. What was the most interesting thing you learned from the Fight BAC lessons:

Thank you!

Safely Separate Experiment

Question:

Is there a potential danger in using the same equipment to prepare raw meat and other foods?

My Hypothesis:

Procedure:

1. Get a sponge from the water with green food coloring and place it on the cutting board to represent “raw chicken”. Pretend that the green water is the juice of the raw chicken. Make sure that it has absorbed some of the colored water (meat juice).
2. Use the knife to imitate the action of cutting the chicken in half. Move the “raw chicken” onto the plate.
3. Next, place three slices of raw cucumber on the cutting board and cut them in half.
4. Place the “raw chicken” sponge back into the green water container.
5. Place the clean sponge (“cooked chicken”) that was cooked well-done on the plate where the “raw chicken” was before cooking.

My Observations:

After step #2, this is where I observed the green water (representing Salmonella):

After step #3, this is what happened to the cucumber slices:

After step #5, this is what happened to the “cooked chicken” sponge:

Chart the path of “Salmonella”

My Conclusions:

This is how I can get rid of the “bacteria” on –

- The cutting board: _____
- The knife: _____
- My hands: _____
- The plate: _____

If I touch something else without washing my hands – or use the knife again – this is what can happen:

To kill the bacteria on the chicken, it is important to:

If someone ate the raw cucumber, this is what could happen:

This is what can happen when cooked chicken is placed on the same plate as raw chicken:

As a result of this lesson, what changes will you make in preparing food at home?

Be a Good Egg Experiment

FightBac Lesson 3 – Cook

QUESTION: How do you know when a hard-cooked egg is safely cooked?

HYPOTHESIS: _____

PROCEDURES:

1. Carefully place the three eggs in cold water and put the pan on the heating element.
2. Choose 3 students to be “egg peelers”.
3. Heat until boiling; remove from heat and cover with lid.
4. Label three plates
 - a. #1: cooked 2 minutes
 - b. #2: cooked 8 minutes
 - c. #3: cooked 15 minutes
5. Remove Egg #1 with the slotted spoon after 2 minutes, and cool under cold water. Place on labeled plate.
6. Remove Egg #2 6 minutes later (total time 8 minutes) and cool under cold water. Place on labeled plate.
7. Let Egg #3 stay in the hot water for 7 minutes more (total time: 15 minutes). Then cool under cold water. Place on labeled plate.
8. Have each “egg peeler” peel one of the three cooked eggs, cut the egg in half, and put it on its labeled paper plate.
9. Observe and record the differences between the three eggs! (Use chart below.)

Record your observations: What do you see?

Part of egg	#1: Cooked 2 min	#2: Cooked 8 min	#3: Cooked 15 min
Yolk			
White			

CONCLUSIONS:

This is what happens when you cook an egg longer:

You can tell that an egg is cooked long enough by:

What Do You Think?

Is it okay to eat raw eggs if they are mixed in raw cookie dough or cake batter?

Based on today's discussion, will you make any changes in the way you handle eggs and meat in your daily life at home? _____

What changes will you make?

FightBac Lesson 4 – Chill

QUESTION: Does the shape of the container affect the rate at which cooling takes place?

HYPOTHESIS: _____

PROCEDURES:

1. Pour 1 cup (250 ml) hot water into each container.
2. Check the temperature of the water in each container and record in chart.
3. Continue to check the temperature every 5 minutes until chart is complete.

Record the temperatures.

Container	Beginning Temperature	5 minutes	10 minutes	15 minutes	20 minutes
Shallow					
Tall					

CONCLUSIONS:

Which container took the longest to cool?

Why did it take it longer?

It is important for leftover food to be cooled down quickly when stored in the refrigerator because:

If the water were clam chowder and it took a long time to cool down, this is what could happen:

Based on today's experiment and discussion, will you make any changes in the way you handle leftovers at home? _____

What changes will you make?

Fight Bac

Lesson 1

Clean

List of Supplies:

Glo Germ
Black light
Liquid soap

Hand sanitizer
Baby wipes

“Clean” Handout
Vegetable scrub brush

Preparation:

Prior to class sprinkle Glo Germ on tables for students to wipe off and therefore get it on their hands. Have wipes and hand sanitizer ready as well as plenty of paper towels.

