

ServSafe Study Guide

Name: _____

Food Services Division

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ServSafe

INTRODUCTION

The ServSafe Class helps to prepare you for the ServSafe Food Protection Manager Certification exam. The class covers the following concepts:

- The Importance of Food Safety
- Good Personal Hygiene
- Time and Temperature Control
- Preventing Cross-Contamination
- Cleaning and Sanitizing
- Safe Food Preparation
- Receiving and Storing Food
- Methods of Thawing, Cooking, Cooling and Reheating Food
- HACCP (Hazard Analysis and Critical Control Points)
- Food Safety Regulations
- Practice Test

SECTION 1

Keeping Food Safe

A foodborne-illness is a disease transmitted to people by food. A foodborne-illness outbreak is when **two** or more people get the same illness after consuming the same food. The only way to confirm an outbreak is by laboratory analysis.

foodborne-illness outbreak can cost an operation thousands of dollars and:

- Loss of customers and sales.
- Loss of reputation.
- Negative media exposure.
- Lowered staff morale.
- Lawsuits and legal fees.
- Staff missing work.
- Increased insurance premiums.
- Staff retraining.

Populations at high risk for foodborne-illnesses:

- Elderly people – People's immune system weakens with age.
- Infants and preschool – age children -very young children have not built up strong immune systems.
- People who are seriously ill, on certain medication, and organ-transplant recipients.



Ready-to-Eat Foods Definition

Ready-to-eat food includes cooked food, plant foods, cooked for hot-holding, washed fruit and vegetables (whole and cut), and deli meat. Bakery items and sugar, spices and seasonings are other examples of ready-to eat-food.

Food that supports the rapid growth of Microorganisms:

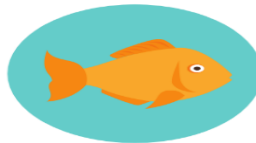
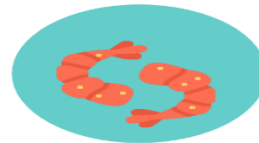
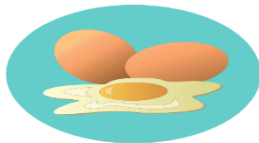
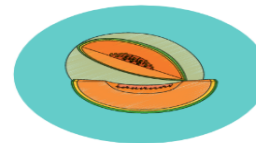
- Contains moisture.
- Contains protein.
- Has a neutral or slightly acidic pH.
- Requires time-temperature control to prevent the growth of microorganisms.

TCS Food

- Pathogens grow well in the food pictured below. These items need time and temperature control to limit pathogen growth. For this reason, this food is called **TCS Food**-Food Requiring Time and Temperature Control for Safety **Food**. Pathogens are being found on food items once considered safe. Pathogens are the greatest threat to food safety.

TCS Food

TCS = Time Temperature Control for Safety
TCS food must be kept for a minimum of time in the danger zone to not compromise the safety of the food

*Meat**Poultry**Fish**Shellfish**Milk & Dairy**Eggs**Baked Potatoes**Untreated garlic
& oil mixtures**Cut Tomatoes**Cut Lettuce**Sliced Melons**Sprouts**Rice, beans**Tofu*

How Food Becomes Unsafe

- The Center of Disease Control (CDC) has identified some common factors that are responsible for foodborne-illness. These include:
 - Purchasing food from unsafe sources.
 - Failing to cook food to the required minimum internal temperature.
 - Holding food at improper temperature.
 - Using contaminated equipment.
 - Poor personal hygiene.

Forms of Contaminants

- Biological: Pathogens are the greatest threat to food safety. They include viruses, parasites, fungi, and bacteria. Some plants, mushrooms, and seafood that carry harmful toxins (poisons) are also included in this group.
- Chemical: Foodservice chemicals can contaminate food if they are used incorrectly. This group includes cleaners, sanitizers, polishes, machine lubricants and toxic metals.
- Physical: Foreign objects like hair, fingernail, dirt, bandages, fish bones, metal staples, ladybug, and jewelry.

How Food Becomes Unsafe

- Time-temperature abuse: Food stayed out too long at room temperature.
- Cross-contamination: Pathogens can be transferred from one surface of food to another.
- Poor personal hygiene: Food handlers can cause a foodborne-illness if they fail to wash their hands after using the restroom, come to work sick, cough or sneeze on food, touch or scratch wound, and then touch the food.



Challenges in Food Safety

Foodservice operations work hard to minimize foodborne-illnesses. As a result of these efforts, foodborne-illnesses have declined in recent years. However, operations still face many challenges to food safety.

Time – Pressure to work quickly can make it hard to take the time to follow food safety practices.

Language and culture – Your staff may speak a different language than you do. This can make it difficult to communicate. Cultural differences can also influence how food handlers view food safety.

Literacy and education – Staff often have different levels of education. This makes it more challenging to teach them food safety.

Pathogens –Illness -causing microorganisms are more frequently found on types of food that once were considered safe.

Unapproved suppliers – Food that is received from suppliers that are not practicing food safety can cause a foodborne-illness outbreak.

High-risk customers – The number of customers at high risk for getting a foodborne-illness is increasing. An example of this is the growing elderly population.





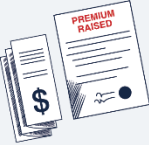



Staff Turnover – Training new staff, as shown at the left, leaves less time for food safety training. The ServSafe program will provide you with the tools you need to overcome the challenges in managing a good food safety program.

The Costs of foodborne-illnesses

Most important are the human costs. Victims of foodborne-illnesses may experience the following:

- Lost work
- Medical costs
- Long-term disability
- Death

Loss of customers and sales 	Loss of reputation 	Negative media exposure 	Lowered staff morale 
Lawsuits and legal fees 	Staff missing work 	Increased insurance premiums 	Staff retraining 

Government Agencies Responsible for the Prevention of foodborne-illness



Several government agencies take leading roles in the prevention of foodborne-illness in the United States. The Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA) inspect food and perform other critical duties. State and local regulatory authorities create regulations and inspect operations and shown in the photo at left.

The FDA

The FDA inspects all food except meat, poultry, and eggs. The agency also regulates food transported across state lines. In addition, the FDA issues a Food Code was created for city, county, state, and tribal agencies. These agencies regulate foodservices for the follow groups:

- Restaurants and retail food stores
- Vending operations
- Schools and day care centers
- Hospitals and nursing homes

Although the FDA recommends that states adopt the Food Code, it cannot require it. The FDA also provides technical support and training. This is available for industry and regulatory agencies.

Other Agencies

Several other agencies have an important role in food safety and the prevention of foodborne-illness.

USDA – The U.S. Department of Agriculture regulates and inspects meat, poultry, and eggs. The USDA also regulates food that crosses state boundaries or involves more than one state.

CDC and PHS These agencies assist the FDA, USDA, and state and local health departments. They conduct research into the causes of foodborne-illness outbreaks. They also assist in investigating outbreaks.

With Power Comes Responsibility

What will the regulatory authority hold the Person in Charge (PIC) accountable for regarding food safety?

- People other than food handlers are restricted from prep, storage, and dishwashing areas. If other people are allowed in these areas, steps are taken to protect food, utensils, and equipment from contamination.
- Food is not prepared in a private home or in a room where people are living or sleeping.
- Maintenance and delivery workers follow food safety practices while in the operation.
- Staff handwashing is monitored in the operation.
- The inspection of deliveries is monitored to ensure that food is received from an approved source, is received at the correct temperature and has not been contaminated.
- Food delivered after-hours is monitored to make sure it is received from an approved source, stored in the correct location, protected from contamination, and accurately presented.
- Food handlers are monitored to make sure TCS food is cooked to required temperatures. Temperatures are checked using calibrated thermometers.
- Food handlers are regularly monitoring food temperatures during hot and cold holding.
- Food handlers are monitored to make sure TCS food is cooled rapidly.
- Consumer advisories are posted notifying guests of the risk of ordering raw or partially cooked food.
- Ensuring that delivery drivers are following food safety practices while in the operation.
- Cleaning and sanitizing procedures are monitored to make sure that sanitizer solutions are at the correct temperature and concentration and remain in contact with items for the correct amount of time.
- Guests are notified that they must use clean tableware when returning to a self-service area.
- Staff members are handling ready-to-eat food with utensils or single-use gloves.
- Staff members are trained in food safety, including allergy awareness.
- Staff members, including conditional staff members, are reporting illnesses and symptoms of illnesses that can be transmitted through food.
- Food safety procedures are written down, implemented, and maintained where required by the regulatory authority.

Key Practices for Ensuring Food Safety

Now that you know how food can become unsafe, you can focus on the following to keep it safe:

- Purchase food from approved, reputable suppliers.
- Control time and temperature.
- Prevent cross-contamination.
- Practice good personal hygiene.
- Properly clean and sanitize.

Set up standard operating procedures (SOPs) that focus on these areas. The ServSafe program will show you how to design these procedures in later chapters.

Knowledge Check

1. What are the five most common risk factors for food safety?
2. List at least six TCS foods.



Apply Your Knowledge

Which Is It? Write an X next to the food that needs time and temperature control to keep it safe.

1. _____ Chopped lettuce
2. _____ Sliced watermelon
3. _____ Flour
4. _____ Cooked Carrots
5. _____ Cheese
6. _____ Strawberries
7. _____ Crackers
8. _____ Tomatoes
9. _____ Sprouts and sprout seeds
10. _____ Shellfish and crustaceans
11. _____ Salt
12. _____ Beef jerky

REVIEW QUESTIONS

1. To be considered an outbreak, a foodborne-illness must
 - a. include at least six people.
 - b. involve more than one food.
 - c. be confirmed by laboratory analysis.
 - d. occur over multiple days.
2. Two guests became ill after eating at a restaurant. They each ate different food items and suffered different symptoms. Would the incident be considered a foodborne-illness outbreak?
 - a. No, because they ate different foods.
 - b. No, because they ate different foods and had different symptoms.
 - c. Yes, because they ate different foods.
 - d. Yes, because they ate different foods and had different symptoms.
3. What is a foodborne-illness outbreak?
 - a. When two or more food handlers contaminate multiple food items
 - b. When an operation serves contaminated food to two or more people
 - c. When two or more people report the same illness from eating the same food
 - d. When the CDC receives information on two or more people with the same illness
4. In a situation that meets all other criteria, how many people must have the same symptoms for a foodborne-illness to be considered an “outbreak”?
 - a. 1
 - b. 2
 - c. 3
 - d. 4
5. Why do pathogens pose an increasing challenge to food safety in an operation?
 - a. Strains of pathogens are stronger than ever before.
 - b. Pathogens can no longer be eliminated from food products.
 - c. Pathogens are being found on food items once considered safe.
 - d. It is harder to prevent pathogens from causing foodborne-illness.

6. Which organization makes recommendations for food safety regulation of the foodservice industry?
 - a. State regulatory authority
 - b. Food and Drug Administration (FDA)
 - c. U.S. Department of Agriculture (USDA)
 - d. Centers for Disease Control and Prevention (CDC)
7. Which is a challenge to food safety in an operation?
 - a. The lack of certified training programs
 - b. The growing elderly population in the U.S.
 - c. The infrequency of health inspections in an operation
 - d. The increased focus on personal hygiene in the operation
8. What is a human cost to victims of foodborne-illness?
 - a. Negative publicity
 - b. Long-term disability
 - c. Changes to the immune system
 - d. Decreased resistance to pathogens
9. Which contaminants pose the greatest threat to food safety?
 - a. Toxins
 - b. Allergens
 - c. Pathogens
 - d. Chemicals
10. Which of the following is a physical contaminant?
 - a. Bone in a filet
 - b. Virus on a salad
 - c. Cleaning solution in a spray bottle
 - d. Toxin in seafood

11. How are chemicals most likely to get into food?
 - a. When they are used incorrectly
 - b. When they are stored in original containers
 - c. When they are purchased from unsafe sources
 - d. When they are kept past their expiration date

12. The three potential hazards to food are biological, physical, and
 - a. situational.
 - b. chemical.
 - c. terminal.
 - d. procedural.

13. Which is a biological contaminant?
 - a. Bones in a chicken filet
 - b. Seafood toxin in a red snapper
 - c. Metal shavings in a can of peaches
 - d. Tomato juice served in a pewter pitcher

14. The most common mistakes that can cause foodborne-illness include practicing poor personal hygiene, using contaminated equipment, failing to cook and hold food correctly, and
 - a. thawing food incorrectly.
 - b. storing food without labels.
 - c. receiving food in dented cans.
 - d. purchasing food from unsafe sources.

15. Which is a common food-handling mistake that can cause foodborne-illness?
 - a. Failing to supervise food deliveries
 - b. Failing to exclude food handlers who are ill
 - c. Failing to calibrate thermometers regularly
 - d. Failing to prevent cross-contact from allergens

16. Cooked rice was left out on a prep table to cool for several hours. This is an example of
 - a. cross-contamination.
 - b. time-temperature abuse.
 - c. improper personal hygiene.
 - d. poor cleaning and sanitizing.
17. The same cutting board is used to prep raw meat, then lettuce. This is an example of
 - a. cross-contamination.
 - b. time-temperature abuse.
 - c. poor personal hygiene.
 - d. poor cleaning and sanitizing.
18. Which is a common risk factor for foodborne-illness?
 - a. Reheating leftover food
 - b. Serving ready-to-eat food
 - c. Using single-use, disposable gloves
 - d. Purchasing food from unsafe sources
19. Raw chicken breasts are left out at room temperature on a prep table. What is the risk that could cause a foodborne-illness?
 - a. Cross-contamination
 - b. Poor personal hygiene
 - c. Time-temperature abuse
 - d. Poor cleaning and sanitizing
20. Which food requires time and temperature control to keep it safe?
 - a. Whole strawberries
 - b. Uncut melons
 - c. Washed carrots
 - d. Baked potatoes

21. What is an example of TCS food?
 - a. Dried parsley
 - b. Chopped walnuts
 - c. Diced celery
 - d. Sliced cantaloupe

22. What is an example of a TCS food?
 - a. Bread
 - b. Bananas
 - c. Sprouts
 - d. Rosemary

23. Which is considered a ready-to-eat food?
 - a. Raw cookie dough
 - b. Mozzarella cheese
 - c. Unwashed kale
 - d. Dried beans

24. What is TCS food?
 - a. Food requiring thermometer checks for security
 - b. Food requiring trustworthy conditions for service
 - c. Food requiring training commitments for standards
 - d. Food requiring time and temperature control for safety

25. A cook preps a beef tenderloin on a cutting board and then immediately cuts pies for dessert on the same cutting board. This is an example of which risk factor?
 - a. Using contaminated equipment
 - b. Practicing poor personal hygiene
 - c. Purchasing food from unsafe sources
 - d. Holding food at incorrect temperatures

26. Which of the following people are at high risk for getting a foodborne-illness?
 - a. Preschool-age children
 - b. Women in their twenties and thirties
 - c. Middle-aged men
 - d. Teenagers who have reached puberty

27. A group is dining out and includes a man and woman in their forties, their teenage son, and grandparents in their early seventies. Who is at high risk for foodborne-illness?
 - a. The man in his forties
 - b. The woman in her forties
 - c. The teenage son
 - d. The grandparents in their seventies

28. Why are young children at a higher risk for foodborne-illness?
 - a. They are more likely to spend time in a hospital.
 - b. Their immune systems are not yet fully developed.
 - c. They are more likely to suffer allergic reactions.
 - d. Their appetites are suppressed.

29. Which of the following is a food safety responsibility of a manager?
 - a. Ensuring that chemicals are stored in a way that meets OSHA requirements
 - b. Ensuring that food prepared in a private home for a restaurant is prepared safely
 - c. Ensuring that delivery drivers are following food safety practices while in the operation
 - d. Ensuring that separate fryers are available for preparing food for customers with allergies

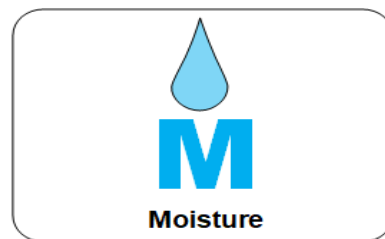
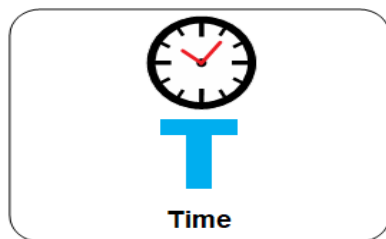
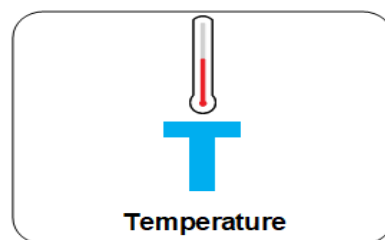
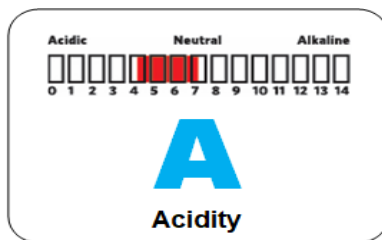
30. The regulatory authority will hold the person in charge responsible for ensuring that
 - a. guests use clean tableware when returning to self-service areas.
 - b. guests are escorted when touring kitchen facilities.
 - c. meat is checked for doneness by touch.
 - d. staff members are applying pesticides to eliminate pests.

SECTION 2

Understanding the Microworld

Microorganisms are small, living organisms that can be seen only through a microscope. Harmful microorganisms are called pathogens. Some pathogens make you sick when you eat them; others produce poisons (toxins) that can make you sick as well.

What pathogens need to grow?

**Learning Objectives**

After completing this chapter, you should be able to:

- Identify the conditions that affect the growth of food-borne bacteria (FAT TOM).
- Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.
- Describe ways to prevent viral, bacterial, parasitic, and fungal contamination.
- Characterize naturally occurring toxins and ways to prevent illnesses caused by them.

TERMS and Definitions

Bacteria: Single-celled, living microorganisms that can spoil food and cause foodborne-illness.

FAT TOM: Acronym for the conditions needed by foodborne bacteria to grow—food, acidity, temperature, time, oxygen, and moisture.

pH: A measure of acidity on a scale of 0 to 14.0, with 0 being highly acidic, 7.0 being neutral, and 14.0 being highly alkaline.

Temperature Danger Zone: The temperature range between 41°F and 135°F, within which most foodborne microorganisms rapidly grow.

Water activity: Amount of moisture available in food for bacteria to grow. It is measured on a scale from 0.0 to 1.0, with 1.0 having the most moisture available.

Spore: Form that some bacteria can take to protect themselves when nutrients are not available. Spores can revert back to a form capable of growth.

FAT TOM

Food – Items that are high in protein such as milk, meat, poultry, dairy products, and eggs.

Acidity —Microorganisms typically grow best in food that has a neutral or slightly acidic pH 7.5 to 4.6.

Temperature – Higher than 41°F (cold food), or below 135°F (hot food).

Time – Time to produce (if food left more than 4 hours at the TDZ).

Oxygen – Aerobic (requires oxygen) and anaerobic (does not require oxygen).

Moisture – Food with plenty of water with a water activity.

KEY TERMS

Microorganisms

Pathogens

Toxins

Fecal-oral route

Jaundice

Onset time

Bacteria

FAT TOM

pH

Temperature danger zone

Water activity (a_w)

Spore

Virus

Parasite

Fungi

Mold

Yeast

Controlling FAT TOM Conditions

You can help keep food safe by controlling FAT TOM . In your operation , however, you will most likely be able to control only time and temperature:

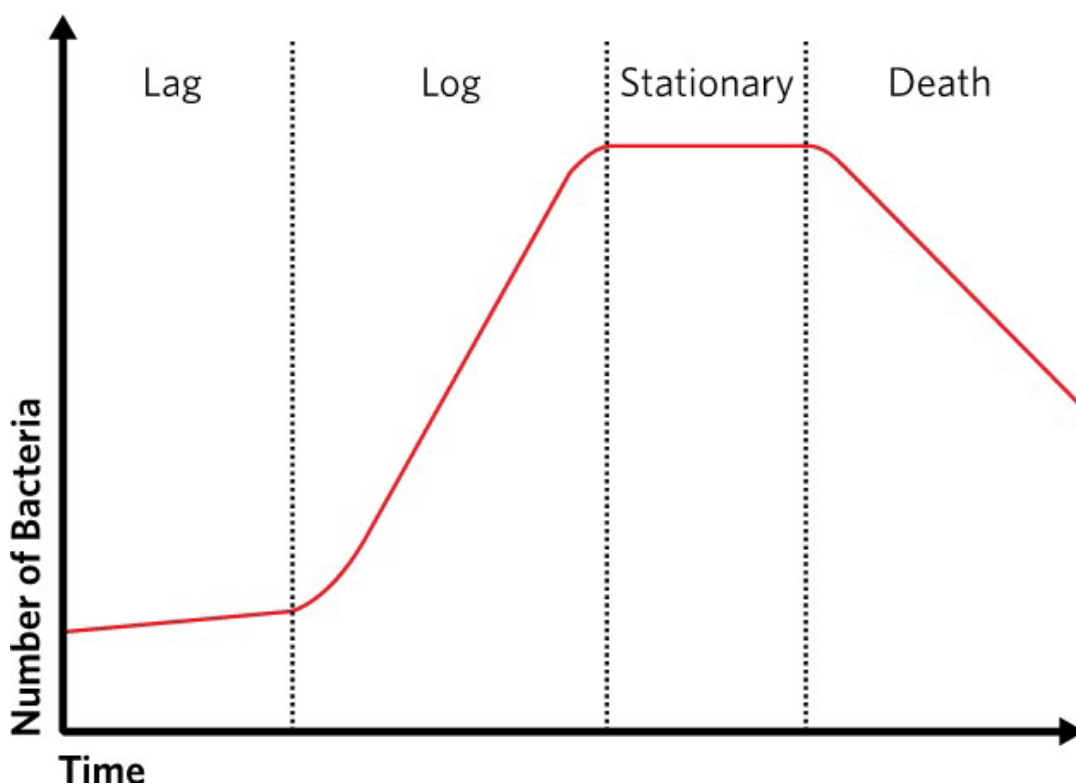
- To control time, limit how long TCS food spends in the temperature danger zone.
- To control temperature, keep TCS food out of the Temperature danger zone.

Lag phase. Bacteria that are introduced to food go through an adjustment period called the lag phase. Their number is stable as they get ready to grow. To prevent food from becoming unsafe, prolong the lag phase by controlling the conditions for growth: temperature, time, oxygen, moisture, and pH. As mentioned earlier, you have the most control over time and temperature. For example; refrigerating food keeps bacteria in the lag phase.

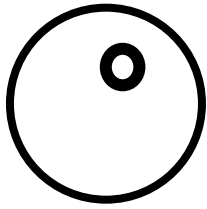
Log phase. Bacteria reproduce by splitting in two. Under the correct conditions, they can double as often as every 20 minutes. As a result, food will quickly become unsafe.

Stages of Growth

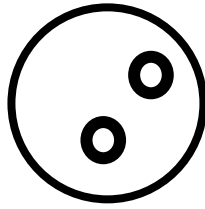
- Lag
- Log
- Stationary
- Death



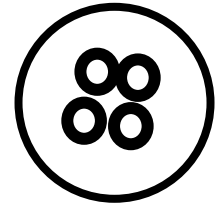
Bacterial Growth



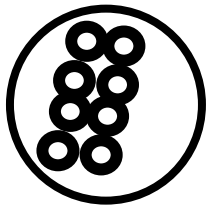
0 min. = 1 cell



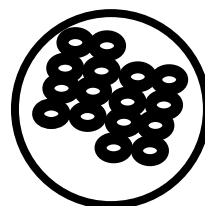
20 min. = 2 cells



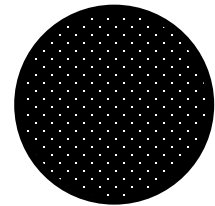
40 min. = 4 cells



60 min. = 8 cells



80 min. = 16 cells



10 hrs. = > billion cells

Under the correct conditions, bacteria can double their number as often as every 20 minutes.

Stationary phase. Bacteria can continue to grow until conditions become unfavorable. Eventually, they grow and die at the same rate.

Death phase. When dying bacteria outnumber growing bacteria, the population declines.

BIOLOGICAL CONTAMINATION

According to the Food and Drug Administration (FDA), there are over 40 kinds of bacteria, viruses, parasites, and molds that can occur in food and cause a foodborne-illness. Six of these have been singled out by the FDA because they are highly contagious and can cause severe illness. These have been dubbed the Big Six.

The Big Six Pathogens

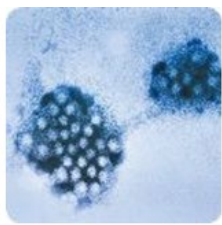
- Shigella spp.
- Salmonella Typhi
- Nontyphoidal Salmonella (NTS)
- Shiga toxin-producing Escherichia coli (STEC), also known as E coli
- Hepatitis A
- Norovirus

BIOLOGICAL HAZARDS

Four types of pathogens can contaminate food and cause foodborne-illness



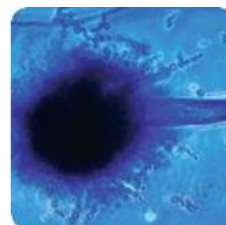
Bacteria



Viruses



Parasites



Fungi

Viruses

- Viruses are the leading causes of foodborne-illness and can survive cooler and freezer temperatures.
- Viruses can be transferred from person to person and from people to food-contact surfaces.

Bacteria

- Bacterial foodborne-illnesses account for more than 90% of all foodborne related illness.
- Bacteria are present especially on our hands.
- Bacteria will multiply in great numbers if food is left in the danger zone.
- Bacteria will double every 20 minutes.

Parasites

- Parasites are organisms that live within or feed off another organism or host.
- Parasites can transfer from human to human and from animal to human.
- Roundworm found in pork that produces trichinosis.

Fungi

- Fungi mostly spoil food and found in air, plant, water.
- Molds can grow in the refrigerator, spoil food and cause illness.
- Yeast can spoil food, fruit juices and jellies.

FOODBORNE INFECTIONS

Foodborne Infections

- Result when a person eats food containing pathogens, which then grow in the intestines and cause illness.

Salmonellosis

- Salmonellosis is associated with poultry and eggs, dairy products and beef. It has also been found in ready-to-eat food, such as produce that has come in contact with farm animals or their waste.
- Illness can occur after consuming only a small amount of this type of bacteria, it is critical to cook food properly and to prevent cross-contamination.

Food Involved	Prevention	Symptoms
Poultry	Avoid cross-contamination. Cook food to the required minimum temperature. Purchase food from reputable suppliers.	Abdominal cramps
Meat		Diarrhea
Fish and shrimp		Vomiting

Shigellosis

- Shigellosis is found in the feces of humans with shigellosis. Illnesses occur when people consume contaminated food or water. Shigellosis can be transferred to food when food handlers fail to wash their hands after using the restroom.

Food Involved	Prevention	Symptoms
Contaminated water	Exclude food handlers from working if they have diarrhea and or diagnosed with Shigellosis. Provide handwashing and proper personal hygiene training to staff.	Abdominal cramps and pain
Salads		Bloody diarrhea
Produce		Vomiting
		Fever

Listeria

- Listeria is naturally found in soil, water, and plants.
- Listeria is associated with ready- to- eat food products.
- Unpasteurized dairy products especially soft cheeses affect the elderly and the very young population.

Food Involved	Prevention	Symptoms
Ready- to- eat -food	Cook raw meat to required minimum internal temperature. Prevent cross-contamination. Discard product that has passed its use-by or expiration date. Use gloves before handling food.	Abdominal cramps and pain
Raw and deli meat		Spontaneous abortion of fetus
Soft cheese		Meningitis
Unpasteurized milk and milk products		Pneumonia

Vibrio

- Vibrio is associated with raw or partially cooked oysters harvested from warm water during the months of April to October.
- Preventing illness depends upon purchasing oysters from approved, reputable suppliers and cooking them to the required minimum internal temperature.

Food Involved	Prevention	Symptoms
Raw or partially cooked oysters	Purchase oysters from approved, reputable suppliers. Cook oysters to the required minimum internal temperature. Inform people at risk to consult a physician before consuming raw or partially cooked oyster.	Abdominal cramps
Oysters harvest from warm water of Gulf of Mexico		Diarrhea, nausea, and vomiting
Oysters harvest from Atlantic and Pacific coasts during the month of April-October		Skin lesions
		Fever and chills

FOODBORNE INTOXICATIONS

Foodborne Intoxications result when a person eats food containing toxins that cause illness. The toxin may have produced by pathogens found in the food or may be the result of a chemical contamination.

Bacillus Cereus

- Bacillus Cereus is a spore forming bacteria found in soil.
- It is commonly associated with plants and cereal crops, such as rice.
- The best prevention can be obtained by cooking, holding and cooling food properly.

Food Involved	Prevention	Symptoms
Cereal crops	Cook food to the required minimum internal temperature. Hold food at the proper temperature. Cool food properly.	Abdominal cramps, pain
Cooked rice, rice pudding and fried rice		Watery Diarrhea
Cooked corn, potatoes, vegetables and meat		Nausea Vomiting

Staphylococcal

- Staphylococcus is primarily found in humans particularly in the hair, nose, throat, and sores.
- It is often transferred to food when people carrying this type of bacteria touch these areas and handle food without washing their hands.

Food Involved	Prevention	Symptoms
Salads containing tuna and chicken	Wash hands after touch hair, face, or body. Use gloves. Cover cuts on hands and arms. Restrict food handler with infected cuts on hands or arms from working with or around food. Cook, hold, and cool for properly.	Abdominal cramps
Salads containing macaroni		Diarrhea
Deli meats		Nausea Vomiting

Botulism

- Botulism is an anaerobic bacterium that grows in the absence of oxygen.
- Botulism is found in canned food, garlic & oil mixtures, baked potatoes that are wrapped in foil.

Food Involved	Prevention	Symptoms
Improperly canned food	Hold, cool and reheat food properly Inspect canned food for damage Store canned food away from sunlight Rejected dented, swelled canned food	Difficulty speaking
Reduced-oxygen-packaged food (ROP)		Difficulty swallowing
Temperature-abused baked potato		Vomiting, nausea
Untreated garlic-oil mixtures		Double vision
		Weakness

FOODBORNE TOXIN-MEDIATED INFECTIONS

Foodborne Toxin-Mediated Infections result when a person eats food containing pathogens, which then produce illness-causing toxins in the intestines.

Clostridium Perfringens

- Clostridium Perfringens is found naturally in soil where it forms spores that allow it to survive.
- It is also carried in the intestines of both animal and humans.

Food Involved	Prevention	Symptoms
Meat and poultry	Cook food to the required minimum internal temperature. Hold food at the proper temperature. Cool food properly.	Abdominal cramps, pain
Dishes made with meat		Diarrhea
Poultry with gravy		Nausea
		No vomiting

Hemorrhagic Colitis (E. Coli)

- Shiga toxin producing E.coli is naturally found in the intestines of cattle, which can contaminate the meat during the slaughtering process.
- It has been associated with contaminated produce but is more commonly associated with undercooked ground beef.

Food Involved	Prevention	Symptoms
Ground beef	Cook food, particularly ground beef, to required minimum internal temperature. Prevent cross-contamination. Exclude employees they have diagnosed with hemorrhagic colitis.	Abdominal cramps
Under cooked beef		Bloody diarrhea
Contaminated produce		Nausea
		Bacteria is present in sick person's feces

Viruses

- Viruses are the smallest of the microbial contaminants.
- May survive freezing, can be transmitted from person to person, from people to food and from people to food-contact surfaces.
- Viruses can contaminate water supplies and food.

Hepatitis A

- Hepatitis A is primarily found in the feces of people infected with the virus.
- The virus is more commonly associated with ready-to-eat food items.
- It has also been found in shellfish contaminated by sewage.

Food Involved	Prevention	Symptoms
Ready-to-eat food	Wash hands properly. Exclude employees from the establishment who have jaundice or diagnosed with hepatitis A. Purchase shellfish from approved reputable suppliers.	Abdominal pain
Deli meats, produce, and salad		Weakness and nausea
Raw and partially cooked shellfish		Fever
		Jaundice

Norovirus

- Norovirus is primarily found in the feces of people infected with the virus.
- Found in contaminated water and ready-to-eat food like Hepatitis A.
- Is very contagious and is often transferred to food when infected food handlers touch the food with fingers containing feces.

Food Involved	Prevention	Symptoms
Ready-to-eat food	Wash hands properly. Exclude food handlers with diarrhea and vomiting. Exclude food handlers that diagnosed with norovirus from establishment. Purchase shellfish from approved reputable suppliers.	Abdominal cramps
Shellfish contaminated by sewage		Nausea
		Vomiting
		Diarrhea

Parasites

An illness from a parasite is not as common as one caused by virus or bacteria. But the threat is real, and even the idea of an infection from a parasite is unpleasant to guests will vary depending on the types of food served and the preparation practices used. A lot will depend on your menu. Fish and produce are sometimes associated with illness caused by parasites. Correct product sourcing and preparation techniques are important for safety. No matter what type of operation you find yourself in, it's still important to understand these pathogens to prevent the foodborne-illnesses they cause.

- Parasites are living organisms that need a host to survive.
- They infect cows, chicken, pigs, fish, and can be transmitted to humans.
- They are a hazard to both food and water.

Anisakiasis

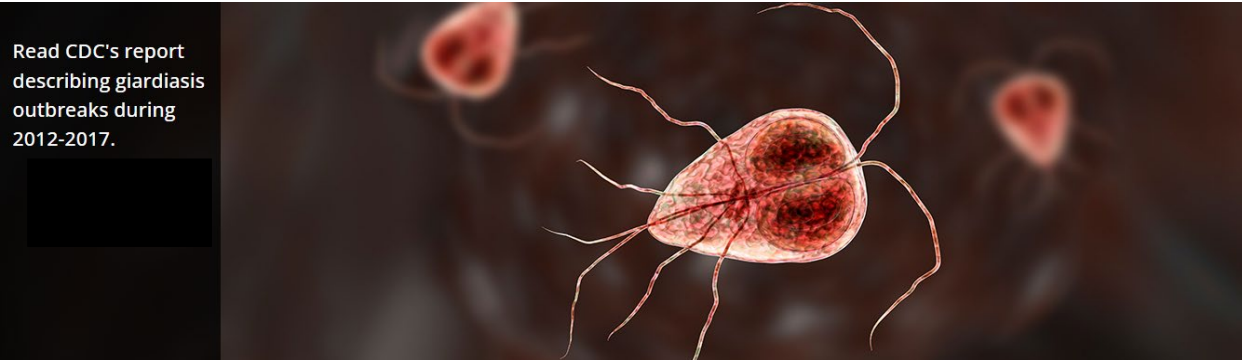
- Anisakiasis is a worm-like parasite found in certain fish and shellfish.
- An illness can develop when raw or undercooked seafood containing the parasite is eaten.

Food Involved	Prevention	Symptoms
Raw and undercooked:	Cook fish to required minimum internal temperature. Purchase fish from approved reputable suppliers. If fish will be served raw, purchase sushi-grade fish.	Stomach pain
Herring, cod, halibut		Tingling in throat and coughing up worms
Mackerel and pacific salmon		Vomiting and nausea
		Diarrhea

Giardia Duodenalis

- Giardia Duodenalis is a parasite that has been found in improperly treated water.
- It can be found in the feces of infected people.
- It is common for the parasite to be spread from person to person in day-care centers.
- Proper hand washing is essential to prevent illness.

Food Involved	Prevention	Symptoms
Improperly treated water	Use properly treated water. Exclude food handlers with diarrhea from the establishment. Wash hands properly to minimize risk of cross-contamination.	Fever
		Loose stools
		Abdominal cramps
		Nausea



Giardia

Is a tiny parasite (germ) that causes the diarrheal disease giardiasis. *Giardia* is found on surfaces or in soil, food, or water that has been contaminated with feces (poop) from infected people or animals. You can get giardiasis if you swallow *Giardia* germs. *Giardia* spreads easily and can spread from person to person or through contaminated water, food, surfaces, or objects. The most common way people get sick is by swallowing contaminated drinking water or recreational water (For example; lakes, rivers, or pools).

Fungi

So Far, you have learned about pathogens that cause foodborne-illnesses. **Fungi** are pathogens that only sometimes make people sick. **Mold** and **yeast** are examples. Mostly, fungi spoil food. We have all seen what happens when food is left in storage for too long, allowing mold to grow on bread, cheese, and other products. It can happen in our refrigerators at home, and it can happen in the operation if we aren't careful.

Fungi can be found in the environment all around us in air, dirt, plants, water, and some food.

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Mold

Molds share some basic characteristics.

Effects. Molds spoil food and sometimes cause illness.

Toxins. Some molds produce toxins, such as aflatoxins.

Growth. Molds grow under almost any condition. They grow particularly well in acidic food with low water activity, such as jams, jellies, and cured, salty meat (e.g., ham, bacon, and salami).

Temperature. Cooler or freezer temperatures may slow the growth of molds, but they do not kill them.

Prevention measures. Some molds produce toxins that can cause allergic reactions, nervous system disorders, and kidney and liver damage. For example; aflatoxin, produced by the molds *Aspergillus flavus* and *Aspergillus parasiticus*, can cause liver disease. Food such as corn and corn products, peanuts and peanut products, cottonseed, milk, and tree nuts (such as Brazil nuts, pecans, pistachio nuts, and walnuts) have been associated with aflatoxins.

Throw out all moldy food, unless the mold is a natural part of the product (e.g., Cheese such as Brie, Camembert, and Gorgonzola). The FDA recommends cutting away moldy areas in hard cheese—at least one inch (2.5 centimeters) around them. You can also use this procedure on other foods, such as salami and firm fruits and vegetables.

Yeast

Yeast share some basic characteristics.

Signs of spoilage. Yeasts can spoil food quickly. Signs of itself may look like a white or pink discoloration or slime. It also may bubble.

Growth. Like molds, yeasts grow well in acidic food with little moisture, such as jellies, jams, syrup, honey, and fruit or fruit juice.

Prevention measure. Throw out any food that has been spoiled by yeast.

Mushroom Toxins

Foodborne-illnesses linked with mushrooms are almost always caused by eating toxic wild mushrooms collected by amateur hunters. Most cases happen because toxic mushrooms are mistaken for edible ones. The symptoms of illness depend on the type of toxic mushrooms eaten.

Mushroom toxins are not destroyed by cooking or freezing. Use only mushrooms and mushroom products purchased from approved, reputable suppliers.

Plant Toxins

Plant Toxins are another form of biological contamination. Illnesses from plant toxins usually happen because an operation has purchased plants from an unapproved source. Some illnesses, however, are caused by plants that have not been cooked correctly. The following are examples of items that have made people sick:

- Toxic plants, such as fool’s parsley or wild turnips. Mistaken for the edible version.
- Honey from bees that harvest nectar from toxic plants.
- Undercooked kidney beans.

Plants Involved		Prevention
Fava bean	Red Kidney beans	Beans are safe when properly cooked
Jimsonweed	Water hemlock	
Water kernels	Rhubarb leaves	

Seafood Toxins

Seafood toxins cannot be smelled or tasted. They also cannot be destroyed by freezing or cooking once they form in food. There are two groups of seafood toxins.

Fish toxins. Some fish toxins are a natural part of the fish. These are called systemic toxins. Puffer fish, Moray eels, and freshwater minnows all produce them. Because of the extreme risk of illness or even death, puffer fish should not be served unless the chef has been licensed to prepare it.

Other toxins are made by pathogens on the fish. Some fish can also become contaminated when they eat smaller fish that have eaten a toxin.

Shellfish toxins. Shellfish, such as oysters, can be contaminated when they eat marine algae that have a toxin.



Major Seafood toxins

For each major seafood toxin, you should understand the following characteristics.

- Common sources.
- Food commonly linked with it.
- Most common symptoms. .
- Most important prevention.



Shellfish Involved	Prevention	Symptoms
Clams and Mussels	Purchase fish from approved suppliers. Prevent time-temperature abuse during receiving, storage, and preparation.	Vomiting and nausea
Oysters and Scallops		Tingling of mouth, face, arms and legs
		Diarrhea

Purchasing from Approved, Reputable Suppliers

These toxins can be prevented by purchasing products from approved, reputable suppliers:

- Histamine
- Ciguatoxin
- Saxitoxin
- Brevetoxin
- Domoic acid

Knowledge Check

1. Can fungi make people sick when consumed?
2. Which type of toxin is created by some molds?

Scombroid Poisoning

- Some fish toxins are systemic-produced by the fish itself.
- Pufferfish, moray eel, and freshwater minnow all produce systemic toxins.
- Scombroid poisoning (known as histamine) is an illness caused by consuming high levels of histamine.
- When fish are time and temperature abused, bacteria on the fish produces the histamine.

Fish Involved	Prevention	Symptoms
Tuna	Purchase fish from approved suppliers. Prevent time-temperature abuse during receiving, storage, and preparation.	Reddening of the face/nick
Bonito		Burning of throat or mouth
Mackerel and Mahi Mahi		Vomiting and nausea
		Diarrhea and headache

Ciguatera Fish Poisoning

- Ciguatoxin is found in certain marine algae. Ciguatoxin is commonly associated with predatory reef fish. The toxin accumulates in these fish when they consume smaller fish that have eaten the toxin algae.

Fish Involved	Prevention	Symptoms
Barracuda	Purchase reef fish from approved suppliers. Prevent time-temperature abuse during receiving, storage, and preparation.	Hot and cold sensations
Grouper		Tingling in fingers, lips, toes
Jacks and Snapper		Vomiting and nausea
		Joint and muscle pain

Notes

REVIEW QUESTIONS

1. Which type of food best supports the growth of bacteria?
 - a. Fats
 - b. Sugars
 - c. Starches
 - d. Proteins

2. Which food best supports the growth of bacteria?
 - a. Butter
 - b. Cooked rice
 - c. Loaf of bread
 - d. Chocolate cake

3. Bacteria grows best at which pH level?
 - a. 0
 - b. 2
 - c. 7
 - d. 12

4. Which food has the most available moisture for bacteria to grow?
 - a. Food with an a_w of 0.0
 - b. Food with an a_w of 0.2
 - c. Food with an a_w of 0.5
 - d. Food with an a_w of 1.0

5. Is vacuum-packed food safe from the growth of bacteria?
 - a. Yes, because the vacuum always destroys bacteria.
 - b. Yes, because all bacteria need oxygen to grow.
 - c. No, because bacteria can grow without oxygen.
 - d. No, because the vacuum increases the food's water activity.

6. What are the two conditions for bacterial growth that you can control?
 - a. Oxygen and acidity
 - b. Acidity and moisture
 - c. Temperature and moisture
 - d. Time and temperature

7. What is the temperature range of the temperature danger zone?
 - a. 0°F to 41°F (-18°C to 5°C)
 - b. 31°F to 60°F (-1°C to 16°C)
 - c. 41°F to 135°F (5°C to 57°C)
 - d. 60°F to 165°F (16°C to 74°C)
8. In what temperature range does bacteria grow most rapidly?
 - a. 0°F to 38°F (-18°C to 3°C)
 - b. 41° to 65°F (5°C to 18°C)
 - c. 70° to 125°F (21°C to 52°C)
 - d. 126°F to 165°F (54°C to 74°C)
9. Which food is in the temperature danger zone?
 - a. Meat received at 40°F (4°C)
 - b. Chicken stored at 45°F (7°C)
 - c. Soup held at 140°F (60°C)
 - d. Chili cooked to 165°F (74°C)
10. Jaundice is a symptom of which foodborne-illness?
 - a. *Shigellosis*
 - b. *Hepatitis A*
 - c. *Hemorrhagic colitis*
 - d. *Norovirus*
11. Which is a “Big Six” pathogen?
 - a. *Salmonella Typhi*
 - b. *Campylobacter jejuni*
 - c. *Staphylococcus aureus*
 - d. *Clostridium Botulinum*
12. Where is Shiga toxin-producing *Escherichia coli* found?
 - a. Cattle
 - b. Water
 - c. Poultry
 - d. Dirt

13. Bloody diarrhea is a common symptom associated with which pathogen?
 - a. *Shigella* spp.
 - b. *Listeria monocytogenes*
 - c. *Clostridium botulinum*
 - d. *Staphylococcus aureus*
14. A guest became ill with nausea and vomiting after eating shrimp, chicken, rice, and vegetables. Which food was the likely cause of the illness?
 - a. Shrimp
 - b. Chicken
 - c. Rice
 - d. Vegetables
15. A guest became ill with a high fever and a rash after eating at a salad bar. Which pathogen is the likely cause of the illness?
 - a. *Vibrio vulnificus*
 - b. *Anisakis simplex*
 - c. *Salmonella* Typhi
 - d. *Clostridium perfringens*
16. A guest became ill with vomiting and diarrhea a few hours after eating a lobster dinner. Which pathogen is the likely cause of the illness?
 - a. *Vibrio vulnificus*
 - b. *Giardia duodenalis*
 - c. Hepatitis A
 - d. Norovirus
17. Which bacteria is commonly linked to cooked rice dishes?
 - a. *Shigella* spp.
 - b. *Salmonella*
 - c. *Bacillus cereus*
 - d. *Vibrio vulnificus*
18. Which is a basic characteristic of a virus?
 - a. Is destroyed by freezing
 - b. Grows in food
 - c. Requires a living host to grow
 - d. Originates in cattle

19. What types of food are commonly associated with yeast?
 - a. Fatty
 - b. Acidic
 - c. Alkaline
 - d. Proteins
20. Which pathogen is one of the leading causes of foodborne-illness?
 - a. Norovirus
 - b. *Clostridium botulinum*
 - c. *Listeria monocytogenes*
 - d. *Campylobacter jejuni*
21. Which parasite is linked to berries and lettuce?
 - a. *Anisakis simplex*
 - b. *Giardia duodenalis*
 - c. *Cryptosporidium parvum*
 - d. *Cyclospora cayetanensis*
22. People with this illness may cough up worms
 - a. *Anisakiasis*
 - b. *Giardiasis*
 - c. *Cyclosporiasis*
 - d. *Cryptosporidiosis*
23. What are the most common symptoms of a foodborne-illness?
 - a. Diarrhea, vomiting, fever, nausea, abdominal cramps, and dizziness
 - b. Diarrhea, vomiting, fever, nausea, abdominal cramps, and headache
 - c. Diarrhea, vomiting, fever, nausea, abdominal cramps, and jaundice
 - d. Diarrhea, vomiting, fever, nausea, abdominal cramps, and tiredness
24. Parasites are commonly linked with
 - a. rice.
 - b. poultry.
 - c. seafood.
 - d. canned food.

25. What is the most important measure to take for preventing *shigella* spp. from causing a foodborne-illness?
- Practicing good personal hygiene
 - Preventing cross-contamination
 - Preventing time-temperature abuse
 - Purchasing from approved, reputable suppliers
26. What is the most important measure to take for preventing hepatitis A from causing a foodborne-illness?
- Practicing good personal hygiene
 - Preventing cross-contamination
 - Preventing time-temperature abuse
 - Purchasing from approved, reputable suppliers
27. What is the most important measure to take for preventing *Nontyphoidal Salmonella* from causing a foodborne-illness?
- Practicing good personal hygiene
 - Preventing cross-contamination
 - Preventing time-temperature abuse
 - Purchasing from approved, reputable suppliers
28. Handwashing is an important measure for preventing which pathogen from causing a foodborne-illness?
- Campylobacter jejuni*
 - Listeria monocytogenes*
 - Clostridium botulinum*
 - Staphylococcus aureus*
29. When cutting away mold from hard cheese, how much does the FDA recommend removing around the affected area?
- ½ inch
 - 1 inch
 - 2 inches
 - 3 inches
30. Which pathogens are linked to Aflatoxins?
- Bacteria
 - viruses
 - parasites
 - mold

31. Which toxin causes an illness with neurological symptoms such as the reversal of hot and cold sensations?
 - a. Histamine
 - b. Ciguatoxin
 - c. Domoic acid
 - d. Brevetoxin
32. A guest experienced a tingling in the mouth and face after eating oysters. What is the likely illness?
 - a. Ciguatera fish poisoning
 - b. Amnesic shellfish poisoning
 - c. Paralytic shellfish poisoning
 - d. Neurotoxic shellfish poisoning
33. Which fish are associated with ciguatoxin?
 - a. Tuna
 - b. Grouper
 - c. Mackerel
 - d. Mahi Mahi
34. What causes most foodborne-illnesses associated with wild mushrooms?
 - a. Being stored for too long after being harvested
 - b. Being mistaken for edible ones when harvested
 - c. Not being stored at the correct temperature
 - d. Not being cooked at the correct temperature
35. Which plant food is toxic when undercooked?
 - a. Raw kidney beans
 - b. Fresh asparagus
 - c. Raw edamame
 - d. Raw sweetcorn
36. Scombroid poisoning can be prevented by
 - a. purchasing fish from approved, reputable suppliers.
 - b. cooking fish to the right internal temperature.
 - c. making sure food handlers wash their hands.
 - d. preventing cross-contamination.

SECTION 3

Food Contaminations, Food Allergens, and foodborne-illness

Food is considered contaminated when it contains hazardous substances. These substances may be biological, chemical, or physical. The most common food contaminants are biological that belong to bacteria, parasites, viruses, and fungi. (See Section 2)

Physical and Chemical Contaminants although biological contaminants are the leading cause of foodborne-illness, physical and chemical contaminants pose a risk to food safety. Food can become contaminated when objects get into it. It can also happen when natural objects are left in food, such as bones in a fish fillet.

Foodborne intoxication occurs when a person consumes food that contains toxins. Toxins in seafood, plants and mushrooms are responsible for many cases of foodborn illness in the United States each year.

Physical and Chemical Contaminants

Physical Contaminants

- Metal shavings from cans, as shown in the photo at left.
- Wood
- Fingernails
- Staples
- Bandages
- Glass Jewelry
- Dirt



Chemical Contaminants

- Cleaners
- Sanitizers
- Polishes
- Machine lubricants
- Deodorizers
- First-aid products
- Health and beauty products, such as hand lotions and hair sprays.



Toxic Metals

Utensils and equipment that contain toxic metals such as lead in a pewter pitcher, copper in a saucepan, or zinc in a galvanized bucket can cause toxic metal poisoning. If acidic food is stored or prepared with this equipment, the toxic metals can be transferred. Use only food grade equipment.

Carbonated-beverage dispensers that are improperly installed can also create a hazard.

If carbonated water is allowed to flow back into the copper supply lines, it could leach copper from the line and contaminate the beverage.



What Is Pewter?

- Pewter is a tin alloy.
- It is a blue-gray metal.
- It consists of tin, antimony, copper, and sometimes bismuth or silver.
- Older pewter is an alloy of tin, lead, and sometimes copper.



Knowledge Check

1. Name an example of a physical contaminant.
2. How can chemical contamination be prevented?
3. What is a food defense program?
4. A manager is limiting access to storage and prep areas. Which step of ALERT is the manager performing?