Procedures:

Discuss with students what bacteria is and how it is spread. Explain that the dust on the tables is to let us see where bacteria might be with the special light. Use the light to let the students look at their hands.

Ask students ways that they could clean their hands. (Hand sanitizer, baby wipes, wash in cold water, wash in warm water with soap) Discuss how effective each would be.

Starting with the baby wipes, ask 3 or 4 students to clean their hands with the wipes. (I did one from each table) Have the students come to the front and look at their hands under the light again for effectiveness. Discuss with students.

Next do the hand sanitizer the same way. Discuss

Repeat having students rinse their hands with cold water only. Discuss

Last have them use soap and water. Discuss. Bring out the fact that the water in the lab is not very hot and that hot water would be better.

Throughout the class observe for students who wipe their hands on their clothes to show the powder under the light to discuss how easily germs spread.

Conclusion:

Summarize the importance of keeping things clean. Give students the “Clean” handout and encourage them to share the information on it with their families. Hand out the vegetable scrub brushes for them to take home and use.

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Lesson Two

Separate

Objectives:

Explain the danger of using the same equipment to prepare raw meat and other foods
Chart the path of Salmonella when preparing food
Explain how cross contamination can take place in the kitchen

Supplies:

Cutting boards	Plastic knives and forks	Plastic plates
Sponges	Containers for colored water	Food coloring
Cucumbers –cut into slices	Containers for cucumbers (lids)	Experiment sheets
“Separate” Handout	Cutting mats for students	

Preparation:

Cucumbers will need to be sliced and put into containers (3 per group) with lids. Before the first class, place the supplies – cutting board, plate, knife, fork, container with cucumbers, and clean sponge – on each table. Fill a small container for each table with water and add food coloring. Place one sponge in the colored water and allow it to get saturated before students come into class. Put a stack of experiment sheets on each table for the students.

Discussion:

Explain that you are going to simulate preparing food in your kitchen at home. The sponges represent raw chicken, which would not be safe to bring into the class, and talk about the type of bacteria that would be found in raw chicken (Salmonella) and why it could be dangerous.

Activity:

1. Read the question together as a class and have the students record their hypothesis on their papers.
2. Look over the rest of the experiment sheet with the students and show them that there will be questions they will need to answer as they complete the steps of the experiment. Have the students complete the procedure section of the experiment.
 - A. They will take a sponge, representing raw chicken, from the colored water and put it onto the cutting board and “cut the chicken” in half. (The plastic knives will not cut the sponge easily so explain that they will just need to press down hard enough to get the liquid to seep out of the sponge.) Then move the “raw chicken” sponge onto the plate. Here they will record some of their observations.
 - B. Next they will put three slices of cucumber onto the cutting board and cut them in half. They will need to actually cut the cucumber. Again, they will record their observations.

C. The students will put the “raw chicken” sponge back into the water and place the clean sponge on the plate. Record their observations.

D. Students will complete the remainder of the experiment sheet and determine if their hypothesis is correct. After they have completed have a discussion of what happened and the implications of using the same utensils, cross-contamination.

3. Allow a few minutes at the end of class to have each group clean up their equipment. Have the students clean the cutting boards, plates, knives and forks. Also have them wash the “cooked chicken” sponge and place it on paper towels to dry so it is clean for later in the day. There are enough sponges to do the morning classes with dry sponges and by the afternoon the first sponges have dried enough that they can be reused. Dry sponges seem to soak up the water representing the salmonella better than a wet sponge does, but you can use the wet sponges. They just need to be clean.

Handout:

Give the students a copy of the “Separate” handout from FightBac to take home and share with their parents. Hand out a cutting mat to each student to take home to use.

FightBac

Lesson Three

Cook

Objectives:

Explain the danger of eating undercooked foods.

Explain the safe way to determine when foods are cooked to a safe temperature.