The Deliberate Contamination of Food

Certain people could try to tamper with your food. These Groups who may attempt to contaminate food:

- Terrorists or activists
- Disgruntled current or former staff
- Vendors
- Competitors

ALERT-is a Food Drug Administration defense tool

- **Assure** – Make sure products received are from safe sources.
- **Look** – Monitor the security.
- **Employees** – Know who is in your facility.
- **Reports** – Keep information related to food defense accessible.
- **Threat** – Develop a plan for responding to suspicious activity or a threat to the operation.

Food Allergy

Nearly seven million Americans have food allergies. Food allergy caused by the body's negative reaction to a particular food protein. Designate one person per shift to fully describe each of the menu items to your customers. If you or your employees do not know if an item is allergen free, urge the customer to order something else. While more than 160 food items can cause allergic reactions, just nine account for 90 percent of all reactions in the United States.

Allergy Symptoms

Depending on the person, an allergic reaction can happen just after the food is eaten or several hours later. This reaction could include some or all of these symptoms:

- Nausea
- Wheezing or shortness of breath
- Hives or itchy rashes
- Swelling of various parts of the body, including the face, eyes, hands, or feet
- Vomiting and/or diarrhea
- Abdominal pain
- Itchy throat

Symptoms may be mild initially, but they can become serious quickly, in severe cases, **anaphylaxis**- a severe allergic reaction that can lead to death-may result. If a guest is having an allergic reaction to food, call the emergency number in your area and inform them of the allergic reaction.

You and your staff must be aware of the most common food allergens and the menu items that contain them.

Preventing Allergic Reactions

Fifteen million Americans have a food allergy, and allergic reactions result in 200,000 emergency room visits every year. Both service staff and kitchen staff need to do their part to avoid serving food containing allergens to people with food allergies. These precautions also apply to any food sensitivities that a guest might mention, such as a gluten intolerance.

Service staff

Your staff should be able to tell guests about menu items that contain potential allergens. At minimum, have one person available per shift to answer guests' questions about menu items. When guests say they have a food allergy your staff should take it seriously. To protect your guests, you and your staff should be able to recognize the signs of an allergic reaction and know what to do when one occurs. You also should know the types of food that most often cause allergic reactions to help prevent them from happening. When working with a guest to place an allergen special order, your staff must be able to do the following. These Nine food items are known as the Big Nine formally known as the Big Eight. Sesame is new as we are seeing more and more people with this allergy.

A **food allergen** is a protein in a food or ingredient. When enough of an allergen is eaten, it can cause an allergic reaction in some people. This happens because their immune systems mistakenly considers the food protein, which is normally harmless, to be a threat and attacks it. There are specific signs that a customer is having an allergic reaction, and your staff should be able to recognize these signs and know how to respond.

The Big Nine Allergens



Milk



Soy



Eggs



Fish, such as
bass,
flounder, and
cod



Crustacean
shellfish, such as
crab, lobster, and
shrimp



Tree nuts, such
as walnuts and
pecans



Wheat



Peanuts



Sesame

Food Allergy Symptoms

A food allergy is the reaction a person's immune system has to a certain food. An allergic reaction can happen within a few minutes or up to two hours afterwards, and could include some or all these symptoms:

- Wheezing
- Difficulty breathing.
- Hives
- Rashes
- Itching
- Tingling in the mouth
- Swelling, including the tongue and throat.
- Abdominal cramps.
- Diarrhea
- A drop in blood pressure.
- Loss of consciousness.

Reactions can vary widely. In some cases, a person could suffer anaphylaxis-a severe life-threatening allergic reaction that can lead to death.

If you or your staff see a customer having severe symptoms, or the customer tells you they are having a severe allergic reaction, act immediately. Let other staff know that assistance is needed and instruct them to call emergency medical services. Do not leave the person alone.

Most Common Food Allergens

You and your staff must be aware of the most common food allergens and the menu items that contain them. While nearly any food can cause an allergic reaction, there are none foods that are responsible for most in the United States.

They are called the Big Nine.

Note: Changes to the existing list include the following

- Soybeans (soy).
- Fish, such as tuna and cod.
- Tree nuts, such as almonds and pine nuts.

Preventing Allergic Reactions:

Tens of millions of Americans have food allergies. Allergic reactions result in tens of thousands of emergency room visits every year-about once every three minutes. Both front of house and back of house staff need to do their part to avoid serving food containing allergens to people with food allergies. These precautions also apply to any food sensitivities that a customer might mention, such as a gluten intolerance.

Food Labels

Food labels are an important tool to identify allergens in the products that you purchase. Federal law requires that major allergens be clearly identified in labels on packaged foods. The allergen must be found within the ingredient listing or directly after the listing on the label. And the information must use the Big Nine allergen common names. As an alternative, the allergens can be listed in one spot using “contains” label.

Front of House Staff

Your front of house staff is critical when it comes to preventing reactions. They have the first opportunity to find out about your guest's food allergies. This information must be communicated to staff in the back of the house to prevent allergic reactions.

- **Front of the House**
- **Inform guests about allergens on menus.** The way that you communicate this is going to depend on your menu and service style. Some operations note allergens in the menu or include disclaimers requesting that guests inform their server of any food allergies. Staff can inform guests of food allergens by:
 - Bringing food labels to guests.
 - Reading ingredient labels to guests when asked.
 - Telling guests about menu items.
- **Listen to guests.** Answer all guests' questions about menu items. Some guests may not inform you that they have a food allergy. When a guest asks about substituting ingredients or mentions being sensitive to something, it's important to check if they have a food allergy.
- The first person that a guest speaks with, the “first point of contact” should have some knowledge of food allergies. Once you know that a guest has a food allergy, pay attention, take notes and read the notes back to them to make sure they are correct.
- **Communicate the allergen special order to back of the house staff.** Provide kitchen staff with written notes about the guest's allergen special order. Verbally confirm the order with kitchen staff when it is placed. When collecting the order from the kitchen, confirm the meal is correct and matches the ticket. Always confirm the allergen special order verbally with kitchen staff.
- **Deliver the allergen special order safely.** Always confirm the order verbally with the guest. To prevent cross-contact, some operations deliver the allergen special order first, separate from other items. As an alternative, all orders for the table can be delivered at the same time with an additional server or manager delivering just the special meal.
- **Avoid cross-contact in workstations.** Keep workstations clean. Don't mix old product with new product. Be careful when restocking stations. Avoid spills and clean carefully if they do happen. Use new, clean tools (i.e., ladles, serving baskets, etc.) when handling orders. Prepare things like breadbaskets and salads at a separate location used just for allergen special orders, if possible.
- **Clean and sanitize.** Replace soiled cloths and cleaning and sanitizing solutions regularly. Clear and reclean tables and chairs for guests with food allergies. When resetting tables, be mindful of condiments or other food items that may contain allergens. Clean spills immediately and common surfaces regularly.

Back of the House Staff

How to avoid Cross-Contact

Here's how to prevent cross-contact in the back of the house and keep customers safe.

- **Review the menu and ingredients for Big Nine allergens.** Check recipes and ingredient labels. Any ingredient substitution should be identified, tested in advance, and noted in recipes. Managers, chefs, and purchasers should stay in regular communication with vendors. If there are any questions about certain or new ingredients, check with the vendor.
- **Receive and store items correctly.** Check deliveries carefully. If substitute items have been provided, check the ingredient labels. Also check to see if any packaging has been broken or spilled. Reject deliveries if inappropriate substitute items have been provided or anytime cross-contact is suspected.
 - Items intended for allergen special orders should be properly labeled and stored separately from Big Nine allergens.
- **Clean surfaces, utensils and equipment.** Wash, rinse, sanitize and air-dry surfaces and equipment to remove allergens. Use fresh cleaning solutions and cleaning clothes when cleaning items to be used for an allergen special order.

Practice good personal hygiene. Wash hands and change gloves before preparing an order for a guest with a known food allergy. Avoid touching anything that may have had contact with a food allergen, including uniforms, skin, and hair.

Prepare the allergen special order correctly. When the order is received, check the ticket and verbally confirm the order with the server. Check written recipes and ingredient labels to confirm that the allergens in question are not present. Follow recipes and only use approved ingredient substitutions. Discard the item if cross-contact has occurred. Do not add anything to an item that has been plated or packaged. Verbally confirm the order with the person who will be serving it to the guest. Do not serve items that cannot be prepared safely.

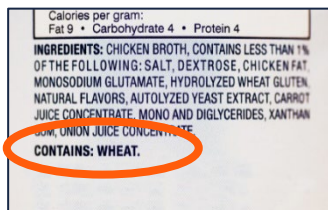
Kitchen Staff

Staff must make sure that allergens are not transferred from **cross-contact**. Here are examples of how it can happen:

- Cooking different types of food in the same fryer oil.
- Letting food touch surfaces, equipment, or utensils that have touched allergens. For example; putting chocolate chip cookies on the same parchment paper that was used for peanut butter cookies can transfer some of the peanut allergen.



Chicken and shrimp are being fried in the same deep fryer. Shrimp allergens can be transferred to the chicken.



Check recipes and ingredient labels.



Wash, rinse, and sanitize cookware, utensils, and equipment.

Food Labels

Food labels are an important tool used to identify allergens in the products that you purchase. Federal law requires manufactured products containing one or more of the Big Nine allergens to clearly identify them on the ingredient label. The allergen may be included “buttermilk,” or it may be shown in parentheses after the ingredient. Often, allergens will be shown in a “contains” statement.

How to avoid Cross-Contact

Staff can avoid cross-contact by following these procedures:

- Check recipes and ingredient levels to confirm that the allergen is not present.
- Wash, rinse, and sanitize cookware, utensils, and equipment before prepping food. This includes food-prep surfaces. Some operations use a separate set of cooking utensils just for allergen special orders.
- Make sure the allergen dose not touch anything for guests with food allergies, including food, beverages, utensils, equipment, and gloves.
- Wash hour hands and change gloves before prepping food.
- Use separate fryers and cooking oils when frying food for guests with food allergies.
- Label food packaged on-site for retail sale. Name all major allergens on the label and follow and additional labeling requirements.

Knowledge Check

1. What are the Big Nine allergens?
2. Name three ways cross-contact can be avoided.

Cross-Contact or Cross-Contamination?

Many people confuse cross-contact with cross-contamination occurs when pathogens are transferred from on surface or food to another. An example of this is raw meat touching ready-to-eat food, such as a salad. This can result in a foodborne-illness. Cross-contact refers to the transfer of an allergen to food that does not contain that allergen. This can result in an allergic reaction in individuals with a food allergy. So, Cross-contamination Pertains to the transfer of pathogens while cross-contact is all about to the transfer of allergens. It's important to know the difference between the two.

You'll want to ensure your operation follows safety rules to keep guests safe from food allergens. But this can be tricky. Think of the common example of frying shrimp and chicken in the same deep fryer. Some operations are small and only have one fryer.

It's hard to know what to do. If a guest has an allergy to crustacean shellfish, the they cannot safely eat food cooked in that shared fryer. Frying the allergen special order separately in a pot or pan is an alternative to this. That way, you can deep fry certain foods to ensure there is no cross-contact with shell-fish allergens.

Kitchen Staff

Staff must make sure that allergens are not transferred from food or food-contact surfaces containing an allergen to the food served to the guest. This transfer of allergens is called cross-contact. Here are examples of how it can happen:

- Cooking different types of food in the same fryer oil.
- Letting food touch surfaces, equipment, or utensils that have touched allergens. For example; putting chocolate chip cookies on the same parchment paper that was used for peanut butter cookies can transfer some of the peanut allergen.

Notes

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

REVIEW QUESTIONS

1. How should chemicals be stored to prevent chemical contamination?
 - a. Away from prep areas
 - b. On the floor between uses
 - c. On the work surface of prep tables
 - d. With food supplies below prep tables
2. Which is a chemical contaminant?
 - a. Bones in a chicken filet
 - b. Norovirus in shellfish
 - c. Metal shavings in a can of peaches
 - d. Tomato juice served in a pewter pitcher
3. Which is an example of physical contamination?
 - a. Bones in fish
 - b. Sneezing on food
 - c. Touching dirty food-contact surfaces
 - d. Mixing vinegar and salt
4. Which is a chemical contaminant?
 - a. Tomato sauce in a copper pan
 - b. Bones in a chicken filet
 - c. Ciguatera toxin in a red snapper
 - d. Metal shavings in a can of peaches
5. What is the best method for preventing a physical hazard in food from causing an injury?
 - a. Practicing proper food defense
 - b. Preventing cross-contamination
 - c. Proper cleaning and sanitizing P
 - d. Purchasing from approved suppliers
6. A guest became ill with vomiting and diarrhea within minutes of eating. What type of contamination was the likely cause?
 - a. Viral
 - b. Allergen
 - c. Chemical
 - d. Biological

7. Chemicals must be stored
 - a. over food.
 - b. separate from food.
 - c. in their original containers.
 - d. above food-contact surfaces.
8. A restaurant stores windshield washer fluid for their delivery vehicles with other chemicals used in the operation. Why can't it be stored there?
 - a. It is highly toxic and corrosive to metals.
 - b. It is more likely to leak.
 - c. It is not necessary for the maintenance of the facility.
 - d. It can react with the other chemicals that are stored there.
9. A dishwasher runs out of sanitizer for the three-compartment sink and uses sanitizer from the dish machine instead. Why is this a mistake?
 - a. The sanitizer is too expensive to use this way.
 - b. The sanitizer is not used in the way it is intended.
 - c. It is too difficult to measure the sanitizer correctly.
 - d. The sanitizer does not sanitize equipment when used this way
10. A chef uses paint brushes purchased at the local hardware store to baste food. Why is this a mistake?
 - a. The brushes will not last due to heavy use.
 - b. These types of brushes are not as easy to clean.
 - c. The brushes are not approved for use with food.
 - d. These brushes are not long enough to prevent burns.
11. To prevent the deliberate contamination of food, a manager should know
 - a. when to register with the EPA.
 - b. how to fill out an incident report.
 - c. where to find Safety Data Sheets in the operation.
 - d. whom to contact about suspicious activity.
12. What is the best way to protect food from deliberate tampering?
 - a. Make it as difficult as possible for someone to tamper with it.
 - b. Allow former employees into the operation.
 - c. Perform spot inspections on new vendors.
 - d. Use the USDA A.L.A.R.M. system.

13. When implementing a food defense program, what is the best way to protect food storage areas?
 - a. Lock them.
 - b. Always leave the lights on.
 - c. Install cameras in these areas.
 - d. Supervise traffic going in and out of them.
14. When implementing a food defense program, what is the best way to make sure food has been received from a safe source?
 - a. Purchase food only from a large distributor.
 - b. Use food suppliers who are local.
 - c. Purchase products directly from the source.
 - d. Request delivery vehicles be locked and sealed.
15. Which symptom could mean a customer is having an allergic reaction to food?
 - a. Coughing
 - b. Dehydration
 - c. Swollen lips
 - d. Sneezing
16. Which is a “Big Nine” food allergen?
 - a. Broccoli
 - b. Wheat
 - c. Grapes
 - d. Pork
17. Peanuts and soy products are two possible food items that can be dangerous for people with
 - a. food allergies.
 - b. FAT TOM.
 - c. weak immune systems.
 - d. chemical sensitivity.
18. Wheezing and hives are a symptom of
 - a. Food allergies
 - b. Norovirus
 - c. Botulism
 - d. Hepatitis A

19. A customer having an allergic reaction may show which symptom?
 - a. Itchy throat
 - b. Cold sweats
 - c. Dizzy spells
 - d. Dehydration
20. Which item contains a common allergen?
 - a. Peanut butter
 - b. Garlic powder
 - c. Chicken wings
 - d. Orange juice
21. What should food handlers do to prevent food allergens from being transferred to food?
 - a. Use clean and sanitized utensils when prepping the order.
 - b. Cook food to the appropriate minimum internal temperature.
 - c. Store cold food at 41°F (5°C) or lower.
 - d. Label chemical containers correctly.
22. To prevent food allergens from being transferred to food,
 - a. buy food from trusted suppliers.
 - b. store cold food at 41°F (5°C) or lower.
 - c. avoid using pewter tableware and copper cookware.
 - d. check ingredient labels to confirm that an allergen is not present.
23. What can servers do to prevent guests from having an allergic reaction?
 - a. Identify all ingredients except secret ingredients.
 - b. Let guests know when you think they are reasonably safe.
 - c. Deliver all food to a table at the same time.
 - d. Clearly mark the order for a guest with an allergy.
24. The transfer of allergens from food or food-contact surfaces to the food served to an allergic guest is called
 - a. biological contamination.
 - b. cross-contact.
 - c. cross-contamination.
 - d. allergenic transfer.

25. What can kitchen staff do to prevent guests from having an allergic reaction?
 - a. Cook all fried foods in the same fryers.
 - b. Check recipes and ingredient labels for allergens.
 - c. Use the same cooking utensils to handle all food.
 - d. Wash hands after preparing food for guests with allergies.
26. What should a manager do with a product they suspect has been deliberately contaminated?
 - a. Dispose of the product.
 - b. Hold on to the product.
 - c. Return the product to its vendor.
 - d. Bring the product to the police station.
27. Which guideline should be included in an effective food defense program?
 - a. Purchase products from a range of suppliers.
 - b. Provide employees with easy access to cleaning chemicals.
 - c. Keep receiving logs for all deliveries to the operations.
 - d. Hire an on-site food safety expert to supervise service.
28. How should food be served to a guest who has allergens?
 - a. With other allergen special orders
 - b. With two sets of eating utensils
 - c. Hand-delivered by an employee
 - d. In a separate area of the dining room
29. Which situation describes cross-contact?
 - a. A cook bakes the pecan pies before the blueberry pies
 - b. A cook uses the deep fryer to fry chicken and a pan to fry shrimp
 - c. A cook slices cheese and then replaces the knife before chopping carrots
 - d. A cook preps raw chicken and then uses the same cutting board to chop lettuce
30. A guest chipped their tooth while eating at a restaurant. What type of contamination was the likely cause?
 - a. Viral
 - b. Physical
 - c. Chemical
 - d. Biological

SECTION 4

The Safe Food Handler

At every step in the flow of food through the operation, food handlers can contaminate food and cause customers to become ill. Good personal hygiene is a critical protective measure against foodborne-illness and customers expect it.

How food handlers can contaminate food

You have learned that staff can make people sick by transferring pathogens when they touch food. These pathogens often come from the food handlers themselves.

Food handlers can cause illness when they transfer microorganisms to food they touch:

- When they have a foodborne-illness.
- When they have not washed their hands.
- When they have wounds or boils that contain a pathogen.
- When they have been in contact with a person who is ill.
- When they have diarrhea, vomiting or jaundice.



Components of good personal hygiene

- Good personal hygiene is a key to the prevention of foodborne-illness and includes:
- Hand washing for at least 20 seconds. Spend at least 10-15 seconds scrubbing hands.
- Clean clothing, hair restraints and jewelry limited to a plain band.
- No medical bracelets are allowed. Let your manager know if you have any medical needs.
- Food handlers with long hair must restraint all hair.
- Short, clean fingernails, no nail polish, wear a bandage over wounds.
- Cover all hand cuts and wounds with clean bandages. Finger cot and clean gloves should be worn at all times to prevent bandage from falling off into food.
- Eliminate bare-hand contact with ready-to-eat food.
- Remove aprons when leaving food-preparation areas, using the restroom and taking garbage out.

PROPER HANDWASHING PROCEDURE

How to wash hands (should take at least 20 seconds):



1. Wet hands and arms. Use running warm water.



2. Apply soap. Apply enough to build up a good lather. Follow the manufacturer's recommendations.



3. Scrub hands and arms vigorously for 10 to 15 seconds. Clean fingertips, under fingernails, and between fingers.



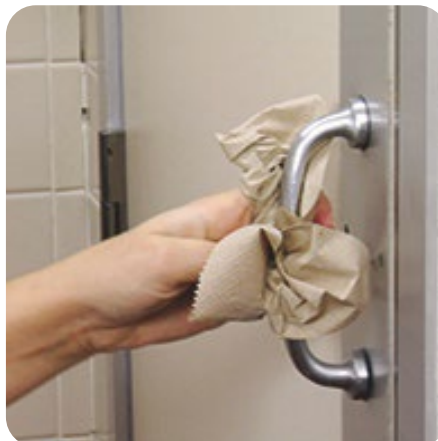
4. Rinse hands and arms thoroughly. Use running warm water.



5. Dry hands and arms. Use a single-use paper towel or hand dryer.

Avoid contaminating clean hands:

- Consider using a paper towel to turn off the faucet and to open the door.



Hepatitis A Scare

Hepatitis A vaccinations were offered to thousands of guests who had visited a local casual dining operation in the Gulf Coast region of the United States. The vaccinations were made available by the local regulatory authority after a food handler at the operation tested positive for hepatitis A, exposing the guests to the virus. The identified food handler was responsible for preparing and setting up items on the salad bar.

The food handler was excluded from work until approved to return by a physician and the regulatory authority. The local regulatory authority also worked with the operation's owners and management team to ensure they had all of the correct processes in place to protect guests and staff.

1. What could have been done to prevent the outbreak?

Food handlers must wash their hands before they start work and after:

- Using the restroom.
- Handling raw meat, poultry and fish.
- Touching the hair, face, or body.
- Sneezing, coughing, or using a tissue.
- Eating, drinking, chewing gum, or using tobacco products (including chewing tobacco, cigarettes, and devices that deliver nicotine electronically, such as e-cigarettes, vapes, and nads).
- Handling chemicals that might affect the safety of food.
- Taking out the garbage.

**Knowledge Check**

1. List at least five situations in which food handlers contaminate food.
2. As it relates to food safety, what is a carrier?

The whole handwashing process should take approximately 15- 20 seconds. Hand antiseptics (sanitizers) must be approved by FDA.

Glove use:

- Gloves can help keep food safe by creating a barrier between hand and food.
- Gloves must never be used in place of handwashing.
- Provide gloves of varying sizes.
- Hands must be washed before putting gloves on and when changing to a new pair.

Food handler should change their gloves:

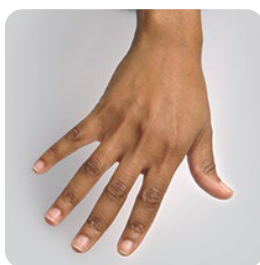
- As soon as they become soiled or torn.
- Before beginning different task.
- At least every four (4) hours during continual use, and more often when necessary.
- After handling raw meat and before handling cooked or ready-to-eat food.

Single-Use Gloves:

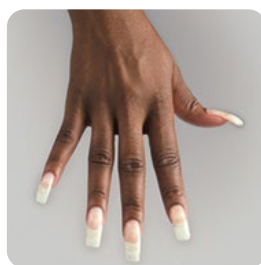
- Wash your hands before putting on gloves when starting a new task. You do not need to rewash your hands each time you change gloves as long as you are performing the same task, and your hands have not become contaminated.
- Gloves that are too big will not stay on. Those that are too small will tear or rip easily.
- When putting on gloves, avoid touching the gloves as much as possible.

Hand Care-Requirements for food handlers:

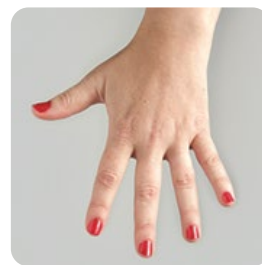
- Long fingernails may be hard to keep clean and can rip gloves. They can also chip and become physical contaminants.
- Fingernails should be kept trimmed and filed. This will allow nails to be cleaned easily. Ragged nails can be hard to keep clean. They may also hold pathogens and break off—becoming physical contaminants.
- Do not wear false fingernails. They can be hard to keep clean. False fingernails also can break off into food. However, false fingernails can be worn if the food handler wears single-use gloves.
- Do not wear nail polish. It can disguise dirt under nails and may flake off into food. However, nail polish can be worn if the food handler wears single-use gloves.



Keep fingernails short and clean.



Do **NOT** wear false nails.



Do **NOT** wear nail polish.

Note: Hand Antiseptics

Hand antiseptics, also called hand sanitizers, are liquids or gels that help lower the number of pathogens on skin. If used, they must comply with the Code of federal regulations (CFR) and food and Drug Administration (FDA) standards. Only use hand antiseptics after handwashing. NEVER use them in place of it. Wait for a hand antiseptic to dry Before you touch food or equipment.

Policies regarding eating, drinking, chewing gum, and tobacco:

- Small droplets of saliva can contain thousands of disease-causing microorganisms.
- Food handlers should eat, drink, chew gum or use tobacco products only in designated area.

Policies for reporting health issues:

- Restrict the food handler from working with or around food if they have a sore throat with a fever.
- Assign staff to other tasks away from food.
- Exclude the food handler from the operation if he or she has vomiting, diarrhea and/or jaundice.
- Exclude the food handler from operation and notify the local regulatory authority if he or she is diagnosed with Hepatitis A, Norovirus, Salmonella Typhi, Shigella, Shiga-toxin-producing E. Coli.

Infected wounds or Cuts:

- Infected wounds, cuts, and boils must be covered if they are open or draining to prevent pathogens from contaminating food and food-contact surfaces.
- How an infected wound or boil is covered depends on where it is located.
- A wound on the arm must be completely covered.

A Good Personal Hygiene Program

Food handlers must not only have the correct knowledge, skills, and attitudes toward personal hygiene but also know how they can contaminate food if they are not careful.

Good personal hygiene can mean different things to different people. It can be slightly different for each person based on their background and personal beliefs. But in a restaurant or foodservice operation, personal hygiene has a very specific meaning. And there are some general guidelines that every employee can and should follow when working in a restaurant operation. Not following good hygiene practices can lead to contamination of food.

To keep food handlers from contaminating food, your operation needs a good personal hygiene program. A good personal hygiene program also helps everyone feel confident in the cleanliness of the business. As a manager, you must make sure this program succeeds.



Do not underestimate your role in a personal hygiene program. You have a responsibility to create the program and make sure it works. Some things to support a Personal hygiene program include:

- Creating personal hygiene policies.
- Training food handlers on those policies and retraining them regularly.
- Modeling the correct behavior at all times.
- Supervising food safety practices at all times.
- Revising personal hygiene policies when laws or science change.

Hand Care

In addition to washing, hands need other care to prevent the spread of pathogens. Make sure food handlers follow the guidelines.

Bare Hand Contact with Ready-to-Eat Food

Food can become contaminated when it has been handled with bare hands. This is especially true when hands have not been washed correctly or have infected cuts or wounds. For this reason, do NOT handle ready-to-eat food with bare hands. And, if you primarily serve a high-risk population, NEVER handle ready-to-eat food with bare hands.

However, there may be exceptions. It may be acceptable to handle ready-to-eat food with bare hands in these situations:

- The food will be added as an ingredient to a dish that does not contain raw meat, seafood, or poultry, but will be cooked to at least 145°F. For example; adding cheese to pizza dough.
- The food will be added as an ingredient to a dish containing raw meat, seafood, or poultry, and the dish will be cooked to the raw items. For example; adding seasonings to raw meat.

Some regulatory authorities allow bare hand contact with ready-to-eat food. If your jurisdiction allows this, you should have specific policies in place about staff health, you must also train staff in handwashing and personal hygiene practices. Check your local regulatory requirements.

This food handler is adding seasonings with bare hands. While the seasonings are ready-to-eat, bare hand contact is allowed because this item will be cooked later.



Ready-to Eat food

Ready-to-Eat food is exactly what it sounds like. It is food that can be eaten without any further prepping, cooking, or washing. When dealing with ready-to-eat food, it is necessary to avoid bare hand contact by wearing gloves or using utensils such as scoops or tongs, items on a salad bar are good examples of ready-to-eat food that require the use of gloves or utensils. Nothing further will be done to the vegetables in the salad bar before they are eaten. When food handlers are prepping these items, they need to wear gloves and use utensils to ensure there is no bare hand contact and no contamination. However, if a food handler is prepping these same vegetables for a soup or stew, then gloves are not necessary. Cooking the vegetables will make the food safe to eat.



The cook is using a proper container with a lid and straw to avoid contamination of food or food contact surfaces.

Personal hygiene can be a touchy subject for some. But because it is so important to food safety, Make sure all staff members do this.

Personal Cleanliness

Pathogens can be found on hair and skin. They have a greater risk of being transferred to food and food equipment if food handlers do not shower or bathe before work. Make sure all staff members do this.

Correct Work Attire

Food Handlers in dirty clothes may give a bad impression of your operation.

More important, dirty clothing may carry pathogens that can cause foodborne-illnesses. These pathogens can be transferred from the clothing to the hands and to the food being prepped. Set up a dress code, and make sure staff follows it. The code should include the guidelines listed on the following page.

These requirements should be included in written policies that are both monitored and enforced. Newly hired staff members who have not started working yet should also be made aware of these policies.

Eating, Drinking, Smoking, and Chewing Gum or Tobacco

Small droplets of saliva can contain thousands of pathogens. Eating, drinking, smoking, or chewing gum or tobacco can transfer saliva to hands or directly to food being handled.

To prevent this, employees should only eat, drink, smoke or chew gum or tobacco in designated areas. Never do these things when:

- Prepping or serving food.
- Working in prep areas.
- Working in areas used to clean utensils and equipment.

Employees can drink from a covered container if they handle the container carefully to prevent contamination of their hands, the container, and exposed food, utensils, and equipment. A properly covered container will include a lid with a straw, or a sip-lid top.

If food must be tasted during prepping, use an approved utensil, and only use that utensil once.

Work Attire Guidelines



Hair restraints

- Wear a clean hat or other hair restraint when in a food-prep area. This can keep hair from falling into food and onto food-contact surfaces.
- Do NOT wear hair accessories that could become physical contaminants. Hair accessories should be limited to items that keep hands out of hair and hair out of food.
- Do NOT wear false eyelashes. They can become physical contaminants.
- Food handlers with facial hair should also wear a beard restraint.

Work Attire Guidelines Continued



Clean clothing

- Wear clean clothing daily.
- Change soiled uniforms, including aprons, as needed to prevent contamination
- If possible, change into work clothes at work.
- Store street clothing and personal belongings in designated areas. This includes items such as backpacks, jackets, electronic devices, key, and personal medications. Make sure these items are stored in a way that does not contaminate food, food-contact surfaces, and linens.
- Keep dirty clothing that is stored in the operation away from food and prep areas. You can do this by placing dirty clothes in nonabsorbent containers or washable laundry bags. This includes dirty aprons, chef coats, and other uniforms.

Aprons

- Remove aprons when leaving prep areas. For example; aprons should be removed and stored before taking out garbage or using the restroom.
- NEVER wipe your hands on your apron.



Jewelry

- Remove jewelry from hands and arms before prepping food or when working around prep areas. Food handlers cannot wear any of the following.
 - Rings, except for a plain band.
 - Bracelets, including medical bracelets.
 - Watches.
- Your company may also require you to remove other types of jewelry. This may include earrings, necklaces, and facial jewelry. These items can fall off and become physical contaminants. Ornate jewelry can be difficult to clean and can hold pathogens. Servers may wear jewelry if allowed by company policy.

Reporting Health Issues

Require staff members to let you know when they are sick. This includes newly hired staff who have not started working yet. Your regulatory authority may ask for proof that you have done this. You can provide it in the following ways.

- Presenting signed statements in which staff has agreed to report illness.
- Providing documentation showing staff has completed training, which includes information on the importance of reporting illness.
- Posting signs or providing pocket cards that remind staff to notify managers when they are sick.

Reporting Illness

Staff must report illnesses before they come to work. They should also let you know immediately if they get sick while working.

When food handlers are ill, you may need to restrict them from working with exposed food, utensils, and equipment. Sometimes, you may even need to exclude sick employees from coming into the operation. This is especially important if they have certain symptoms:

- Vomiting.
- Diarrhea
- Jaundice (a yellowing of the skin or eyes).
- Sore throat with fever.
- Infected wound or boil that is open or draining (unless properly covered).

Staff must also tell you when they have been diagnosed with an illness from one of these pathogens:

- Norovirus
- Hepatitis A
- Shigella spp.
- Shiga-toxin producing E. coli (STEC).
- Salmonella Typhi.
- Nontyphoidal Salmonella.

They must also tell you if they live with someone who has been diagnosed with any of these illnesses, except nontyphoidal Salmonella.

If a food handler is diagnosed with an illness from any of these pathogens, you must report the illness to your regulatory authority.

Watching for Staff Illnesses

As a manager, you should watch food handlers for signs of illness. That could include watching for things like.

- Vomiting
- Excessive trips to the bathroom .
- Yellowing of the skin, eyes, and fingernails).
- Cold sweats or chills (indicating a fever).
- Persistent nasal discharge and sneezing.



This food handler appears to be in distress. The manager should watch staff for signs of illness.

Knowledge Check

1. What are the steps for proper handwashing?
2. A prep cook at a restaurant located in a shopping mall has a sore throat with a fever. What action must the manager take?

Restricting or Excluding Staff for Medical Conditions

How to Handle Medical Conditions

If	Then
The food handler has an infected wound or boil that is not properly.	Restrict the food handler from working with exposed food, utensils, and equipment.
The food handler has a sore throat with a fever.	<p>Restrict the food handler from working with exposed food, utensils, and equipment.</p> <p>Exclude the food handler from the operation if you primarily serve a high-risk population.</p> <p>The food handler can return to the operation and/or work with or around food when he or she has a written release from a medical practitioner.</p>

Restricting or Excluding Staff for Medical Conditions

How to Handle Medical Conditions

If	Then
The food handler has persistent sneezing, coughing, or a runny nose that causes discharge from the eyes, nose, mouth.	Restrict the food handler from working with exposed food, utensils, and equipment.
<p>The food handler has at least one of these symptoms from an infectious condition:</p> <ul style="list-style-type: none"> • Vomiting • Diarrhea • Jaundice (yellow skin or eyes) 	<p>Exclude the food handler from the operation.</p> <p>Vomiting and diarrhea Food handlers must meet one of these requirements before they can return to work:</p> <ul style="list-style-type: none"> • Have had no symptoms for at least 24 hours. • Have a written release from a medical practitioner. <p>Jaundice Food handlers with jaundice must be reported to the regulatory authority. Food handlers who have had jaundice for seven days or less must be excluded from the operation. Food handlers must have a written release from a medical practitioner and approval from the regulatory authority before returning to work.</p>
<p>The food handler is vomiting or has diarrhea and has been diagnosed with an illness caused by one of these pathogen:</p> <ul style="list-style-type: none"> • Norovirus • Shigella spp. • Nontyphoidal Salmonella • Shiga toxin-producing E. coli (STEC) <p>The food handler has been diagnosed with an illness caused by one of these pathogens:</p> <ul style="list-style-type: none"> • Hepatitis A • Salmonella Typhi 	<p>Exclude the food handler from the operation.</p> <p>Report the situation to the regulatory authority.</p> <p>Some food handlers diagnosed with an illness may not experience symptoms, or their symptoms may have ended. Work with the medical practitioner and the local regulatory authority to determine whether the food handlers must be excluded from the operation or restricted from working with exposed food, utensils, and equipment. The medical practitioner and regulatory authority will also determine when the employees can safely return to the operation and/or carry out their regular food handling duties.</p>

REVIEW QUESTIONS

1. What is the main reason for food handlers to avoid scratching their scalps?
 - a. Transferring a food allergen
 - b. Spreading pathogens to the food
 - c. Getting food in their hair
 - d. Causing toxic-metal poisoning
2. A food handler has a wound on their finger. Can the wound cause a foodborne-illness?
 - a. No, because the immune system will stop any infection.
 - b. No, because the finger is less prone to infection than other areas.
 - c. Yes, because all wounds can contaminate food and cause illness.
 - d. Yes, because a wound that contains pathogens can contaminate food.
3. What is a carrier?
 - a. Bacteria that carry dangerous pathogens
 - b. A seafood parasite that attaches itself to fish
 - c. Someone with a compromised immune system
 - d. Someone who carries pathogens without getting sick
4. What is jaundice?
 - a. Reddening of the face
 - b. Swelling of the lips
 - c. Tingling in the face
 - d. Yellowing of the skin
5. When washing hands, what is the minimum time that food handlers should scrub hands and arms with soap?
 - a. 5 seconds
 - b. 8 seconds
 - c. 10 seconds
 - d. 18 seconds
6. What should the temperature of the water be when washing hands?
 - a. Hot
 - b. Cold
 - c. Warm
 - d. Lukewarm

7. A food handler wet his hands with warm water, applied soap and scrubbed them for 15 seconds. Then he rinsed them in warm water and dried them on a cloth side towel. What did he do wrong?
 - a. Wet hands with warm water
 - b. Dried hands on a side towel
 - c. Rinsed hands with warm water
 - d. Scrubbed hands for only 15 seconds
8. Approximately how long should the whole handwashing process take?
 - a. 5 seconds
 - b. 10 seconds
 - c. 5 seconds
 - d. 20 seconds
9. After handling dirty dishes, a server washes their hands in the three-compartment sink. Is this acceptable?
 - a. Yes, hands can be washed in any sink.
 - b. Yes, those sinks are designated for handwashing.
 - c. No, those sinks don't always have handwashing soap.
 - d. No, hands should only be washed in a designated handwashing sink.
10. When should food handlers wash their hands?
 - a. Before starting a new task
 - b. After applying hand antiseptics
 - c. After putting on single-use gloves
 - d. After handling ready-to-eat food
11. After which activity must food handlers wash their hands?
 - a. Clearing tables
 - b. Putting on gloves
 - c. Serving customers
 - d. Applying hand antiseptic
12. What must food handlers do after touching their body or clothing?
 - a. Wash their hands.
 - b. Rinse their gloves.
 - c. Change their aprons.
 - d. Use a hand antiseptic.

13. What is the purpose of a hand antiseptic?
 - a. To sterilize skin surfaces
 - b. To kill all pathogens on the hands
 - c. To reduce pathogens to safe levels
 - d. To reduce the conditions for pathogen growth
14. Hand antiseptics should be used
 - a. before handwashing.
 - b. after handwashing.
 - c. in place of handwashing.
 - d. during handwashing.
15. After washing her hands, a food handler applied a hand sanitizer, rubbed the sanitizer in, and immediately continued chopping vegetables on a cutting board. What did she do wrong?
 - a. She did not let the sanitizer dry.
 - b. She failed to rinse off the sanitizer.
 - c. She should not have washed her hands first.
 - d. She should not have rubbed the sanitizer into her hands.
16. How should food handlers keep their fingernails?
 - a. Short and unpolished
 - b. Long and unpolished
 - c. Long and painted with nail polish
 - d. Short and painted with nail polish
17. Why should food handlers not wear false fingernails?
 - a. They are hard to keep clean.
 - b. They transfer chemicals to food.
 - c. They hold more pathogens than natural nails.
 - d. They become toxic when in contact with sanitizer.
18. What should a food handler do when working with an infected cut on their finger?
 - a. Stay away from food and prep areas.
 - b. Wash hands and cover the cut with a bandage.
 - c. Apply ointment and bandage the cut with an impermeable cover.
 - d. Cover the cut with an impermeable cover and wear a single-use glove.

19. If a food handler has a wound on their arm, they cannot prepare food until they
 - a. apply antibacterial ointment.
 - b. cover the wound with any type of bandage.
 - c. cover the wound with an impermeable cover.
 - d. cover the wound with a dry, durable, tight-fitting bandage.
20. Which food item may be handled with bare hands?
 - a. Sliced cheese for sandwiches
 - b. Boiled egg slices for salad
 - c. Chopped carrots for stew
 - d. Parsley for garnish
21. Which food can be handled with bare hands?
 - a. Baked potatoes
 - b. Cheese for a pizza
 - c. Croutons for a salad
 - d. Salt to season an already cooked dish
22. A cook wore single-use gloves while forming raw ground beef into patties. The cook continued to wear them while slicing hamburger buns. What mistake was made?
 - a. The cook did not wear reusable gloves while handling the raw ground beef and hamburger buns.
 - b. The cook did not clean and sanitize the gloves before handling the hamburger buns.
 - c. The cook did not wash hands before putting on the same gloves to slice the hamburger buns.
 - d. The cook did not wash hands and put on new gloves before slicing the hamburger buns.
23. A food handler who spends an entire shift forming hamburger patties should change gloves
 - a. after 1 hour, because the gloves may quickly build up pathogens.
 - b. every 4 hours during continual use, and more often if needed.
 - c. at the end of the shift.
 - d. every 6 hours, to avoid wasting gloves.
24. Single-use gloves do not need to be worn when
 - a. washing produce.
 - b. applying a garnish to a dish.
 - c. adding spices to already cooked food.
 - d. arranging food on the plate.

25. When using single-use gloves in an operation, a food handler should
 - a. wash and reuse them.
 - b. purchase only latex gloves.
 - c. provide a one-size-fits-all glove.
 - d. provide gloves made from non-latex materials.
26. What should food handlers do after prepping food and before using the restroom?
 - a. Wash their hands.
 - b. Take off their hats.
 - c. Change their gloves.
 - d. Take off their aprons.
27. Where should personal items, like a coat, be stored in the operation?
 - a. On a shelf, above food
 - b. On a shelf, below food
 - c. Away from food
 - d. In the kitchen, away from guests
28. What must always be worn when in a food prep area?
 - a. Apron
 - b. Chef coat
 - c. Side towel
 - d. Hair restraint
29. What is the only jewelry that may be worn on the hands or arms while handling food?
 - a. Plain-band ring
 - b. Medical ID bracelet
 - c. Leather-band watch
 - d. Diamond ring
30. Food handlers must remove jewelry from the
 - a. Hands
 - b. Ears
 - c. Face
 - d. Mouth

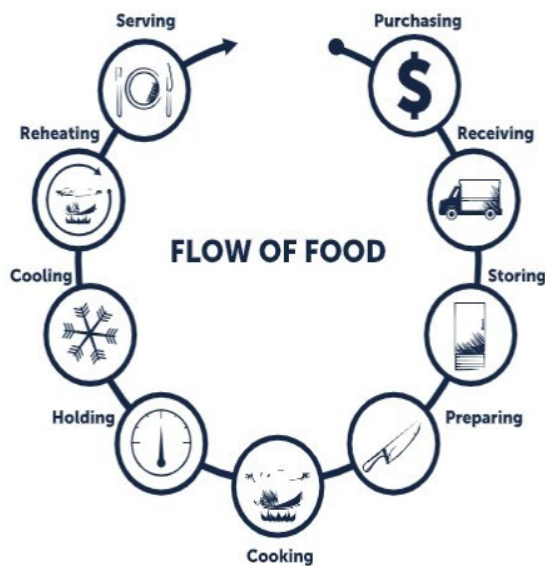
31. Where should staff members eat, drink, smoke, or chew gum?
 - a. Designated areas
 - b. Dishwashing areas
 - c. Outside the kitchen door
 - d. Where customers cannot see them
32. Is it acceptable for a server to eat a bowl of soup in the server station?
 - a. No, never when serving food.
 - b. No, because they are in full view of the public.
 - c. Yes, if they will not contaminate food.
 - d. Yes, if they will not contaminate equipment.
33. Is it acceptable for a cook to drink coffee from a mug while preparing food?
 - a. Yes, if they are not touching food with bare hands.
 - b. Yes, if the coffee cup is placed where it will not spill.
 - c. No, because the coffee cup is an uncovered container.
 - d. No, because there is always a chance the coffee will spill.
34. If food handlers are sick, they must
 - a. stay home.
 - b. tell you about their symptoms.
 - c. call the health department.
 - d. only work for short periods of time.
35. A food handler with a sore throat and a fever should be excluded from working in a day-care center because the children
 - a. will not receive the same level of service.
 - b. could make the food handler sicker.
 - c. are a high-risk population.
 - d. will refuse to eat.

SECTION 5

The Flow of Food: An Introduction

Many things can happen to a product on its path through the establishment, from purchasing and receiving through storing, preparing, cooking, and holding, cooling, reheating, and serving.

This path is known as the **flow of food**.



The step[s] in the flow of food through the operation, which include purchasing, storing, preparing, cooking, holding, cooling, reheating, and serving.

Even people who have never set foot in a commercial kitchen or foodservice operation may have some idea of the path food takes on its way to guests. Food and other items are purchased and delivered to the operation and then stored until it's time for use. Items are prepped in the kitchen. Vegetables are chopped, meat is trimmed, sandwiches are assembled, and so forth. Many items will be cooked, and in some cases will be hot held for later service. These are the things you might see on a steam table in a restaurant.

After cooking, other items may be cooled and stored. This includes food like cold, grilled chicken to be used later for salads. And some items will be pulled from the cooler or freezer and reheated for service. Of course, all finished items will be plated or bagged and served to guests. There are many steps, and all along the way there are opportunities for food to become unsafe. Guests may notice obvious problems, such as food at the wrong temperature or a cook with a filthy apron. But you need to be aware of much more.

You are responsible for the safety of the food at every point in this flow, and many things can happen to it. For example; a frozen food might be safe when it leaves the processor's plant. However, on the way to the supplier's warehouse, the food might thaw. Once in your operation, the food might not be stored correctly, or it might not be cooked to the correct internal temperature. These mistakes can add up and cause a foodborne-illness. That is why it's important to understand how to prevent the time-temperature abuse and cross-contamination.

Cross-Contamination

Cross-contamination is a major hazard in the flow of food. Pathogens can be spread from food or unwashed hands to prep tables, utensils, equipment, or other food. Cross-contamination can occur at almost any point within the flow of food. When you know how and where it can happen, it is fairly easy to prevent. The most basic way is to keep raw and ready-to-eat food away from each other.

Guidelines for Preventing Cross-Contamination between Food



Guidelines for Preventing Cross-Contamination between Food

Each type of food should have separate equipment. For example; use one set of cutting board, utensils, and containers for raw poultry. Use another set for raw meat. Use a third set for produce.

Colored cutting boards and utensil handles can help keep equipment separate. The color tells food handlers which equipment to use with each food item. You might use yellow for raw chicken, red for raw meat, and green for produce.



Clean and sanitize before and after tasks

Clean and sanitize all work surfaces, equipment, and utensils after each task. When you cut up raw chicken, For example; you cannot get by with just rinsing the equipment. Pathogens such as nontyphoidal Salmonella can contaminate food through cross-contamination. To prevent this, you must wash, rinse, and sanitize equipment.

Guidelines for Preventing Cross-Contamination between Food



Prep raw and ready-to-eat food at different times

If you need to use the same prep table for different types of food, prep raw meat, fish, and poultry at a different time than ready-to-eat. You must clean and sanitize work surfaces and utensils between each type of food. Also, if you prep ready-to-eat food before raw food, you can reduce the chance for cross-contamination.

Separate raw meat, poultry, and seafood from unwashed and ready-to-eat fruits and vegetables. Do this during storage, preparation, holding and display to prevent cross-contamination



Buy prepared food

Buy food that does not require much prepping or handling. For example; you could buy precooked chicken breasts or chopped lettuce.

Preventing Cross-Contamination

- A major hazard in the flow of food is cross-contamination, which is the transfer of microorganisms from one food or surface to another.
- They can be transferred from food or unwashed hands to prep tables, equipment, utensils, cutting boards, or other food.
- Some ways to prevent cross-contamination are:
 - ✓ Assign specific equipment to each type of food product.
 - ✓ Clean and sanitize all work surfaces, equipment, and utensils after each task.
 - ✓ When using the same prep table, prepare raw meat, fish, and poultry and ready-to-eat food at different times.
 - ✓ Do not handle food with bare hands- use clean gloves.

Time and Temperature

- One of the biggest factors responsible for foodborne-illness outbreaks is time-temperature abuse.
- Foodborne microorganisms grow at temperatures between 41°F to 135°F, which is why this range is known as the temperature danger zone.
- Potentially hazardous food (TCS) can be time-temperature abused as it flows through the establishment. This can occur when it is not:
 - ✓ Cooked to the required minimum internal temperature-check the recipe for cooking temperature.
 - ✓ Cooled properly. Cool hot food from 135°F to 70°F within two (2) hours and from 70°F to 41°F in additional four (4) hours.
 - ✓ Reheated properly. Reheat all food to 165°F.
 - ✓ Held at the proper temperature. Hold hot food to 135°F or higher. Hold cold food to 41°F or lower.

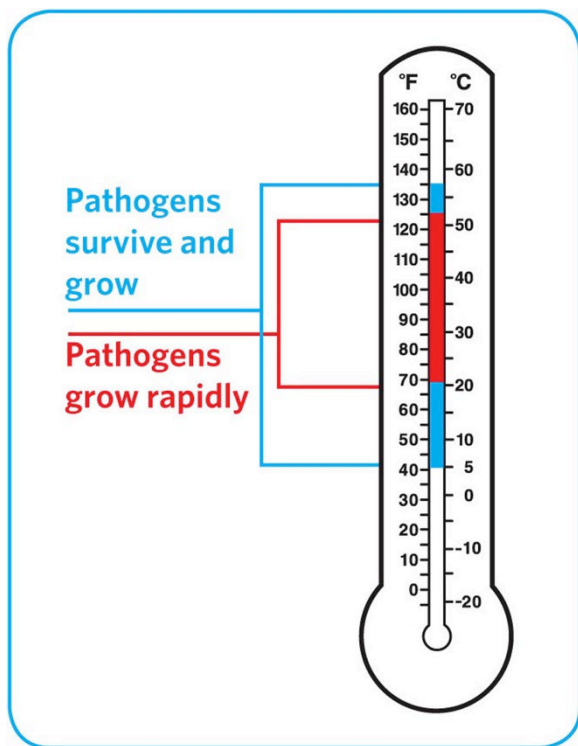
Preventing Time-Temperature abuse

- The best way to avoid time-temperature abuse is to establish procedures employees must follow and then monitor them. Make time-temperature control part of every employee's job. To be successful, you should:
 - ✓ Determine the best way to monitor time and temperature in the establishment.
 - ✓ Ensure the establishment has the right kind of thermometers available.
 - ✓ Ensure employees regularly record food temperatures and the times they are taken.
 - ✓ Develop a set of corrective actions.

Monitoring Time and Temperature

- To manage both time and temperature, you need to monitor and control them.
- The thermometer may be the single most important tool you have to protect your food.





This thermometer displays the temperature danger zone, showing that pathogens survive and grow between 41°F and 135°F, but grow more rapidly between 70°F and 125°F

Time-Temperature Control

Time-Temperature abuse is another major hazard in the flow of food. Remember, TCS food has been time-temperature abused any time it remains between 41°F and 135°F. This is called the temperature danger zone because pathogens grow in this range. They grow especially fast between 70°F and 125°F.

Food is being time-temperature abused whenever it is handled in the following ways:

- It is cooked to the wrong minimum internal temperature.
- It is held at the wrong temperature.
- It is cooled or reheated incorrectly.