Supplies:

Hot plate for each group –in the science lab

Small pot for each group – for boiling eggs

Potholer for each group

Slotted spoon for each group – for removing eggs from water

Small plastic container for each group – used to put the egg in while running cold water over it

Plastic or paper plate for each group – if using plastic they can be washed and re-used, paper will need to be replenished for each class

Plastic knife for each group – used for cutting eggs open

Timers – one for each group

Eggs – enough for each group throughout the day to have 3 eggs

Experiment sheets – one for each student

Discussion:

Read over the question on their experiment sheets and have the students write their hypothesis. Encourage the students to write in complete sentences. Quickly go over the procedures with them and explain that they will need to record observations throughout the experiment. **It helps with time if you get the eggs in the water then look over the rest of the instructions while the cooking process starts.**

Activity:

Egg groups – The students will cook the eggs for the time stated on the experiment sheet. This is the total cooking time and not added to the amount of time already cooked. No egg will be cooked for more than a total of 15 minutes after the water has come to a boil. The students will record what they see after they cut each egg open and then write their conclusions. The students should write about the 2 minute egg while the 8 minute egg is still in the water and so on. If they wait until all 3 eggs are cooked it will take them too long to finish their writing. Again, encourage the students to write in complete sentences and not fragments.

Handout:

Give the students a copy of the “Cook” handout from FightBac to take home and share with their parents. Hand out meat thermometers and talk about the importance of cooking meat to the correct internal temperature.

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Lesson Four

Chill

Objectives:

Determine the best size and shape container for storing leftovers to safely chill them.
Explain why it is important to cool foods correctly when storing leftovers.

Supplies:

Hot water – either from the tap or using something to heat the water
Containers – two different sizes, one deep and one shallow. Plastic storage bowls work best. You will need one of each size container for each group in the largest class.
Thermometers – two for each group
Timers – one for each group
Experiment sheets – one for each student

Discussion:

Read over the question with the students and have them to make their hypothesis.

Activity:

Put the hot water into the containers and have one or two people from each group come to get the water. (You can do this while they are making their hypothesis.)

The students will take the temperature of the two containers at the same time and then record. They will then time 5 minute intervals and take the temperatures again. Make sure they are taking the temperature of both containers at the same time. It is also important that they remove the thermometer from the water between temperatures.

Note: This experiment has a lot of down time while they are waiting to take the temperature of the water. Use that time for discussion and just have them take the temperature when their timer goes off. Not all groups will be taking the temperature at the exact same time.

Discussion:

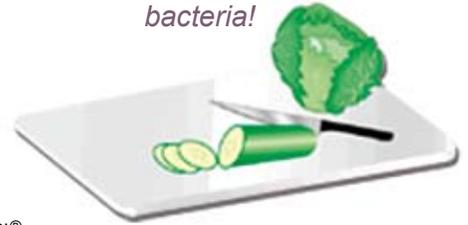
When they have all finished their chart and written their conclusions, discuss which container should have taken longer and why. Also discuss why this is important when dealing with leftovers and the question about clam chowder. (You may have to explain to the students what clam chowder is.)

Handout:

Give the students a copy of the “Chill” handout from FightBac to take home and share with their parents. Give each student a thermal lunch bag.



*Keep it Clean!
Watch those Juices!
Remember to spread
the word—not the
bacteria!*



Combat Cross-Contamination Get it straight—it's safe to separate!

Cross-contamination is how bacteria can be spread. Improper handling of raw meat, poultry and seafood can create an inviting environment for cross-contamination. As a result, harmful bacteria can spread to food and throughout the kitchen.

Separate. . .Don't Cross-Contaminate

KEEP IT CLEAN!

Lather Up

Always wash hands with warm water and soap for at least 20 seconds before and after handling food and after using the bathroom, changing diapers and handling pets. Always start with a clean scene—wash cutting boards, dishes, countertops, and utensils with hot water and soap.

Take Two

Use one cutting board for fresh produce and a separate one for raw meat, poultry and seafood.

Clean Your Plate

Never place cooked food back on a plate that previously held raw meat, poultry, seafood, or eggs.

WATCH THOSE JUICES!

Safely Separate

Separate raw meat, poultry and seafood from other foods in your grocery shopping cart and shopping bags, and in your refrigerator.

Seal It

To prevent juices from raw meat, poultry or seafood from dripping onto other foods in the refrigerator, place these raw foods in sealed containers or plastic bags on the bottom shelf of the fridge.

Marinating Mandate

Sauce that is used to marinate raw meat, poultry or seafood should not be used on cooked food unless it is boiled first.



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