Time also plays a critical role. The longer food stays in the temperature danger zone, the more time pathogens have to grow. To keep food safe, you must reduce the time food spends in this temperature range. TCS food must be thrown out if it stays in the temperature danger zone for four hours or more. Food handlers should avoid time-temperature abuse by following good policies and procedures, as seen in the table.

Knowledge Check

1. Outline five guidelines for preventing cross-contamination of food.
2. What are the steps for proper handwashing?
3. A prep cook at a restaurant located in a shopping mall has a sore throat with a fever. What action must the manager take?
4. What are all of the steps that an item can take in the flow of food? Place them in any order.

Avoiding Time-Temperature Abuse



Monitoring

Learn which food items should be checked, how often, and by whom. Make sure food handlers understand what to do, how to do it , and why it is important.



Tools

Make sure the correct kinds of thermometers are available, Give food handlers their own thermometers, Have them use timers in prep areas to check how long food is in the temperature danger zone.



Recording

Have food handlers record temperatures regularly. Make sure they write down when the temperatures were taken. Print simple forms for recording this information. Post them on clipboards outside of coolers and freezers, near prep areas. And next to cooking and holding equipment



Time and temperature control

Have procedures to limit the time TCS food spends in the temperature danger zone. This might include limiting the amount of food that can be removed from a cooler when prepping the food.



Corrective actions

Make sure food handlers know what to do when time and temperature standards are not met. For example; if you hold soup on a steam table and its temperature falls below 135°F after two hours, you might reheat it to the correct temperature or throw it out.

Monitoring Time and Temperature

Time and temperature are extremely important controls for keeping food safe. When considering managing time and temperature for safety, many people will think immediately of cooks and chefs. After all, they are responsible for collecting food from storage and cooking it. The truth is everyone involved in food, at every step of the way, has a hand in keeping food out of the temperature danger zone. A restaurant owner-operator selecting vendors and lending a hand in the operation must understand this. And so must a hotel manager whose property might offer breakfast to guests. A registered dietitian consulting with a care facility needs to know this. And so does a procurement manager planning food deliveries to a retail or restaurant operation. Every person who works professionally with food can and will have an impact.

To keep food safe, you must control the amount of time it spends in the temperature danger zone. This requires monitoring food temperatures. The most important tool you have is the thermometer. There are many types of thermometers. Three types are commonly used in foodservice operations:

- Bimetallic stemmed thermometers
- Thermocouples
- Thermistors

Bimetallic Stemmed Thermometers

A **bimetallic stemmed Thermometer** checks temperatures from 0°F to 220°F. This makes it useful for checking temperatures during the flow of food. For example; you can use it to check food temperatures both during receiving and in a hot-or cold-holding unit.



A bimetallic stemmed thermometer measures temperatures through a metal stem. When checking temperatures, insert the stem into the food up to the dimple. You must do this because the sensing area goes from the tip of the stem to the dimple. This trait makes the thermometer useful for checking the temperature of large or thick food. It is usually not practical for this food. Such as hamburger patties.

If you purchase bimetallic stemmed thermometers for your operation, make sure they have the following features.

Calibration nut. You can make the thermometer accurate by adjusting its calibration nut.

Easy-to-read markings. Clear markings reduce the chance that someone will misread the thermometer. The thermometer must be scaled in at least two-degree increments.

Dimple. The dimple is the mark on the stem that shows the end of the temperature-sensing area.

Thermocouples and Thermistors

Thermocouples and thermistors are also common types of thermometers in foodservice operations. These tools are similar. The difference between them is the technology inside.

Thermocouples and thermistors measure temperatures through a metal probe. Temperatures are displayed digitally. The sensing area on thermocouples and thermistors is on the tip of their probe. This means you do not have to insert them into the food as far as bimetallic stemmed thermometers to get a correct reading. Thermocouples and thermistors are good for checking the temperature of both thick and thin food.

Thermocouples and thermistors are available in multiple sizes and styles. Many come with different types of probes, shown in the Table on the following page.



This food handler is calibrating a thermocouple thermometer by placing the tip of the probe in a container of ice water.



Infrared thermometers can be used to check surface temperatures.



Time-temperature indicators show when food has been time-temperature abused during shipment or storage.

Types of Probes



Immersion Probes

Use these to check the temperature of liquids. This could include soups, sauces, and frying oil.



Surface Probes

Use these to check the temperature of flat cooking equipment. Such as griddles.



Penetration probes

Use these to check the internal temperature of food. They are especially useful for checking



Air probes

Use these to check the internal temperature inside coolers and ovens. They are especially useful for checking

Common Thermometers

Bimetallic stemmed thermometers

- Can check temperature from 0°F to 220°F, must be accurate within $\pm 2^\circ\text{F}$.
- A Bimetallic stemmed thermometer measures temperature through its metal stem.
- When checking temperatures, insert the thermometer stem into food up to the dimple.
- Bimetallic thermometers are designed to take hot and cold food temperatures.

Infrared

Infrared thermometers measure the temperature of food and equipment surfaces.

- Infrared thermometers can reduce the risk of cross-contamination and damage to food products because they do not require contact with food.
- They should not be used to measure air temperature or the internal temperature of food.

Thermocouples and Thermistors

- They measure temperature through a metal probe or sensing area and display results on a digital readout.
- Are designed to take the temperature of equipment and food.

Immersion, surface, and penetration probe thermometers

- Immersion probes are designed to measure the temperature of liquids, such as; soups, sauces, or frying oil.
- Surface probes measure temperature of flat cooking equipment like griddles.
- Penetration probes are used to measure the internal temperature of food.

Time-Temperature Indicators (TTI)

- The time-temperature indicator is a self-adhesive tag that is attached to the food shipment to determine if the temperature has exceeded safe limits during shipment or later storage.

How to Calibrate Thermometers

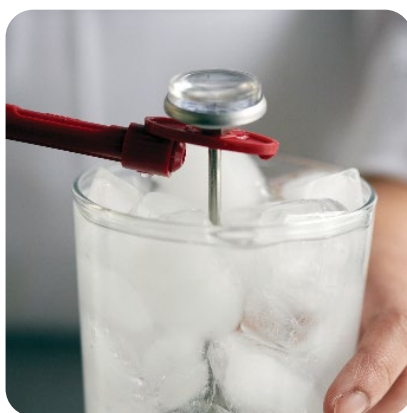
Thermometers can lose their accuracy when they are bumped or dropped. It can also happen when they go through a severe temperature change. When this happens, the thermometer needs **calibration**, or an adjustment, to give a correct reading. Thermometers that cannot be calibrated should be replaced. Always follow the manufacturer's directions.

There are two ways to calibrate a thermometer:

- The Boiling-point method involves adjusting the thermometer to the temperature at which water boils (212°F depending on your elevation).
- The ice-point method involves adjusting the thermometer to the temperature at which water freezes (32°F).



1. Fill a large container with ice. Use crushed ice if you have it. Add tap water until the container is full (50/50 %).
Note: Stir the mixture well.



2. Put the thermometer stem or probe into the ice water. Make sure the sensing area is submerged.
Wait 30 seconds or until the indicator stops moving.
Note: Do not let the stem or probe touch the container.



3. Adjust the thermometer so it reads 32°.

Notes:

- To calibrate a bimetallic stemmed thermometer, adjust it by holding the calibration nut.
- To calibrate a thermocouple or thermistor, follow the manufacturer's directions.

General Thermometer Guidelines

You should know how to use and care for each type of thermometer in your operation. You can follow the general guidelines below. However, you should always follow manufacturers' directions.

Cleaning and sanitizing. Thermometers must be washed, rinsed, sanitized, and airdried. Keep storage cases clean as well. Do these things before and after using thermometers to prevent cross-contamination. Be sure the sanitizing solution you are using is for food-contact surfaces. Always have plenty of clean and sanitized thermometers on hand.

Calibration. Thermometers can lose their accuracy. Make sure your thermometers are accurate by calibration them regularly, calibrate thermometers at these times:

- After they have been bumped or dropped.
- After they have been exposed to extreme temperature changes.
- Before deliveries arrive.
- Before each shift.

Keep in mind that some thermometers cannot be calibrated and must be replaced or sent back to the manufacturer for calibration. Always follow the manufacturer's directions regarding calibration.

Glass thermometers. Glass thermometers, such as candy thermometers, can be a physical contaminant if they break. They can only be used when enclosed in a shatterproof casing.

How to check food temperatures

When checking the temperature of food, insert the probe into the thickest part of the food. This is usually in the center. Also take another reading in a different spot. The temperature may vary in different areas. Here are some examples of how to take food temperatures:

- Plastic thick package – Insert thermometer between two packages.
- Meat, poultry and fish – Insert clean calibrated thermometer in the thickest part of the food.
- Soft package – Fold package in half and insert thermometer in the middle without puncturing the package.
- Carton – Open the carton and insert thermometer.

Thick packaged



Carton liquid



Meat, poultry, fish



**Liquids soft package
(pouches)**



REVIEW QUESTIONS

1. Using one set of cutting boards for raw poultry and another set of cutting boards for ready-to-eat food reduces the risk of
 - a. cross-contamination.
 - b. time-temperature abuse.
 - c. physical contamination.
 - d. toxic-metal poisoning.
2. What is the purpose of color-coded equipment?
 - a. It indicates the level of risk for each product.
 - b. It helps keep equipment separate.
 - c. It indicates the cooking temperature of each product.
 - d. It provides a visual cue for the preparation order of products.
3. How can the risk of cross-contamination be reduced when prepping different types of food on the same prep table?
 - a. Prep raw and ready-to-eat food at the same time.
 - b. Prep raw and ready-to-eat food at different times.
 - c. Prep ready-to-eat food after raw food.
 - d. Clean and sanitize the table after you are done using it.
4. An operation has decided to purchase cut lettuce for salads rather than cutting the lettuce themselves. What is the benefit of doing this?
 - a. To prevent temperature abuse
 - b. To prevent cross-contamination
 - c. To reduce the cost of a salad
 - d. To reduce the focus on proper personal hygiene
5. What must be done after completing each prep task to reduce the risk of cross-contamination?
 - a. Food must be put away as quickly as possible.
 - b. Aprons must be replaced with clean ones.
 - c. Surfaces must be cleaned and sanitized.
 - d. Food temperatures must be checked with a clean thermometer.

6. What is the temperature range of the Temperature Danger Zone?
 - a. 0°F to 32°F (-18°C to 0°C)
 - b. 32°F to 120°F (0°C to 49°C)
 - c. 41°F to 135°F (5°C to 57°C)
 - d. 60°F to 150°F (16°C to 66°C)
7. Pathogens grow most rapidly at temperatures between
 - a. 41°F and 45°F (5°C to 7°C).
 - b. 45°F and 60°F (7°C to 16°C).
 - c. 70°F and 125°F (21°C to 52°C).
 - d. 120°F and 135°F (49°C to 57°C).
8. Pathogens are likely to grow well in a meat stew that is
 - a. below freezing temperature.
 - b. at refrigeration temperatures.
 - c. between 41°F and 135°F (5°C and 57°C).
 - d. cooked to the correct internal temperature.
9. Food is being temperature abused when it is
 - a. held at the wrong temperature.
 - b. taken out of the cooler.
 - c. reheated rapidly.
 - d. cooked to a higher temperature than required.
10. Food must be thrown out after remaining in the temperature danger zone for
 - a. 1 hour.
 - b. 2 hours.
 - c. 3 hours.
 - d. 4 hours.
11. Which action can help prevent time-temperature abuse?
 - a. Regularly recording temperatures
 - b. Performing self-inspections
 - c. Proper cleaning and sanitizing
 - d. Purchasing from approved suppliers

12. Limiting the amount of food that can be removed from a cooler when prepping it can help prevent
 - a. cross-contamination.
 - b. cross-contact.
 - c. time-temperature abuse.
 - d. thermal energy transfer.
13. Which thermocouple probe should be used to check the temperature of a pork roast?
 - a. Air
 - b. Surface
 - c. Immersion
 - d. Penetration
14. What do time-temperature indicators do?
 - a. Measure temperature through a probe with a sensor at the end
 - b. Measure the length of time that food should be cooked
 - c. Show if food has been cross-contaminated during preparation
 - d. Show if food has been time-temperature abused during shipment
15. Which temperature measuring device is designed for measuring surface temperatures?
 - a. Infrared Thermometer
 - b. Time-Temperature Indicator
 - c. Thermistor
 - d. Bimetallic Stemmed Thermometer
16. An infrared thermometer must
 - a. be held close to the food.
 - b. touch the surface of the food.
 - c. be used to take readings through metal.
 - d. be used when taking air temperatures.
17. Which thermocouple probe would be used to check the temperature of a grill?
 - a. Air
 - b. Surface
 - c. Immersion
 - d. Penetration

18. Which thermocouple probe would be used to check the temperature of a pot of soup?
 - a. Air
 - b. Surface
 - c. Immersion
 - d. Penetration
19. When using the ice-point technique to calibrate a thermometer, to what temperature should the thermometer be adjusted?
 - a. 0°F (-18°C)
 - b. 32°F (0°C)
 - c. 41°F (5°C)
 - d. 212°F (100°C)
20. What is the calibration nut on a bimetallic stemmed thermometer used for?
 - a. Keeping it accurate
 - b. Marking its sensing area
 - c. Measuring air temperature
 - d. Measuring temperatures through glass
21. When calibrating a thermometer by placing it in boiling water, what temperature should it be adjusted to if the location is at sea level?
 - a. 110°F (43°C)
 - b. 165°F (74°C)
 - c. 180°F (82°C)
 - d. 212°F (100°C)
22. When checking the internal temperature of food, where should the thermometer be inserted?
 - a. In the thinnest part of the food
 - b. In the thickest part of the food
 - c. On the bottom of the food
 - d. On the top of the food
23. Thermometers that measure the temperature of food must be accurate to
 - a. +/- 1°F or +/- 0°C.
 - b. +/- 2°F or +/- 1°C.
 - c. +/- 3°F or +/- 2°C.
 - d. +/- 4°F or +/- 3°C.

24. When should thermometers be calibrated?
 - a. before use
 - b. after use
 - c. during use
 - d. before and after use
25. How long does it take a bimetallic stemmed thermometer's reading to steady after it is inserted into food?
 - a. 5 seconds
 - b. 10 seconds
 - c. 15 seconds
 - d. 30 seconds
26. Which action can help prevent time-temperature abuse?
 - a. Hold hot items on a steam table whenever possible.
 - b. Give each food handler their own thermometer.
 - c. Avoid opening the walk-in coolers to keep a stable temperature.
 - d. Reheat food that has spent more than an hour in the temperature danger zone
27. How far into the food should you insert the stem of a bimetallic stemmed thermometer to get an accurate reading?
 - a. Up to the dimple
 - b. Up to the tip of the probe
 - c. Up to the calibration nut
 - d. Up to the indicator head
28. Which is an example of corrective action for time-temperature abuse?
 - a. A food handler checks and records the temperature of hot-held food every hour.
 - b. A manager trains food handlers to calibrate different thermometers.
 - c. A stockpot of soup has been left on a prep table overnight, so a food handler throws it away.
 - d. A restaurant requires suppliers to place temperature-recording devices in their delivery trucks.
29. What's the most basic way a food handler can prevent cross-contamination?
 - a. Monitor and log all food deliveries.
 - b. Clean and sanitize every piece of equipment at the start of each shift.
 - c. Keep raw and ready-to-eat food away from each other.
 - d. Designate separate prep tables for specific types of food.

30. A food handler has been tasked with marinating raw chicken and chopping kale for a salad. If the food handler has access to only one prep table, what should they do to prevent cross-contamination?
- a. Prep the chicken before prepping the kale.
 - b. Prep the chicken and kale at the same time but hold separately until service.
 - c. Wash and dry equipment in between prepping each item.
 - d. Use separate equipment for each item.

SECTIONS 6

The Flow of Food: Purchasing and Receiving

Purchasing for an operation can be a tricky, but important, task. It might be done by one person who is dedicated to purchasing, such as a purchasing manager. Or, it might be done by the executive chef, food and beverage manager. In a larger operation, purchasing may be done through a procurement department.

Food and other products can come from a variety of sources. Broadline suppliers carry nearly everything an operation needs, from paper goods and chemicals to food and equipment.

Specialty vendors tend to focus on a comprehensive selection of a particular product. Specialized seafood or cheese vendors are examples. And, of course, there are local sources featuring locally produced food. Many operations use a mixture of all three. For whoever performs the function, and whichever type of supplier is chosen, food safety should always be first priority.

The final responsibility for safety of food entering your operation resides with you. You can avoid many potential food safety hazards by using approved, reputable suppliers. Consider the following when making your selection.



This restaurant manager is touring a supplier's Facility.

Approved, reputable suppliers. Food must be purchased from approved suppliers.

These suppliers have been inspected and can show you an inspection report.

Approved suppliers also meet applicable local, state, and federal laws. These standards apply to all suppliers in the food chain, which can include growers, shippers, packers, manufacturers, distributors (trucking fleets and warehouses), and local markets. Develop relationships with all of your suppliers and verify that they have good food safety practices.

Many operations establish supplier lists based on their company specifications, standards, and procedures. However, only approved reputable suppliers should be included on these lists.

Inspection reports. Consider reviewing suppliers' most recent inspection reports. These can be from the U.S. Department of agriculture (USDA), the Food and Drug Administration (FDA), or a third-party inspector. They should be based on Good Manufacturing Practices (GMP) or Good Agricultural Practices (GAP).

GMPs are the FDA's minimum sanitation and processing requirements for producing safe food. They describe the methods, equipment, facilities, and controls used to process food. Both suppliers and their sources are subject to GMP inspections.

Make sure an inspection report reviews the following areas:

- Receiving and storage.
- Processing
- Shipping
- Cleaning and sanitizing.
- Personal hygiene.
- Staff training.
- Staff training.
- Recall program.
- HACCP (hazard analysis critical control point) program or other food safety system.

Knowledge Check

1. What is one way you can avoid food safety hazards when purchasing food?
2. What are some items that should be reviewed on a supplier inspection report?

Receiving Considerations

Receiving food is a critical step in the flow of food process with more to it than simply putting the items away. After food has been purchased from a reputable supplier, it is very important that it is received in the correct manner. Following proper receiving steps can ensure the food being received is not only what was ordered, but that it has arrived safely. Contamination, whether biological, chemical, or physical, is a factor that can make food unsafe. Another factor that could affect food safety is poor temperature control. Food items may even be damaged in transit, resulting in leaking packages or dented cans. As food is received, it must be checked to ensure the safety of the products. And everyone who may perform this task needs to receive training on how to accept or reject food as it arrives. Failing to check food could be a costly mistake for any foodservice operation. Guests can become severely ill if unsafe food is served, not to mention the additional expenses from accepting contaminated or poor-quality food that must then be thrown away and purchased again. ⁹¹



A food handler has received a food delivery of produce and is inspection bananas to ensure they are safe and of acceptable quality.

PURCHASING and RECEIVING

Having procedures in place for inspecting food can reduce hazards before they enter your operation. Here are some guidelines that can help you improve the way you receive deliveries.

Scheduling. Suppliers should deliver food when staff has enough time to inspect it. Schedule deliveries at a time when they can be received correctly.

Staff needs. Make specific staff responsible for receiving. Train them to follow food safety procedures, including checking items for correct temperatures, expired code dates, signs of thawing and refreezing, and pest damage. Staff should be able to accept, reject, and sign for deliveries. Also, provide them with the tools they need, including purchase orders, temperature logs, thermometers, and scales. Then make sure that enough trained staff is available to receive and inspect food promptly.

Good preparation. Plan ahead for deliveries. Have clean hand trucks, carts, dollies, and containers ready. Also make sure there is enough space in dry storage and walk-in areas for deliveries.

Timing and process for inspections. Deliveries must be inspected immediately upon receipt.

The process starts with a visual inspection of the delivery truck. Check it for signs of contamination. Inspect the vehicle. Look for signs of pests. If there are signs of problems, reject the delivery.

Continue with a visual inspection of food items. Look at each delivery right away to count quantities, check for damaged food, and look for items that might have been repacked or mishandled. Spot-check weights and take sample temperatures of all TCS food. Inspect and store each delivery before accepting another one. This will prevent temperature abuse in the receiving area.

Knowledge Check

1. What is one way you can avoid food safety hazards when purchasing food?
2. What are some items that should be reviewed on a supplier inspection report?

Key Drop Deliveries

Some foodservice operations receive food after-hours, when they are closed for business. This is often referred to as a **key drop delivery**. The supplier is given a key or other access to the operation to make the delivery. Products are then placed in coolers, freezers, and dry-storage areas. The delivery must be inspected once you arrive at the operation and must meet the following conditions:

- It is from an approved supplier.
- It was placed in the correct storage location to maintain the required temperature and was protected from contamination.
- It has not been contaminated.
- It is honestly presented.

Rejecting Deliveries

You can refuse any delivery that does not meet your standards. Staff members should know how to reject an item or a shipment.

1. Set the rejected item aside from the items you are accepting.
2. Tell the delivery person exactly what is wrong with the item. Use your purchase order or invoice to support your decision.
3. Get a signed adjustment or credit slip from the delivery person before giving the item back to the delivery person.
4. Log the incident on the invoice or receiving document. Be specific about the action taken and the item involved.

Occasionally you may be able to recondition and use items that would have been rejected. For example; a shipment of cans with contaminated surfaces may be cleaned and sanitized, allowing them to be used. However, the same cans may not be reconditioned if they are damaged.

Recalls

Food items you have received may sometimes be recalled by the manufacturer. This may happen when food contamination is confirmed or suspected. It can also occur when items have been mislabeled or misbranded. Often food is recalled when food allergens have not been identified on the label. Most vendors will notify you of the recall. However, you should also monitor recall notifications made by the FDA and the USDA.



This box has “DO NOT USE” AND “DO NOT DISCARD” labels because the items inside have been recalled.

Follow these guidelines when notified of a recall:

- Identify the recalled food items by matching information from the recall notice to the item. This may include the manufacturer’s ID. The time the item was manufactured, and the item’s use-by date.
- Remove the item from inventory and place it in a secure and appropriate location. That may be a cooler or dry-storage area. The recalled item must be stored separately from food, utensils, equipment, linens, and single-use items.
- Label the item in a way that will prevent it from being placed back in inventory. Some operations do this by including a “Do Not Use” and “Do Not Discard” label on recalled food items. Inform staff not to use the product.
- Refer to the vendor’s notification or recall notice for what to do with the item. For example; you might be instructed to throw it out or return it to the vendor.

General Inspection Guidelines

When inspecting deliveries, focus on checking product temperatures, packaging, documentation, and the quality of the food. These can provide important evidence as to whether or not the food is safe. When checking product temperatures, using the correct type of thermometer ensure you are getting the best reading. Packaging is also very important. Check that all items are properly packaged and show no signs of contamination, damage, or tampering. Examples include cans that are severely dented at the seams and packages that are leaking or have stains. Some items have special documentation requirements, such as shellstock identification tags. And, of course, consider the quality of the food. Appearance, texture, and odor are a few ways that will help tell if food has been time-temperature abused. If so, reject the food -it may be unsafe.

Checking Temperatures

Use thermometers to check food temperatures. The following examples explain how to check the temperatures of various types of food.



Meat, poultry, and fish

Insert the thermometer stem or probe directly into the thickest part of the food. The center is usually the thickest part.



Reduced oxygen packaging (ROP), modified atmosphere packaging (MAP), vacuum-packed, and sous vide food

Insert the thermometer stem or probe between two packages. If the package allows, fold it around the thermometer stem or probe. Be careful NOT to puncture the package.



Other packaged food

Open the package and insert the thermometer stem or probe into the food. The sensing area must be fully immersed in the food.

Receiving Criteria for Food Deliveries







Cold TCS food:

Receive at 41°F (5°C) or lower, unless otherwise specified.

Checking Temperatures

Use thermometers to check food temperatures. The following examples explain how to check the temperatures of various types of food.

Receiving Criteria for Food Deliveries	
	<p>Shellstock-live molluscan shellfish (oysters, mussels, clams, and scallops): Receive at an air temperature of 45°F and an internal temperature no greater than 50°F. Cooled to 41°F or lower in four hours.</p> <p>In-shell product-non-living, processes shellfish with one or both shells present: Receive according to manufacturer's directions.</p>
	<p>Shucked shellfish-molluscan shellfish with both shells removed:</p> <p>Receive at 45°F or lower.</p> <p>Cool the shellfish to 41°F or lower in four hours.</p>
	<p>Milk</p> <p>Receive at an air temperature 45° F or lower.</p> <p>Cool the milk to 41° F or lower in four hours.</p>
	<p>Shell eggs</p> <p>Receive at an air temperature 45° F or lower.</p>
	<p>Hot food</p> <p>Receive at 135° F or higher.</p>
	<p>Frozen food</p> <p>Frozen food should be frozen solid when received.</p> <p>Reject frozen food for the following reasons:</p> <p>Receive at 135° F or higher..</p> <ul style="list-style-type: none"> Fluids or water stains in case bottoms or on packaging. Ice crystals or frozen liquids on the food or packaging.

Packaging

Both food items and nonfood items, such as single-use cups, utensils, and napkins, must be packaged correctly when you receive them. Items should be delivered in their original packaging with a manufacturer's label. The packaging should be intact and clean, it should protect food and food-contact surfaces from contamination.

Reject it and with tears, holes, or punctures in their packaging. Likewise, reject cans if they have any of these problems.

Damage. Reject items with tears, holes, or punctures in their packaging. Likewise, reject cans if they have any of these problems:

- Severe dents in the can seams.
- Deep dents in the can body.
- Missing labels.
- Swollen or bulging ends.
- Holes and visible signs of leaking.
- Rust.

All food packaged in a reduced-oxygen environment, such as vacuum-packed meat, must be rejected if the packaging is bloated or leaking. Items with broken cartons or seals, or with dirty or discolored packaging, should also be rejected. Do NOT accept cases or packages that appear to have been tampered with.

Liquid. Reject items with leaks, dampness, or water stains (which indicate the item was wet at some point). Reject items if there are large ice crystals or frozen liquids on the packaging. This may be evidence of thawing and refreezing, which shows the food has been tampered with.

Pests. Reject items with signs of pests or pest damage.

Dates. Food must be correctly labeled. Do NOT accept food that is missing a **Use-by date** or **expiration date** from the manufacturer. This date is the recommended last date for the product to be at peak quality. Reject items that have passed their use-by date the item was received to help with stock rotation during storage.

You may see other dates on labels. A **sell-by date** tells the store how long to display the product for sale. A **best-by date** is the date by which the product should be eaten for best flavor or quality.



This large can of food should be rejected because it has a severe dent in the top seam.



This vacuum-packed package of meat is leaking



This bag of flour has a water stain indicating it was wet at some point. This item should be rejected.

Documents and Stamps

Food items must be delivered with the correct documents. For example; molluscan shellfish must be received with a **shellstock identification tag or label**. These tags indicate when and where the shellfish were harvested. They also ensure that the shellfish are from an approved source.

CEDAR KEY SEAFOOD DISTRIBUTORS, INC.	
P.O. Box 979, Cedar Key, FL 32625	
PERISHABLE KEEP REFRIGERATED	Phone: (352) 543-6000 Fax: (352) 543-6642 Wholesale # WD-6672 Cert. # FL-1435-SS
ORIGINAL SHIPPER'S CERT. No. IF OTHER THAN ABOVE:	
HARVEST DATE:	10/7/2014
HARVEST LOCATION:	FL3012 "PRODUCT OF USA" FARM RAISED
TYPE OF SHELLFISH:	PASTA CLAMS
QUANTITY OF SHELLFISH:	5# UNIT
SELL BY:	CA 398 SS
THIS TAG IS REQUIRED TO BE ATTACHED UNTIL CONTAINER IS EMPTY OR IS RETAGGED AND THEREAFTER KEPT ON FILE FOR 90 DAYS.	

This shellstock tag indicates where this shipment of Pasta Clams came from.

Store molluscan shellfish (live, shucked, or in-shell product) in their original container. Do NOT remove the shellstock tag or label from the container until the last shellfish has been used. When the last shellfish is removed from the container, write the date on the shell stock tag label, or invoice. Then, keep it on file, in chronological order, for 90 days from that date.

Shellfish should remain in the container they were received in until sold or prepared for service. Shellfish from one container should not be mixed with shellfish

from another container unless they have the same certification number or harvest date or are from the same growing area.

Fish that will be eaten raw or partially cooked must also be received with the correct documentation. These documents must indicate the fish was correctly frozen before you received it keep these documents for 90 days from the sale of the fish. If the fish was farm raised, it must have documentation that states the fish was raised to FDA standards. These documents must also be kept for 90 days from the sale of the fish.

Inspection and Grading Stamps

Meat must be purchased from plants inspected by the USDA or a state department of agriculture. Note that "inspected" does not mean that the product and the processing plant have met defined standards.

Carcasses and packages of meat that have been inspected will have an **inspection stamp** with abbreviations for "inspected and passed" by the inspecting agency, along with a number identifying the processing plant.

Poultry is inspected by the USDA or the state department of agriculture in much the same way as meat.

Liquid, frozen, and dehydrated eggs must also have a USDA inspection mark. These types of eggs are required by law to be pasteurized.

Note that grading stamps might also appear on packages of eggs, meat and poultry. Grading of these types of products is voluntary and paid for by processors and packers.



A USDA inspection stamp received on a package of meat on a package of meat



A USDA inspection stamp received on a package of poultry.

Food Quality

Poor food quality can be a sign that the food has been time-temperature abused and, Therefore, may be unsafe. Work with your suppliers to define specific safety and quality criteria for the food items you typically receive. Reject food if it has any of the following problems.

Appearance. Reject food that is moldy or has an abnormal color. Food that is moist when it should be dry, such as salami, should also be rejected. Do not accept any food item that shows signs of pests or pests' damage. Reject frozen food that has large ice crystals on it. This may be evidence of thawing and refreezing.

Texture. Reject meat, fish, or poultry that is slimy, sticky, or dry. Also reject it if it has soft flesh that leaves an imprint when you touch it.

Odor. Reject food with an abnormal or unpleasant odor.

In addition to the guidelines above, you should always reject any item that does not meet your operation's standards for quality.



This block of cheese has mold all around the edges and should be rejected.




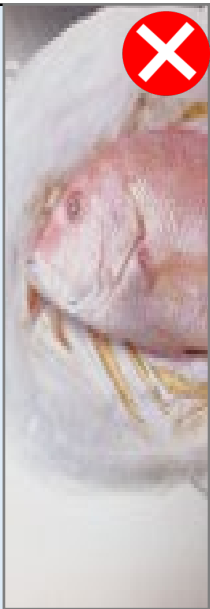
Knowledge Check

1. Name three reasons why you might reject a can from a supplier.
2. What information is included on a shellstock identification tag?




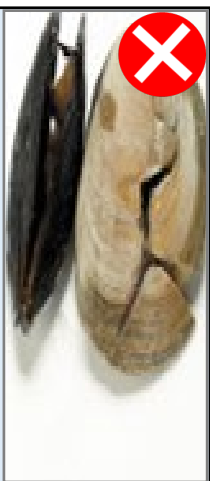
Inspecting Specific Types of Food

Restaurants and foodservice operations receive so many different types of food that it can be challenging to know the requirements for them all. In addition to checking that food is being received at the correct temperature, you should use visual and olfactory cues as well. Using your senses, particularly your eyes and nose, can be a very powerful tool for checking food quality. Strong odors and discoloration are obvious signs of poor quality. Of course, the “sniff test” cannot tell you if food is safe; but it may help you determine if some foods have more specific receiving criteria.


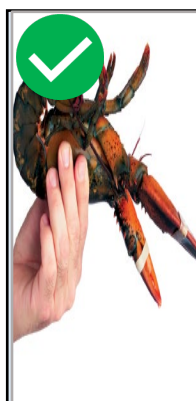


Fresh Fish

 	<p>Accept Criteria</p> <p>Color: Bright red gills; Bright shiny Skin.</p> <p>Texture: Firm flesh that springs back when touched.</p> <p>Odor: Mild ocean or seaweed smell.</p> <p>Eyes: Bright, clear, full.</p> <p>Packaging: Product surrounded by crushed, self-draining ice.</p>	<p>Reject Criteria</p> <p>Color: Dull gray gills; dull dry skin.</p> <p>Texture: Soft flesh that leaves an imprint when touched.</p> <p>Odor: Strong fishy or ammonia smell.</p> <p>Eyes: Cloudy, red-rimmed, sunken.</p> <p>Product: Tumors, abscesses, or cysts on the skin.</p>	 
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Shellfish

 	<p>Accept Criteria</p> <p>Odor: Mild ocean or seaweed smell.</p> <p>Shells: Closed and unbroken, Indicating that the shellfish are alive.</p> <p>Condition: If fresh, they must be received alive.</p>	<p>Reject Criteria</p> <p>Texture: Slimy, sticky, or dry.</p> <p>Odor: Strong fishy smell.</p> <p>Shells: Excessively muddy or broken shells.</p> <p>Condition: Dead on arrival (open shells that do not close when tapped).</p>	 
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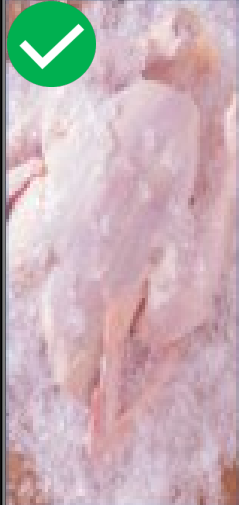

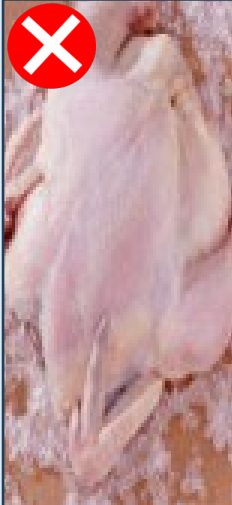
Crustaceans

 	<p>Accept Criteria</p> <p>Odor: Mild ocean or seaweed smell.</p> <p>Condition: Shipped alive, packed in seaweed, and kept moist.</p>	<p>Reject Criteria</p> <p>Odor: Strong fishy smell.</p> <p>Condition: Dead on arrival.</p>	 
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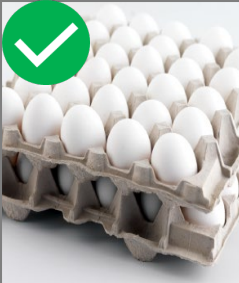


Meat

 	<p>Accept Criteria</p> <p>Color:</p> <ul style="list-style-type: none"> • Beef: Bright, cherry red; aged beef may be darker; vacuum-packed beef will appear purplish. • Lamb: Light red. • Pork: Light pink meat; firm, white fat. <p>Texture: Firm flesh that springs back when touched.</p> <p>Odor: No odor.</p> <p>Packaging: Intact and clean.</p>	<p>Reject Criteria</p> <p>Color:</p> <ul style="list-style-type: none"> • Beef: Brown or green • Lamb: brown, whitish surface covering the lean meat. • Pork: Excessively dark color; soft or rancid fat. <p>Texture: Slimy, sticky, or dry.</p> <p>Odor: Sour odor.</p> <p>Packaging: Broken cartons; dirty wrappers; torn packaging; broken seals.</p>	 
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Poultry

 	<p>Accept Criteria</p> <p>Color: No discoloration.</p> <p>Texture: Firm flesh that springs back when touched.</p> <p>Odor: No odor.</p> <p>Packaging: Should be surrounded by crushed, self-draining ice.</p>	<p>Reject Criteria</p> <p>Color: Purple or green discoloration around the neck; dark wing tips (red are acceptable).</p> <p>Texture: Stickiness under the wings and around joints.</p> <p>Odor: Abnormal, unpleasant odor.</p>	 
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Shell Eggs

 	<p>Accept Criteria</p> <p>Odor: No odor.</p> <p>Shells: Clean and unbroken.</p>	<p>Reject Criteria</p> <p>Odor: Sulfur smell or off odor.</p> <p>Shells: Dirty or cracked.</p>	 
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Dairy Products

	<p>Accept Criteria</p> <p>Milk: Sweetish flavor.</p> <p>Butter: Sweet flavor; uniform color; firm texture.</p> <p>Odor: Mild ocean or seaweed smell .</p> <p>Cheese: Typical flavor and texture; uniform color; clean and unbro0ken rind.</p>	<p>Reject Criteria</p> <p>Milk: Sour, bitter, or moldy taste; off odor; expired sell-by date.</p> <p>Butter: Sour, bitter, or moldy taste; uneven color; soft texture; contains foreign matter.</p> <p>Cheese: Abnormal flavor or texture; uneven color; unnatural mold; unclean or broken rind.</p>	
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Fresh Produce

	<p>Accept Criteria</p> <p>Temperature: Varies according to the product</p> <p>Condition: Varies according to the product.</p>	<p>Reject Criteria</p> <p>Condition: Evidence of mishandling or insects (including insect eggs and egg cases).</p> <p>Spoilage: Mold, cuts, wilting unpleasant odors, discoloration, etc. (will depend on the produce involved).</p>	
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Knowledge Check

1. What are the criteria for accepting fresh fish?
2. Name criteria for rejecting poultry.

STUDY QUESTIONS

1. What is the most important factor in choosing an approved food supplier?
 - a. It has a HACCP program or other food safety system.
 - b. It has documented manufacturing and packing practices.
 - c. It has a warehouse that is close to the operation, reducing shipping time.
 - d. It has been inspected and complies with local, state, and federal laws.
2. An approved supplier
 - a. does not require inspection.
 - b. will not have food safety violations.
 - c. can show you their inspection report.
 - d. has an active managerial control program in place.
3. Which agency subjects suppliers to food safety inspections?
 - a. Public Health Service (PHS)
 - b. Centers for Disease Control and Prevention (CDC)
 - c. U.S. Department of Agriculture (USDA)
 - d. Environmental Protection Agency (EPA)
4. A chef purchases fresh fish from a local fisherman. Is this an approved supplier?
 - a. Yes, if the fish is fresh caught.
 - b. Yes, if the town has licensed the fisherman.
 - c. No, not if the fisherman is local.
 - d. No, the fisherman is not inspected.
5. What are Good Manufacturing Practices (GMP) as defined by the FDA?
 - a. Rules for receiving food
 - b. Requirements for producing safe food
 - c. Parameters for the safe storage of food
 - d. Guidelines for creating a HACCP plan

6. When receiving a delivery of food for an operation, it is important to
 - a. inspect only the TCS food.
 - b. inspect all food immediately before storing it.
 - c. stack the delivery neatly and inspect it within 12 hours.
 - d. store it immediately and inspect it later.
7. What is the first thing that should be done when a food delivery arrives?
 - a. Inspect and store the delivery.
 - b. Check temperatures of all TCS food items.
 - c. Inspect the vehicle for signs of contamination.
 - d. Inspect packaging for signs of damage or pests.
8. Should employees be cross-trained so more people have the skills to receive deliveries?
 - a. Yes, this ensures that deliveries will be received quicker.
 - b. Yes, the more people who can receive products the better.
 - c. No, specific staff should be responsible for receiving.
 - d. No, cross-training is expensive and time-consuming.
9. What should be done if pests are spotted in a delivery vehicle?
 - a. Reject the entire delivery.
 - b. Reject any products close to where the pests were found.
 - c. Accept the delivery, depending on the type of pest found.
 - d. Accept the delivery if the products look safe.
10. What should an employee do if two food deliveries arrive at the same time?
 - a. Accept them both.
 - b. Alternate the inspection between each delivery.
 - c. Inspect both deliveries and store them afterwards.
 - d. Inspect and store one delivery before accepting another.
11. What must be done after receiving a key drop delivery?
 - a. The delivery must be inspected.
 - b. The delivery must be stored correctly.
 - c. Temperatures must be checked immediately.
 - d. Products must be removed from original packaging.

12. A recall has been issued for a specific brand of orange juice. The store manager has matched the information from the recall notice to the item, removed the item from inventory, and stored it in a secure location. What should the manager do next?
 - a. Refer to the vendor notification for next steps.
 - b. Contact the supplier and arrange for product pick up.
 - c. Label the item to prevent it from accidentally being placed back in inventory.
 - d. Inform the local media, customers, and employees of the reason for the recall.
13. What must a manager do with a recalled food item in the operation?
 - a. Combine the item with non-recalled items during preparation.
 - b. Record the names of customers who purchase the item.
 - c. Store the recalled item separately from other food.
 - d. Sell all recalled items within 24 hours.
14. Where should a manager check to find recall notices?
 - a. Public Health Service (PHS)
 - b. Food and Drug Administration (FDA)
 - c. Centers for Disease Control and Prevention (CDC)
 - d. Environmental Protection Agency (EPA)
15. How should the temperature of a shipment of sour cream be taken when it arrives at an operation?
 - a. Place a hand on a container to see if it is cool to the touch.
 - b. Hold an infrared thermometer as close as possible to a case.
 - c. Place the thermometer stem between shipping boxes for a reading.
 - d. Remove the lid of a container and put the thermometer stem into the sour cream.
16. How should the temperature of a shipment of bulk vacuum packages of raw ground beef be taken when it arrives at an operation?
 - a. Place a hand on a package to see if it is cool to the touch.
 - b. Hold an infrared thermometer as close as possible to a case.
 - c. Place the thermometer stem between two packages for a reading.
 - d. Open a package and put the thermometer stem into the ground beef.
17. Where should the thermometer stem be placed when checking the temperature of a chicken breast?
 - a. In the thinnest part
 - b. In the thickest part
 - c. Between two chicken breasts
 - d. Underneath a chicken breast

18. At what internal temperature should cold TCS food be received?
 - a. 41°F (5°C) or lower
 - b. 45°F (7°C) or lower
 - c. 51°F (10°C) or lower
 - d. 55°F (13°C) or lower
19. What must be done with live oysters received at an air temperature of 45°F (7°C)?
 - a. They must be rejected.
 - b. They must be discarded.
 - c. They must be heated to 155°F (68°C).
 - d. They must be cooled to 41°F (5°C) or lower.
20. At what maximum temperature can milk be received?
 - a. 55°F (13°C)
 - b. 50°F (10°C)
 - c. 45°F (7°C)
 - d. 41°F (5°C)
21. At what maximum temperature can shell eggs be received?
 - a. 55°F (13°C)
 - b. 50°F (10°C)
 - c. 45°F (7°C)
 - d. 41°F (5°C)
22. At what minimum temperature must hot TCS food be received?
 - a. 140°F (60°C)
 - b. 135°F (57°C)
 - c. 125°F (52°C)
 - d. 110°F (43°C)
23. What is the meaning of large ice crystals on frozen food?
 - a. The product has been frozen properly.
 - b. The product is still in the process of reaching the correct temperature.
 - c. The product has thawed and been refrozen.
 - d. The product should be cooked rapidly after thawing.

24. What are the packaging criteria for accepting nonfood items?
 - a. Soiled but intact
 - b. Soiled but with fewer than two punctures or tears
 - c. Clean with no more than two punctures or tears
 - d. Clean, intact, and protected from contamination
25. A food item that is received with an expired use-by date should be
 - a. rejected.
 - b. used immediately.
 - c. accepted but labeled differently.
 - d. accepted but kept separate from other items.
26. A can has a deep dent, but no product is leaking from it. What should be done with the can?
 - a. It can be accepted.
 - b. It should be rejected.
 - c. It should be recalled.
 - d. It should be used immediately.
27. A product's "best by" date states when it should be
 - a. thrown away.
 - b. sold at a discount.
 - c. eaten for peak quality.
 - d. rotated in storage.
28. How long must shell stock tags be kept on file?
 - a. 30 days after the day the shellfish were received
 - b. 90 days after the day the shellfish were received
 - c. 30 days after the last shellfish was sold or served from the container
 - d. 90 days after the last shellfish was sold or served from the container
29. Documentation received with fish that will be eaten raw must state
 - a. how the fish were caught.
 - b. where the fish were harvested.
 - c. that the fish were correctly frozen.
 - d. the credentials of the fisherman who caught the fish.

30. Fish that will be farm-raised must meet the standards of what agency?
 - a. USDA
 - b. FDA
 - c. CDC
 - d. Homeland Security
31. Meat must be purchased from plants inspected by what government agency?
 - a. USDA
 - b. FDA
 - c. PHS
 - d. CDC
32. An inspection stamp on meat indicates that
 - a. it is free of pathogens.
 - b. it is a “choice” cut of meat.
 - c. the product has met standards.
 - d. the food is safe to eat even if undercooked.
33. Poor food quality can be a sign of
 - a. cross-contact.
 - b. cross-contamination.
 - c. time-temperature abuse.
 - d. improper personal hygiene.
34. When checking a shipment of fresh salmon filets, a food handler notices that the flesh is soft and leaves an imprint when touched. What should be done with the fish?
 - a. Accept the fish.
 - b. Reject the fish.
 - c. Recall the fish.
 - d. Accept any filets that do not have an imprint.
35. A food handler notices that a shipment of fresh meat appears to be dry. What should be done with the meat?
 - a. Accept the meat.
 - b. Reject the meat.
 - c. Recall the meat.
 - d. Cook the meat within 24 hours.

36. What should be done with a shipment of fresh clams that have a slight seaweed smell?
 - a. Accept the clams.
 - b. Reject the clams.
 - c. Recall the clams.
 - d. Cook the clams within 24 hours.
37. Which item should be rejected?
 - a. Bags of organic cookies in torn packaging
 - b. Bottled milk at 41°F (5°C)
 - c. Single-use cups in original packing
 - d. Live oysters with an internal temperature of 50°F (10°C)
38. A food item that is received with an expired use-by date should be
 - a. rejected.
 - b. used immediately.
 - c. accepted but labeled differently.
 - d. accepted but kept separate from other items.
39. Beef that has been received is bright cherry red and has flesh that springs back when touched. What should be done with the beef?
 - a. Accept the beef.
 - b. Reject the beef.
 - c. Recall the beef.
 - d. Cook the beef within 24 hours.
40. A shipment of whole chickens has been received with dark wing tips and a purple color around the neck. What should be done with the chickens?
 - a. Accept the chickens.
 - b. Recall the chickens.
 - c. Reject the chickens.
 - d. Reject any chickens with these traits and keep the rest.

SECTION 7

The Flow of Food: Storage

General Storage Guidelines

Nearly everyone has experienced to dismay of finding food in the back o the refrigerator at home and wondering “how long has this been here?” Similarly, most individuals have had to throw out food that has gone bad or expired. And more than one baked good has been rendered inedible when one ingredient was mistaken for another-was that baking soda or corn starch?

Incorrectly stored food may be annoying in a have kitchen. But it can be devastating for a foodservice operation’s finances, its reputation, and the health of its guests.

Fortunately, the tools that can prevent this are easy to master, and the equipment that will keep food safe can be as simple as levels and pens. The basic strategies apply to any operation that serves food, whether its continental breakfast items in a hotel, appetizers at a bar, or top-quality entrees in a fine dining operation.

In general, you must label, and date mark your food correctly. You must also rotate food and you need to store items in a way that prevents cross-contamination.

Use the following general guidelines when storing food.

Labeling

Labeling food is important for many reasons. Illnesses have occurred when unlabeled chemicals were mistaken for food such as flour, sugar, and baking powder. Customers have also suffered allergic reactions when food was unknowingly prepped with a food allergen that was not identified on the label.



This container has been labeled with the common nave of the food it holds “Powdered Milk”.

Labeling Food for use On-Site

Any item not stored in its original container must be labeled. The label must include the common name of the food or a statement that clearly and accurately identifies it . If a food is easily identifiable by sight and will not be mistaken for another item, it is not necessary to label the item. Dry pasta would be an easily identifiable example.

Labeling Food That Is Packaged On-Site for Retail Sale

Food packaged in the operation that is being sold to customers for use at home, such as bottled salad dressing, must be labeled. The label must include the following information:

- Common name of the food or a statement that clearly identifies it.
- Quantity of the food.
- List of ingredients and sub-ingredients in descending order by weight. This is necessary if the item contains two or more ingredients.
- List of artificial colors and flavors in the food.
- Chemical preservatives.
- Name and place of business of the manufacturer, packer, or distributor.
- Source of each major food allergen contained in the food. This is not necessary if the source is already part of the common name of the ingredient.

These labeling requirements do not apply to customers' leftover food items placed in carryout containers.

Date Marking

Refrigeration slows the growth of most bacteria, but some types grow well at refrigeration temperatures. When food is refrigerated for long periods of time, these bacteria can grow enough to cause illness. For this reason, ready-to eat TCS food must include Date marking if it will be held for longer than 24 hours. The labels must indicate when the food must be sold, eaten, or thrown out.

Ready-to-eat TCS food can be stored for only seven days if it is held at 41°F (5°C) or lower.

After that date, the food must be discarded. The count begins on the day the food was prepared or a commercial container was opened. For example; a food handler who prepared and stored potato salad on October 1 would write a discard date of October 7 on the label.

Operations have a variety of systems for date marking. Some write the day or date the food was prepped on the label. Others write the use-by day or date on the label.



This pan of turkey chili has been properly marked with a use-by date.

Commercially Processed Food

Sometimes commercially processed food will have a use-by date that is less than seven days from the date the container was opened. In this case, the container should be marked with this use-by date, as long as the date is based on food safety.

Combining food

When combining food with different use-by dates in a dish, the discard date of the dish should be based on the earliest use-by date of any food items involved.

Here is an example:

- A food handler is prepping jambalaya on December 4 using shrimp and sausage.
- The shrimp has a use-by date of December 8.
- The sausage has a use-by date of December 10. So, the use-date of the jambalaya is December 8.

December						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4 Jambalaya Prep Date	5	6	7	8 Shrimp Use-By Jambalaya Use-By	9	10 Sausage Use-By
11	12	13	14	15	16	17



Following FIFO requirements, food with the earliest expiration dates is stored in front of items with later dates. This makes it easier to use the oldest items first.

Rotation

Food must be rotated while in storage to maintain quality and limit the growth of pathogens. Food items must be rotated so the dates are used before those with later dates.

Many operations use the **first-in, first-out (FIFO) Method** to rotate their refrigerated, frozen, and dry food during storage. Here is one way to use the FIFO method: Identify the food item's use-by or expiration date. Store items with the earliest use-by or expiration dates in front of items with later dates.

Once shelved, use those items stored in front first. Throw out food that has passed its manufacture's use-by or expiration date.

Temperatures

Pathogens can grow when food is not stored at the correct temperature. Follow these guidelines to keep food safe:

- Store TCS food at an internal temperature of 41° F or lower, or 135° F or higher. Randomly sample the internal temperature of stored food using a calibrated thermometer on a regular basis.
- Store meat, poultry, seafood, and dairy items in the coldest part of the unit, away from the door.
- Store frozen food at temperatures that keep it frozen.
- Make sure storage units have at least one air-temperature measuring device. It must be accurate to within $\pm 3^{\circ}\text{F}$ or $\pm 1.5^{\circ}\text{C}$. This device must be located in the warmest part of refrigerated units, and the coldest part of hot-holding units,. Check cooler and freezer temperatures often.
- Do not overload coolers or freezers. Storing too many food items prevents good airflow and makes the units work harder to stay cold. Be aware that frequent opening of the cooler lets warm air inside, which can affect food safety.
- Consider using cold curtains in walk-in coolers and freezers to help maintain temperatures.
- Use open shelving. Do not line shelves with aluminum foil, sheet pans, or paper. This restricts the circulation of cold air in the unit.
- Monitor food temperatures in coolers regularly. Randomly sample the temperature of stored food to verify that the cooler is working. If the food is not at the correct temperature, throw it out.
- Defrost freezers regularly. They are more efficient when free of frost. Move food to another freezer while defrosting.

Preventing Cross-Contamination

Food, equipment, utensils, liners, and single-use items must be stored in ways that prevent cross-contamination. Follow these guidelines.

Storage Location

Food should be stored in a clean, dry location away from dust and other contaminants.

- Locker rooms or dressing rooms.
- Restrooms or garbage rooms.
- Mechanical rooms.
- Under unshielded sewer lines or leaking water lines.
- Under stairwells.

Damaged, Spoiled. Or Incorrectly Stored Food

If you find expired, damaged, spoiled, or incorrectly stored food that has become unsafe, you should discard it. This includes food that is missing a date mark, ready-to-eat TCS food that has exceeded its date mark, and food that has exceeded time/temperature requirements.

If the food must be stored until it can be returned to the vendor, there is a risk of contaminating the food stored near it. To prevent this risk, follow these guidelines:

- Store the food away from other food and equipment.
- Label the food so food handlers do not use the product.

Supplies

- Store all items in designated storage areas.
- Store items away from walls and at least six inches off the floor.
- Store single-use items (e.g., sleeve of single-use cups, single-use gloves) in Original packaging.

Containers

- Store food in containers intended for food.
- Use containers that are durable, leakproof, and able to be sealed or covered.
- NEVER use empty food containers to store chemicals. NEVER put food, equipment, utensils, linens, or single-use items in empty chemical containers.
- Wrap or cover all food correctly. Leaving food uncovered can lead to cross-contamination.

Shellfish Containers:

Store molluscan shellfish (live, shucked, or in-shell product) in their original container: Do NOT remove the shellstock tag or label from the container until the last shellfish was used. When the last shellfish is removed from the container, write the date on the tag, label or invoice. Then, keep it on file, in chronological order, for 90 days from that date.

Shellfish should remain in the container they were received in until sold or prepared for service. Shellfish from one container should not be mixed with shellfish from another container unless they have the same certification number of harvest date or are from the same growing area.

Cleaning

Keep all storage areas clean and dry. Clean floors, walls, and shelving in coolers, freezers, dry-storage areas, and heated holding cabinets regularly. Clean up spills and leaks promptly to keep them from contaminating other food. Follow these guidelines:

- Clean dollies, carts, transporters, and trays often.
- Store food in containers that have been cleaned and sanitized.
- Store dirty linens, away from food. Store them in clean, nonabsorbent containers. They can also be stored in washable laundry bags.

Storage Order

Safe food storage starts with wrapping or covering food. After that, how you store the food depends on the type of food and your options for storage.

- Store raw meat, poultry, and seafood separately from ready-to-eat food. If raw and ready-to-eat food cannot be stored separately, store ready-to-eat food above raw meat, poultry, and seafood. This will prevent juices from raw food from dripping onto ready-to-eat food.
- Raw meat, poultry, and seafood can be stored with or above ready-to-eat food. If raw and ready-to-eat food in a freezer if all of the items have been commercially processed and packaged. Frozen food that is being thawed in coolers must also be stored below ready-to-eat food.
- Store raw meat, poultry, and seafood in coolers in the following top-to-bottom order-seafood, whole cuts of feed and pork, ground meat and ground fish, and whole and ground poultry. This order is based on the minimum internal cooking temperature of each food, with the food requiring the highest internal cooking temperature at the bottom.

Storage Order, Top to Bottom

Preventing cross-contamination:

Store food items in the following top-to-bottom order:

Minimum Internal Cooking Temperature

A. Ready-to-eat food	N/A
B. Seafood	145° F
C. Whole cuts of beef and pork	145° F
D. Ground meat and ground fish	155° F
E. Whole and ground poultry	165° F

This storage order is based on the minimum internal cooking temperature of each food.



Knowledge Check

1. When must food be date marked?
2. Explain the FIFO Method of stock rotation.

Storing Specific Food

The general storage guidelines apply to most food. Basic requirements, such as keeping food out of the temperature danger zone and making sure that frozen food stays frozen, are typically required by local jurisdictions. But it’s important to know that some foods do have their own special requirements for quality and safety. For example; you might happily prepare and eat a shell egg that was stored at 41° F for three weeks. But a fresh rainbow trout stored in the same cooler, for the same amount of time, might not be so appealing. Another example is canned food. While it may seem like canned food could last forever, it doesn’t. Canned food will spoil, and incorrect storage temperatures shorten its shelf life. In fact, humidity and temperature levels in dry storage can have a real impact on food quality.

Additional storage requirements and Guidelines



Meat

Temperature

- Fresh meat should be held at an internal temperature of 41° F
- Frozen meat should be stored at a temperature that will keep it frozen.

Containers and location

- Immediately after delivery and inspection, store meat in its own storage unit or in the coldest part of the cooler.
- If meat is removed from its original packaging, wrap it in airtight, moisture proof material or place it in clean and sanitized containers.
- Primal cuts, quarters, sides of raw meat, and slab bacon can be hung on clean and sanitized hooks or placed on sanitized racks.
- To prevent cross-contamination, do NOT store meat above the food.

Additional storage requirements and Guidelines**Fish****Temperature**

- Store shucked shellfish at an internal temperature of 41° F or lower.
- Store live shellfish in its original container at an air temperature of 41° F or lower.

Containers

- Keep fillets and steaks in original packaging, or tightly wrap them in moisture-proof materials.
- Fresh, whole fish can be packed in flaked or crushed ice. Ice beds should be self-draining. Change the ice and clean and sanitize the container often.

**Shellfish****Temperature**

- Store shucked shellfish at an internal temperature of 41° F or lower.
- Store live shellfish in its original container at an air temperature of 41° F or lower.

Containers

- Do Not remove the shellstock tag from the container until the last shellfish has been used. Keep shellstock identification tags on file for 90 days from the date the last shellfish was sold or served from the container:
 - The tank has a sign stating that the shellfish are for display only.
 - For shellfish to be served to customers, a variance has been obtained from the local regulatory authority that allows the shellfish to be served to customers.

To obtain a variance, you will need to show the following:

- Water from other tanks will not flow into the display tank.
- Using the display tank will not affect food quality or safety.
- Shellstock ID tags have been retained as required.

Additional storage requirements and Guidelines**Eggs****Temperature**

- Store shell eggs at an air temperature of 41° F or lower. Maintain constant temperature and humidity levels in coolers used to store shell eggs.
- Store frozen egg items at temperatures that will keep them frozen.
- Store liquid eggs according to the manufacture's recommendations.
- Store dried egg items in a cool dry-storage area. Once they are reconstituted (mixed with water), store them in the cooler at 41° F or lower.

Guidelines

- Do NOT wash shell eggs before storing them. They are washed and sanitized at the packing facility.
- Plan the use all shell eggs within four to five weeks of the packing date.
- Keep shell eggs in cold storage until the time they are used. Take out only as many eggs as are needed for immediate use.
- Do NOT reconstitute more dried egg items than needed for immediate use.

**Poultry****Temperature**

- Store raw poultry at an internal temperature of 41° F or lower.
- Frozen poultry should be stored at a temperature that will keep it frozen.

Containers

- If the poultry has been removed from its original packaging, place it in an airtight container or wrap it in airtight material.
- Ice-packed poultry can be stored in a cooler as is . Use self-draining containers. Change the ice and sanitize the container often.

Additional storage requirements and Guidelines

Fresh Produce

Temperature

- Cut melons, cut tomatoes and cut leafy greens are TCS food. Store them at 41° F or lower.
- Store whole citrus fruit, hard-rind squash, eggplant, and root vegetables-such as potatoes, sweet potatoes, rutabagas, and onions-in a cool dry-storage area, Temperatures of 60°F to 70°F are best.
- Other fruits and vegetables have various temperature requirements for storage. While many raw, whole fruits and vegetables can be stored at 41°F

Containers and location

- Raw, whole produce and raw, cut vegetables-such as celery, carrots, and radishes-delivered packed in ice can be stored as they are. Make sure the containers are self-draining. The ice should also be changed regularly.
- Make sure containers for whole citrus fruit, hard-rind squash, eggplant, and root vegetables-such as potatoes, sweet potatoes, rutabagas, and onions-are well ventilated.
- Store onions away from other vegetables that might absorb odor.

Guidelines

- Fruits and vegetables kept in the cooler can dry out quickly, keep the relative humidity at 85 to 95 percent.
- Although most produce can be stored in the cooler, avocados, bananas, pears, and tomatoes ripen best at room temperature.
- Most produce should not be washed before storage. Moisture often promotes the growth of mold. Instead, wash produce before prepping or serving it.
- When soaking or storing produce in standing water or an ice-water slurry, do not mix different items or multiple batches of the same item.

UHT and Aseptically

Temperature

- Food that has been pasteurized at ultra-high temperatures (UHT) and aseptically packaged can be stored at room temperature.
- Once opened, store UHT and aseptically packaged food in the cooler at 41°F or lower.
- Store UHT items that are not aseptically packaged at an internal temperature of 41°F or lower.

Additional storage requirements and Guidelines**ROP Food****Temperature**

- Always store reduced oxygen packaged (ROP) Food at temperatures recommended by the manufacturer or at 41°F or lower. ROP food includes modified atmosphere packaged (MAP), vacuum-packed, and sous-vide food.
- Frozen items should be stored at temperatures that will keep them frozen. Store and handle these items carefully.

Guidelines

- ROP items are especially susceptible to the growth of clostridium botulinum. Throw the item away if the package shows any of the following characteristics:
 - It is torn or slimy.
 - It contains excessive liquid.
 - The food item bubbles, indicating the possible growth of Clostridium botulinum.
- Always check the expiration date before using ROP items. Labels should clearly list contents, storage temperature, prep instructions, and a use-by date.
- Operators who package food in-house using a ROP process need to follow specific rules for packaging and labeling. Consult your local regulatory authority for guidance.

**Canned Goods****Temperature**

- Even canned food spoils over time. Higher storage temperatures may shorten shelf life.

Guidelines

- Acidic food, such as canned tomatoes, does not last as long as food that is low in acid. The acid can also form pinholes in the metal over time.
- Discard damaged cans.
- Keep dry-storage areas dry. Too much moisture will cause cans to rust.
- Wipe cans clean with a sanitized cloth before opening them. This will help prevent dirt from falling into the contents of the can.

Additional storage requirements and Guidelines



Dry Food

Containers

Keep flour, cereal, and grain items, such as pasta or crackers, in airtight containers these items can quickly become stale in a humid room. They can also become moldy with too much moisture.

Guidelines

- Before using dry food, check containers or packages for damage from insects or rodents. Cereal and grain items are often targets for these pests.
- If stored in the correct conditions, salt and sugar can be held almost indefinitely.

Dry storage

Many of the items found in dry storage can last a long time, but not forever. In dry storage, and in every other part of the operation, using FIFO really matters. And making sure that stock is properly rotated is everyone’s job-not just the cook or the person who handles receiving.

One part of this that is easy to overlook is managing bulk bins. In operations that go through large amounts of products such as flour and breadcrumbs, bulk bins are used to manage stock.

The product, a 25-pound bag of flour For example; is transferred into these bins. This provides ready access. But what some employees may forget is that the product all the way at the bottom of the bin should be either used up or disposed of. The bins should also be regularly cleaned and properly labeled. If this isn’t done, you might end up with an improperly labeled bin with a layer of flour on the bottom that has been there for years!

Knowledge Check

1. What is one example of a produce item that is considered to be a TCS food?
2. Do all fruits and vegetables need to be stored at 41°F

STUDY QUESTIONS

1. Ready-to-eat TCS food must be date marked if it will be stored for longer than
 - a. 12 hours.
 - b. 24 hours.
 - c. 36 hours.
 - d. 48 hours.
2. What is the maximum amount of time that ready-to-eat TCS food can be stored in a cooler at 41°F (5°C) before it must be sold, served, or thrown out?
 - a. 2 days
 - b. 5 days
 - c. 7 days
 - d. 9 days
3. What items are stored correctly in a cooler?
 - a. Salmon stored below ground turkey
 - b. Kale stored below raw hamburger patties
 - c. Raw chicken thighs stored above pork chops
 - d. Raw shrimp stored above raw steak
4. Any item not stored in its original container must be
 - a. labeled.
 - b. thrown out.
 - c. used immediately.
 - d. served as quickly as possible.
5. What must be included on the label of food that has not been stored in its original container?
 - a. The food's common name
 - b. A list of ingredients
 - c. Major allergens
 - d. Preservatives in the food

6. What is the discard date for tuna salad that was prepared and stored on October 1?
 - a. October 6
 - b. October 7
 - c. October 8
 - d. October 9
7. A chef is preparing a dish that includes beef and pork. If the beef has a use-by date of September 4 and the pork has a use-by date of September 6, what is the discard date of the dish?
 - a. September 3
 - b. September 4
 - c. September 5
 - d. September 9
8. How should food be rotated in storage?
 - a. Items with the earliest use-by dates are discarded before items with later dates.
 - b. Items with the latest use-by dates are used before items with earlier dates.
 - c. Items with the latest use-by dates are discarded before items with earlier dates.
 - d. Items with the earliest use-by dates are used before items with later dates.
9. What should be done with food that has passed its use-by date?
 - a. It should be discarded.
 - b. It should be used immediately.
 - c. It should only be reheated once.
 - d. It should be cooked to a higher internal temperature.
10. At what temperature must cold TCS food be stored to keep it safe?
 - a. 41°F (5°C) or lower
 - b. 45°F (7°C) or lower
 - c. 50°F (10°C) or lower
 - d. 65°F (18°C) or lower
11. At what temperature must hot TCS food be stored to keep it safe?
 - a. 110°F (43°C) or higher
 - b. 120°F (49°C) or higher
 - c. 125°F (52°C) or higher
 - d. 135°F (57°C) or higher

12. Where should the air-temperature measuring device be placed in a cooler?
 - a. Near the door
 - b. On a back wall
 - c. On the ceiling
 - d. Near the floor
13. Why should overloading coolers be avoided?
 - a. It reduces airflow.
 - b. It lets warm air inside.
 - c. It may lead to freezing the food.
 - d. It can lead to a moisture build-up.
14. What should be done to help keep food safe in a walk-in cooler?
 - a. Store meat and poultry near the cooler's door.
 - b. Line open shelves with aluminum foil.
 - c. Randomly sample food temperature daily.
 - d. Pack food tightly in coolers to ensure proper cooling.
15. What should be done to help keep frozen food safe in a freezer?
 - a. Open it frequently to check the temperature.
 - b. Defrost the freezer on a regular basis.
 - c. Install a thermometer in the coldest part of the freezer.
 - d. Ensure the temperature stays at 41°F (5°C).
16. Which items are stored correctly in a cooler?
 - a. Macaroni salad stored above raw salmon
 - b. Raw ground pork stored below raw poultry
 - c. Raw poultry stored above raw pork roast
 - d. Sliced pineapple stored below raw steaks
17. How far off the floor should food be stored?
 - a. 1 inch (3 centimeters)
 - b. 2 inches (5 centimeters)
 - c. 4 inches (10 centimeters)
 - d. 6 inches (15 centimeters)

18. Where should food that doesn't require refrigeration be stored?
 - a. In a dry location
 - b. In a moist location
 - c. In a high humidity location
 - d. In a high temperature location
19. A chef wants to package and sell their signature barbeque sauce on-site. What information must they include on their labels to make the sauce acceptable for retail sale?
 - a. Chemical preservatives
 - b. Nutritional value
 - c. Calorie count
 - d. Recommended serving size
20. What should be done to keep single-use items safe in storage?
 - a. Place them in new packaging.
 - b. Remove them from their packaging.
 - c. Keep them in original packaging.
 - d. Open the packaging to increase airflow.
21. What must be done with food before storing it?
 - a. It must be frozen properly.
 - b. It must be wrapped or covered.
 - c. It must be marked with a storage date.
 - d. It must be placed in containers that allow airflow.
22. Where should dirty linens be stored?
 - a. Near the receiving doors
 - b. In nonabsorbent containers
 - c. Separately in dry storage areas
 - d. Near the dishwashers
23. What is the storage order in a cooler based on?
 - a. First In First Out (FIFO)
 - b. The use-by dates of each food
 - c. The risk of cross-contact in the cooler
 - d. The internal cooking temperature for each food

24. What should be done to keep shell eggs safe when storing them?
 - a. Wash them before storage.
 - b. Use them within 8 weeks of the packing date.
 - c. Keep them in storage until the time they are used.
 - d. Store them at an air temperature of 45°F (7°C) or lower.
25. What should be done to keep fresh produce safe when storing it?
 - a. Wash it before storage.
 - b. Keep the humidity in storage low.
 - c. Store all produce at 41°F (5°C) or lower.
 - d. Store cut produce at 41°F (5°C) or lower.
26. Which is a best practice for handling canned food in storage?
 - a. Discard cans with small dents.
 - b. Replace cans that are about to expire with cans that have later expiration dates.
 - c. Wipe the tops of cans with a sanitized cloth before opening.
 - d. Check the surface temperature and discard cans that are too warm.
27. A manager asks a food handler to put away a shipment of whole potatoes. What should the food handler do?
 - a. Wash and dry the potatoes.
 - b. Put the potatoes in an airtight container.
 - c. Refrigerate the potatoes.
 - d. Move the potatoes to a cool dry storage area.
28. A food handler needs to combine a new shipment of canned tomatoes with the cans already on the shelf. If the new cans have expiration dates of June 2025 and the old cans have expiration dates of January 2026, how should they rotate the cans?
 - a. The new cans should go behind the old cans.
 - b. The new cans should go in front of the old cans.
 - c. The old cans should be discarded and replaced with the new cans.
 - d. The old cans should be stored below the new cans.
29. Which is a best practice for storing flour?
 - a. Check packaging for pest damage before using.
 - b. Store in a room with medium to high humidity.
 - c. Repackage in breathable containers before storing.
 - d. Conduct daily temperature checks.

30. Which is an example of reduced-oxygen packaged (ROP) food?
- a. Insulated box of whole oysters
 - b. Sack of flour
 - c. Bag of whole apples
 - d. Vacuum-packed deli meat

SECTION 8

The Flow of Food: Preparation

Preparation

A Commercial Kitchen is a busy place where time is precious. Staff members need to complete all of their tasks in the allotted time while manager shift and pivo to stay on top of competing demands. A staff member might miss a shift, leaving the operation shorthanded, or an unexpectedly large party might arrive at the operation. But no matter how busy the kitchen may be, guests never want to wait any longer for their food than is absolutely necessary.

On top of all of that, the variety and quantities of food that go through a commercial kitchen can vary drastically. In one moment, a cook may be assembling a single sandwich for a solo diner. In another moment, that same cook could be preparing a 20-gallon batch of tomato sauce for the next day, or 300 orders for a catering event. It's a rapidly changing environment, but one constant is the necessity to keep food and guests safe. With practice and care, it is possible to keep up with the pace of the kitchen while maintaining food safety.

General Preparation Practices

Cross-contamination and time-temperature abuse can happen easily when you are prepping food. You can prevent pathogens from spreading and growing by making good food-prep choices.

Equipment. Make sure workstations, cutting boards, and utensils are clean and sanitized.

Quantity. Only remove as much food from the cooler as you can prep in a short period of time. This keeps ingredients from sitting out for long periods of time.

Storage. Return prepped food to the cooler. Or cook it, as quickly as possible.

Additives. If you use food or color additives when prepping food, follow these guidelines:

- Only use additives that have been approved by your local regulatory authority. NEVER use more than is allowed by law. NEVER use additives to alter the appearance of the food.
- Do NOT sell produce that was treated with sulfites before it was received in the operation. NEVER add sulfites to produce the will be eaten raw.

Presentation. Food should be offered to guests in a way that does not mislead or misinform them. Guests must be able to judge the true appearance, color, and quality of food:

- Food additives or color additives.
- Colored overwraps.
- Lights

Food also must be presented the way it was described. For example; if your menu offers “fried perch,” you cannot substitute another substitute another fish for the perch.

Food that has not been honestly presented should be thrown out.

Corrective actions. Food that has become unsafe should be thrown out unless it can be safely reconditioned. All food-especially ready-to-eat food-should be thrown out in the following situations:

- When it is handled by staff who have been restricted or excluded from the operation because of illness.
- When it is contaminated by hands or bodily fluids-For example; from sneezing.
- When it has exceeded the time and temperature requirements designed to keep food safe.

Sometimes food can be restored to a safe condition. This is called reconditioning. For example; a hot food that has not been held at the correct temperature may be reheated if it has not been in the temperature danger zone for more than two hours. This can return food to a safe condition.

Thawing

When frozen food is thawed and exposed to the temperature danger zone, pathogens in the food will begin to grow. To reduce this growth, NEVER thaw food at room temperature.

For example; suppose a cook needs to thaw a 20-pound turkey. In a hurry, he places it on a prep table to thaw overnight. When the turkey begins to thaw, the skin and outer layers are exposed to the temperature danger zone even though the core of the turkey is still frozen. If there are pathogens on the turkey, they will grow to a level high enough to make the turkey unsafe.

General Guidelines for TCS Food

To prevent pathogen growth, thaw TCS food according to the methods and guidelines on the following page.

Methods and guidelines for Thawing TCS Food



Refrigeration

Thaw food in a cooler, keeping its temperature at 41° F or lower. This requires advance planning larger items, such as a turkey, can take several days to thaw completely in a cooler.



Running water

- Submerge food under running, drinkable water at 70° F or lower.
- The flow of the water must be strong enough to wash loose food bits into the drain.
- Always use a clean and sanitized food-prep sink when thawing food this way.
- NEVER let the temperature of the food go above 41° F for longer than four hours. This includes the time it takes to thaw the food plus the time it takes to prep or cool it.



Microwave

- Thaw food in a microwave oven if it will be cooked immediately after thawing.
- The food must be cooked in conventional cooking equipment, such as an oven, once it is thawed.



Cooking

Thaw food as part of the cooking process. For example:

- Frozen hamburger patties can go straight from the freezer onto a grill without first being thawed.
- Frozen chicken can go straight into a deep fryer.

These items cook quickly enough from the frozen state to pass through the temperature danger zone without harm. However, always verify the final internal cooking temperature with a thermometer.

Some frozen food may also be slacked before cooking. **Slacking** is the gradual thawing of frozen food to prep it for deep-frying. This allows for even heating during cooking. For example; you might slack frozen breaded chicken breasts by having them warm from -10°F to 25° F.

Slack food just before you cook it. Do not let it get any warmer than 41° F. If your regulatory authority allows slacking at room temperature, have a system that ensures the item does not exceed 41° F.

Thawing ROP Fish

Frozen fish may be supplied in reduced oxygen packaging (ROP). This fish should usually remain frozen until ready for use. If this is stated on the label, the fish must be removed from the packaging at the following times:

- Before thawing it under refrigeration.
- Before or immediately after thawing it under running water.

If you are packaging fish using a reduced oxygen packaging method, the fish must:

- Be frozen before, during, or after packaging.
- Include a label that states the fish must be frozen until used.

Prepping Specific food

Special care must be taken when handling meat, seafood, and poultry, as well as salads containing these items. Likewise, you will need to pay close attention when prepping eggs, batter and breading, and produce. Even ice needs special care.

Meat, Seafood, and Poultry

The sources of most cross-contamination in an operation are raw meat, poultry, and seafood. Your staff should follow specific procedures when handling these items.

Cleaning and sanitizing. Use clean and sanitized work areas, cutting boards, knives, and utensils. Prep raw meat, poultry, and seafood separately or at different times from fresh produce.

Quantity. Only remove as much food from the cooler as you can prep in a short period of time. This keeps ingredients from sitting out for long periods of time. For example; if assembling pans of meat lasagna, remove only enough ingredients to prepare a few pans at a time. Then return the prepared pans of lasagna to the cooler before removing more ingredients.

Prompt action. Return raw, prepped meat directly to the cooler, or cook it as quickly as possible. Store these items correctly to prevent cross-contamination.

Salads containing TCS Food

Chicken, tuna, egg, pasta, and potato salads have all been involved in food-borne-illness outbreaks. These salads are not usually cooked after prepping. This means you do not have a chance to reduce pathogens that may have gotten into the salad. Therefore, you must take a few extra steps. Follow these guidelines.

Prepping small batches. Prep food in small batches so large amounts of food do not sit out at room temperature for long periods of time.

Using Leftovers. Leftover TCS food, such as pasta, chicken, and potatoes, should only be used to make salads if has been cooked, held, cooled, and stored correctly.

Storing leftovers. Do NOT use leftover TCS food that has been held for more than seven days. Check the use-by date of the stored TCS food before using it.

Chilling. Consider chilling all ingredients and utensils before using them to make the salad. For example; tuna, mayonnaise, and mixing bowls may be chilled before making tuna salad.

Refrigeration. Leave food in the cooler until all ingredients are ready to be mixed.

Eggs and Egg mixtures

Historically, the contents of whole, clean, uncracked shell eggs were considered bacteria- free. However, specific species nontyphoidal salmonella can live within a laying hen. Salmonella can also be deposited in an egg before the shell is formed. Only a small number of eggs produce in the United States are likely to carry this type of bacteria. However, all untreated eggs are considered TCS food. They can support the rapid growth of bacteria.

When prepping eggs and egg mixtures, follow these guidelines:

Pooled eggs. Pooled eggs are eggs that are cracked open and combined in a common container. Handle them (if allowed) with special care because bacteria in one egg can be spread to the rest. Cook Pooled eggs promptly after mixing or store at $\leq 41^{\circ}\text{F}$ or lower. Clean and sanitize containers used to hold pooled eggs before using them for a new batch.

Pasteurized eggs. Consider using pasteurized shell eggs or egg products for egg dishes requiring little or no cooking. Some examples include hollandaise sauce, Caesar salad dressing, tiramisu, and mousse.



This mixing bowl contains pooled eggs, which have been cracked open and combined in a common container. Handle pooled eggs with care.

High-risk populations. Operations that serve high-risk populations, such as hospitals and nursing homes, must take special care when using eggs. If you mainly serve these populations, use pasteurized eggs or egg products when dishes containing eggs will be served raw or undercooked. Shell eggs that are pooled must also be pasteurized. Unpasteurized shell eggs may be used if the dish will be cooked all the way through, such as in an omelet or a cake.

Cleaning and sanitizing. Promptly clean and sanitize all equipment and utensils used to prep eggs.

Raw and Undercooked Ingredients

Cooking food to the required minimum internal temperatures is a great way to reduce pathogens to safe levels. Certain foods, though, may contain raw or undercooked ingredients. In fact, some customers demand this. Rare hamburgers and raw oysters are some obvious examples.

What might surprise customers are the many popular foods that contain hidden raw or undercooked eggs. Hollandaise sauce is one example. Made from a mixture of egg yolk, melted butter, and lemon juice, it's a key component of the breakfast favorite eggs benedict. And it's also used to top other items such as steamed asparagus. Other common items prepared in-house with undercooked eggs include bearnaise sauce, Caesar salad dressing, mayonnaise, and some aioli garlic sauces. Raw and undercooked eggs can also be found in many popular dessert items as tiramisu, chocolate mousse, royal icing, and many custards. Raw cookie dough and foamed egg white-which is used to top some cocktails-also contain raw egg.

Although these items cannot necessarily be cooked to required minimum internal temperatures, it is still possible to reduce the risk of foodborne-illness. Pasteurized eggs can be used in these items to help keep food safe.

Batters and breading

Batters or breading prepped with eggs or milk should be handled carefully. They run the risk of time-temperature abuse and cross-contamination. If you choose to make breaded or battered food from scratch, follow these guidelines.

Small batches. Prepping batters in small amounts prevents time-temperature abuse of both the batter and the food being coated. Store what you do not need in a covered container at 41° F or lower.

Prompt storage. When breading food that will be cooked later, store it in the cooler as soon as possible.

Unused items. Create a plan to throw out unused batter or breading after a set time. This might be after using a batch or at the end of a shift.

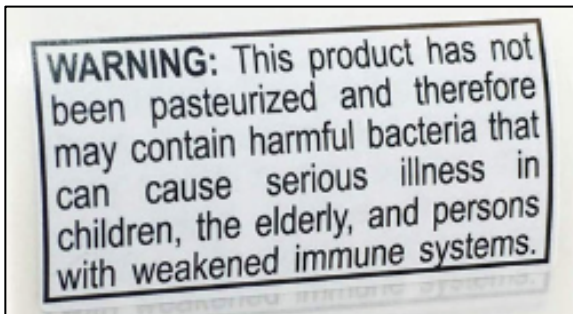
Thorough cooking. The coating of battered and breaded food acts as an insulator that can prevent food from being thoroughly cooked. Cook this food all the way through. When deep-frying food, make sure the temperature of the oil recovers before loading each batch.

Overloading the basket when frying food also slows cooking time. This means items can be removed from the fryer before they are thoroughly cooked. Monitor oil and food temperatures using calibrated thermometers. Watch cooking time as well.

Fresh Juice

If you package fresh fruit and vegetable juice in-house for later sale, treat (e.g., pasteurize) the juice according to an approved Hazard Analysis Critical Control Point (HACCP) plan. You will learn about HACCP plans in Chapter 10.

As an alternative to manufacturing under a HACCP plan, the juice can be labeled with the following: “Warning: This product has not been pasteurized and, therefore, may contain harmful bacteria that can cause serious illness in children, the elderly, and people with weakened immune systems”.



This label is required for fresh juice sold on site.

Produce

Handle fresh produce carefully to prevent foodborne-illnesses. Viruses such as hepatitis A, Bacteria such as Shiga toxin-producing *E. coli*, and parasites such as *Cryptosporidium parvum* can survive on produce, especially cut produce.

Prepping. Make sure fruits and vegetables do NOT come in contact with surfaces exposed to raw meat, poultry, and seafood.

- Prep produce away from raw meat, poultry, seafood, and ready-to-eat food.
- Clean and sanitize the workspace and all utensils that will be used before and after prepping produce.

Washing. Wash fruit and vegetables thoroughly under running water to remove dirt and other contaminants. Do this before cutting, cooking, or combining the produce with other ingredients:

- The water should be slightly warmer than the temperature of the produce.
- Pay close attention to leafy greens, such as lettuce and spinach. Remove the outer leaves, Pull lettuce and spinach completely apart and rinse thoroughly.
- Certain chemicals may be used to wash fruits and vegetables. Also, produce can be treated by washing it in water containing ozone. This treatment helps control pathogens. Your local regulatory authority can tell what is acceptable to use for this.



As shown in the photo, wash leafy greens thoroughly under running potable water. Also remember the water should be slightly warmer than the produce.

Soaking or storing. When soaking or storing produce in standing water or and ice-water slurry. Do NOT mix different items or multiple batches of the same item. Pathogens from contaminated produce can contaminate the water and the ice and can spread to other produce.

Refrigerating. Refrigerate and hold cut melons, cut tomatoes, and cut leafy greens at 41° F or lower. They are TCS food. Many operations hold other fresh-cut produce at this temperature as well.

High-risk populations. If your operation primarily serves high-risk populations, do NOT serve raw seed sprouts. The high-risk population that we serve would be preschool age children, infants, and students that have special diets. Other high-risk operations would be an adult living facilities.

Ice

People often forget that ice is a food and can become contaminated just as easily as any other food. Follow these guidelines to avoid contaminating ice in your operation.

Consumption. Make ice from potable water which is safe to drink water.

Cooling food. NEVER use ice as an ingredient if it was used to keep food cold. For example; if ice is used to cool food on a salad bar, it cannot then be used in drinks.

Containers and scoops. Use clean and sanitized containers and ice scoop outside of the ice machine in a clean, protected location.

NEVER touch ice with hands or use a glass to scoop ice.

Prepping Practices That Have Special Requirements

A **Variance** is document issued by your regulatory authority that allows a regulatory Requirement to be waived or changed. You will need a variance if your operation plans to prep food in any of the following ways:

- Packaging fresh juice on-site for sale at a later time, unless the juice has warning label that complies with local regulations.
- Smoking food as a way of preserving it (but not to enhance flavor).
- Using food additives or adding components such as vinegar to preserve or alter the food so that it no longer needs time and temperature control for safety.
- Curing food.
- Custom-processing animals for personal use. For example; a hunter brings a deer to a restaurant or butcher shop for dressing and takes the meat home for later use.
- Packaging food using a reduced oxygen packaging (ROP) method. This includes MAP, vacuum-packed, and *sous vide* food.
- Sprouting seeds or beans.
- Offering live shellfish from a display tank.

When applying for a variance, your regulatory authority may require you to submit a HACCP plan.

- The HACCP plan must account for any food safety risks related to the way you plan to prep the food item.
- You must comply with the HACCP plan and any other associated documents-including the variances at the operation. These documents must be provided to the regulatory authority if requested. Your records must show that you have procedures for monitoring critical control points and are:
 - Regularly monitoring the critical control points.
 - Taking the necessary corrective actions if there is a failure at a critical control point.
 - Verifying the effectiveness of the processes or procedures.

Variances and HACCP Plans

When an operation wishes to perform certain actions, such as smoking food for preservation or sprouting seeds, it may need a variance. Variances, which are issued by the local regulator, are meant to ensure that food and guests stay safe. Many local health departments provide forms that may be filled in by those seeking a variance. Depending on the process and local requirements, a Hazard Analysis Critical Control Point (HACCP) plan may be required. These plans show, in detail, how the operation will keep food safe while performing the action. Of course, many restaurant and foodservice managers do not apply for variances or create HACCP plans on a daily basis. In larger organizations, a quality assurance specialist or food safety manager may be involved. Smaller operations may choose to work with a consultant. These roles may provide interesting career opportunities for people who are passionate about food safety and the industry.

Knowledge Check

1.

Provide an example of food that cannot be safely reconditioned and must be thrown out.
2.

Describe the guidelines when thawing food under running water.




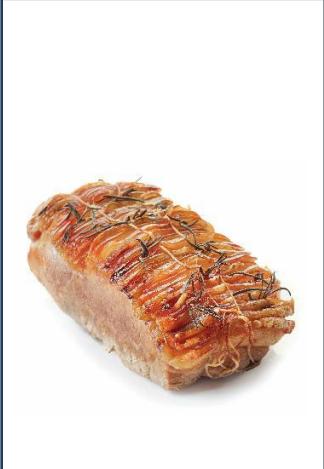
Cooking Food

Many people might expect a skilled cook to know precisely when an item is cooked to perfection based only on training and experience. But to be truly certain food is safe, additional tools should be used. The most important of those tools, of course, is the thermometer. To reduce pathogens to safe levels, food items must reach certain minimum temperatures and stay there for minimum amounts of time. On top of that, operational and regulatory requirements may include temperature logs and other records. This is particularly common when primarily cooking for high-risk populations, such as young children or the elderly. A professional kitchen requires training experience, the right tools, and a true commitment to food safety always.

Minimum Internal Cooking Temperatures

The only way to reduce pathogens in food to safe levels is to cook it to its correct **minimum internal temperature**. The temperature is different for each food. Once reached, you must hold the food at this temperature for a specific amount of time.

The FDA recommends cooking food to the minimum internal temperatures listed in the following table. However, your operation or regulatory authority might require different temperatures. Keep in mind that while cooking can reduce pathogens in food to safe levels, it will not destroy spores or toxins they may have produced. For this reason, it is critical to handle food correctly before it is cooked.

Minimum internal Cooking Temperatures													
	<p>165° F for <1 second (instantaneous)</p> <ul style="list-style-type: none">• Poultry, including whole or ground chicken, or duck.• Stuffing made with fish, meat, or poultry.• Stuffed meat, seafood, poultry, or pasta.• Dishes that include previously cooked TCS ingredients (raw ingredients should be cooked to their required minimum internal temperatures).												
	<p>155° F for 17 seconds</p> <p>Meats that are not intact:</p> <ul style="list-style-type: none">• Ground meat, including beef, pork, and other meat.• Meat mechanically tenderized with needles or blades or by injecting it with brine or flavors (e.g., brined ham or flavor injected roasts).• Meat vacuum-tumbled with marinades or other solutions.• Meat that has been cubed or pounded.• Ground meat from game animals commercially raised and inspected.• Ratites (mostly flightless birds with flat breastbones), including ostrich and emu.• Ground meat from game animal's, including chopped or minced seafood.• Shell eggs that will be hot held for service.												
	<p>145° F for 15 seconds</p> <ul style="list-style-type: none">• Seafood, ncluding fish, shellfish, and crustaceans.• Steaks/chops of pork, veal, and lamb.• Commercially raised game.• Shell eggs that will be served immediately.												
	<p>145° F for 4 minutes</p> <ul style="list-style-type: none">• Roasts of pork, beef, veal, and lamb.• Roasts may be cooked to the alternate cooking times and temperatures depending on the type of roast and oven used: <table><tr><td>130°F 112 minutes</td><td>140°F 12 minutes</td></tr><tr><td>131°F 89 minutes</td><td>142°F 8 minutes</td></tr><tr><td>133°F 56 minutes</td><td>144°F 5 minutes</td></tr><tr><td>135°F 36 minutes</td><td></td></tr><tr><td>136° F 28 minutes</td><td></td></tr><tr><td>138°F 18 minutes</td><td></td></tr></table>	130°F 112 minutes	140°F 12 minutes	131°F 89 minutes	142°F 8 minutes	133°F 56 minutes	144°F 5 minutes	135°F 36 minutes		136° F 28 minutes		138°F 18 minutes	
130°F 112 minutes	140°F 12 minutes												
131°F 89 minutes	142°F 8 minutes												
133°F 56 minutes	144°F 5 minutes												
135°F 36 minutes													
136° F 28 minutes													
138°F 18 minutes													

Minimum internal Cooking Temperatures



135° F for (no minimum time)

- Food from plants, including fruits, vegetables, grains (e.g., rice, pasta) and legumes (e.g., beans, refried beans) that will be hot held for service.



175° F

- Tea

Automatic iced tea and automatic coffee machine equipment:

Tea leaves should remain in contact with the water for a minimum of one minute.

Traditional steeping method: Tea leaves should be exposed to the water for about five minutes.

General Cooking Guidelines

Here are general guidelines to follow when cooking food.

Requirement to Follow Manufacturer Cooking Instructions

Some packaged foods contain manufacturer's instructions for cooking. These instructions must be followed before using the product. Frozen vegetables are an example. They frequently contain cooking instructions from the manufacturer and are often intended for use only after cooking.

It is especially important to follow these instructions when using the frozen vegetables to make RTE foods, such as salads. If the vegetables contained a pathogen and the food was not cooked, the pathogen could multiply and cause foodborne-illness.

Prohibition against Serving Food Not Cooked According to Manufacturer Instructions to High-Risk Populations

Operations That Mainly Serve High-Risk Populations

Operations that mainly serve high-risk populations, such as nursing homes or daycare centers, cannot serve certain item:

- Packaged food, such as frozen vegetables, that have not been cooked according to manufacturer's instructions.

Cooking TCS Food in the Microwave Oven

Meat, seafood, poultry, and eggs that you cook in a microwave oven must be cooked to 165° F.

In addition, follow these guidelines:

- Cover the food to prevent its surface from drying out.
- Rotate or stir it halfway through the cooking process so that the heat reaches the food more evenly.
- Let the covered food stand for at least two minutes after cooking to let the food temperature even out.
- Check the temperature in at least two places to make sure that the food is cooked through.

Requirement:

You must ensure that your staff is maintaining the temperature of TCS food during thawing.

Requirement:

Employees are required to cool TCS Foods Rapidly.

As you know, pathogens grow well in the temperature danger zone. However, they grow much faster at temperatures between 125°F and 70° F. Food must pass through this temperature range quickly to reduce this growth. That's why it is critical to ensure food handlers are using the correct method to cool TCS food, cooling it quickly, and regularly monitoring temperatures during cooling.

Time and Temperature. Specify the cooking time and minimum internal temperature in all recipes.

Correct thermometer. Use a thermometer with a probe that is the correct size for the food.

Check the temperature in the thickest part of the food. Take at least two readings in different locations.

Overloading. Avoid overloading ovens, fryers, and other cooking equipment. Overloading may lower the equipment or oil temperature, and the food might not cook fully.

Equipment temperature. Let the cooking equipment's temperature recover between batches.

Consumer Advisors

You must cook TCS food to required minimum internal temperatures listed in this Chapter unless a customer requests otherwise. This might happen often in your operation, particularly if you serve meat, eggs, or seafood.

Disclosure. If your menu includes TCS items that are raw or undercooked, such as animal products, you must note it on the menu next to these items. This can also be done by next to the menu. The footnote must include a statement that indicates the item is raw or undercooked or contains raw or undercooked ingredients.

Reminder. You must advise guests who order TCS food That is raw or undercooked, Such as animal products, of the increased risk of foodborne-illness. You can do this by posting a notice in our menu. You can also provide this information using brochures, table tents, signs, or other written methods. Check your local regulatory requirements.

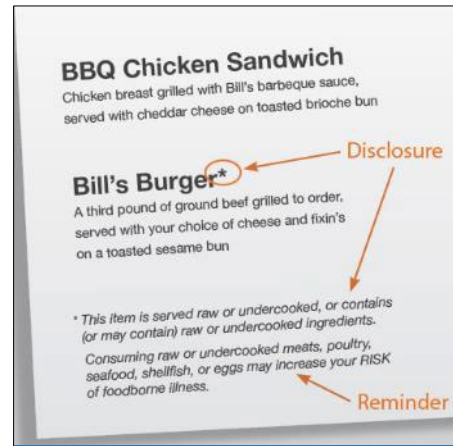
Children's Menus

The FDA advises against offering raw or undercooked meat, poultry, seafood, or eggs on a children's menu. This is especially true for undercooked ground beef, which may be contaminated with Shiga-toxin-producing *E. coli*.

Operations That Mainly Serve High-Risk Populations

Operations that mainly serve a high-risk population, such as nursing homes or daycare centers, cannot serve certain items. NEVER serve these items:

- Raw seed sprouts.
- Raw undercooked eggs (unpasteurized), meat , or seafood. Examples include over-easy eggs, raw oysters on the half shell, and rare hamburgers.
- Unpasteurized milk or juice.



Operations must note menu items that contain raw or undercooked ingredients. This menu provides both a disclosure and a reminder.

Partial Cooking During Prepping

Some operations partially cook food during prep and then finish cooking it just before service. This is called partial cooking, or par-cooking. Follow the steps below if you plan to partially cook meat, seafood, poultry, or eggs, or dishes containing these items.

When partially cooking meat seafood, poultry, eggs:

- Initial cooking should not exceed 60 min.
- Cool the food immediately.
- Freeze or refrigerate the food after cooling.
- Heat the food to its required minimum internal temperature.
- Cool the food if it will not be served immediately or held for service.

Your regulatory authority will require you to have written procedures that explain how the food cooked by this process will be prepped and stored. These procedures must be approved by the regulatory authority and describe the following:

- How the requirements will be monitored and documented.
- Which corrective actions will be taken if requirements are not met.
- How these food items will be marked after initial cooking to indicate they need further cooking.
- How these food items will be separated from ready-to-eat food during storage, once initial cooking is complete.



Knowledge Check

1. The FDA recommends cooking certain food items to a minimum internal temperature of 145°F for 15 seconds. Name at least two of these foods.
2. The FDA advises against including certain items on children's menus. What are they?

Cooling and Reheating Food

When you do not serve cooked food immediately, you must get it out of the temperature danger zone as quickly as possible. That means cooling it quickly as possible. That means cooling it quickly.

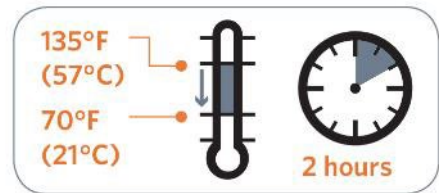
You also need to reheat it correctly, especially if you are going to hold it.

It's a potentially perilous time because the food will be passing through the temperature danger zone whether it is being cooled or reheated. Any time food spends in the TDZ is an opportunity for pathogens to grow. And if too much time is spent? Well, then pathogens can grow to dangerous levels. That's bad for everyone. Following the requirements for proper cooling and reheating can help ensure this doesn't happen.

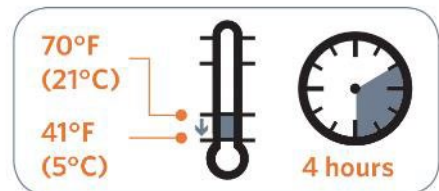
Temperature Requirements for cooling Food

As you know, pathogens grow well in the temperature danger zone. They grow even faster between 125° F and 70° F or lower within six hours.

First, cool food from 135° F to 70° F within two hours.



Then, cool food from 70° F to 41° F or lower or in the next four hours.



If food has not cooled to 70° F within two hours, it must be reheated and then cooled again.

If you can cool the food from 135° F to 70° F in less than two hours, you can use the remaining time to cool it to 41° F or lower. However, the total cooling time cannot be longer than six hours. For example; if you cool food from 135° F to 70° F in one hour, you have the remaining five hours to get the food to 41° F or lower. Check your local regulatory requirements.

Cooling food

Several factors and cooling methods can affect how quickly food will cool.

Factors That Affect Cooling

The following factors affect how quickly food will cool:

Thickness or density of the food. The denser the food, the slower the food will cool.

Size of the food. Large food items cool more slowly than smaller items. To let food cool faster, you should reduce its size. Cut large food items into smaller pieces. Divide large containers of food into smaller containers or shallow containers or shallow pans.

Storage container. The container in which food is stored also affects how fast it will cool. Stainless steel transfers heat away from food faster than plastic. Shallow pans disperse heat faster than deep ones.



These stainless steel containers of tomato sauce have been placed in an ice-water bath to cool.



This food handler is stirring hot food with an ice paddle to cool it quickly.



Dividing large amounts of food into multiple small containers is an effective way to speed cooling.

NEVER cool large amounts of hot food in a cooler. Most coolers are not designed to cool large amounts of hot food quickly. Also, placing hot food in a cooler may not move the food through the temperature danger zone quickly enough.

- After dividing food into smaller containers, place them in a clean prep sink or large pot filled with ice water. Stir the food frequently to cool it faster and more evenly.
- Blast chillers blast cold air across food at high speeds to remove heat. They are typically used to cool large amounts of food.
- Ice paddles are plastic paddles that can be filled with ice or with water and then frozen. Food stirred with these paddles will cool quickly. Food cools even faster when placed in an ice-water bath and stirred with an ice paddle.
- When cooling soups or stews you can add ice or cold water as an ingredient to cool it. To use this method, the recipe is made with less water than required. Cold water or ice is then added after cooking to cool the food and provide the remaining water.

Storage Food for further cooling

Loosely cover food containers before storing them. Food can be left uncovered if stored in a way that protects it from contaminants. Storing uncovered containers above other food, especially raw meat, seafood, and poultry, will help prevent cross-contamination.

Reheating food

How you reheat food depends on how you intend to use the food. Follow these guidelines when reheating food.

Food reheated for immediate service. You can reheat food that will be served immediately, such as a beef sandwich, to any temperature. However, you must make sure the food was cooked and cooled correctly.

Food reheated for hot holding. You must reheat TCS food for hot holding to an internal temperature of 165° F for 15 seconds. Make sure the food reaches this temperature within two hours from start to finish. These guidelines apply to all reheating methods, such as pans or microwave ovens. Reheat commercially processed and packaged ready-to-eat food to an internal temperature of at least 135° F. This includes items such as cheese sticks and deep-fried vegetables.

Knowledge Check

1. When cooling food, what are the time and temperature requirements for each stage?
2. For items that will be hot held, what is the minimum internal temperature required when reheating commercially processed and packaged ready-to-eat food such as deep-fried mushrooms?

[illegible]

STUDY QUESTIONS

1. The two biggest hazards when prepping food are cross-contamination and
 - a. cross-contact.
 - b. chemical intoxication.
 - c. physical contamination.
 - d. time-temperature abuse.
2. A food handler took out a hotel pan of tuna salad to make two dozen tuna sandwiches. What error was made?
 - a. There was no error.
 - b. Too much tuna salad was taken out at one time.
 - c. Too much time was spent in the temperature danger zone.
 - d. The tuna salad was exposed to the temperature danger zone.
3. What guidelines should be followed when using additives during food preparation?
 - a. Additives should only be used to alter the appearance of food.
 - b. Sulfites should only be added to produce that will be eaten raw.
 - c. Additives must be approved by the regulatory authority.
 - d. Colored overwraps should be used to enhance the appearance of food.
4. Food that has become unsafe should be thrown out unless
 - a. it can be safely reconditioned.
 - b. there are no visible signs of spoilage.
 - c. a foodborne-illness is unlikely.
 - d. it has been approved by the regulatory authority.
5. When preparing protein salads, such as tuna or egg salad, never use leftover TCS ingredients that have been held longer than
 - a. 2 days.
 - b. 3 days
 - c. 5 days
 - d. 7 days.

6. How should pooled eggs be handled to keep them safe?
 - a. Cook them right after mixing them.
 - b. Make additional batches in the same container.
 - c. Store them at an air temperature of 45°F (7°C) or lower.
 - d. Leave them at room temperature for 4 hours or less.
7. Why are overloading fryer baskets a food safety risk?
 - a. It risks burning the food and producing carcinogens.
 - b. It reduces oil temperature resulting in undercooked food.
 - c. It can transfer allergens to the fryer oil more easily.
 - d. It can result in cross-contamination due to splatter.
8. What guidelines should be followed when handling ice to keep it safe?
 - a. Store ice scoops in the ice machine.
 - b. Only handle ice with bare hands after handwashing.
 - c. Use a glass to scoop ice.
 - d. Never use ice as an ingredient if it was used to cool food.
9. Which practice requires a variance?
 - a. Packaging food using a reduced oxygen method
 - b. Holding food without temperature control
 - c. Cooling food using the two-stage cooling method
 - d. Reheating food that was previously cooked and cooled
10. Which method is a safe way to thaw food?
 - a. As part of the cooking process
 - b. Under running water at 125°F (52°C) or higher
 - c. Submerged in a sink of standing water at 70°F (21°C)
 - d. On the counter at room temperature
11. A food handler removes a frozen lasagna from the freezer and leaves it on a prep table to thaw overnight. Why is this method of thawing unsafe?
 - a. Dishes that thaw at room temperature need to be cut into smaller pieces first.
 - b. The dish is exposed to the temperature danger zone so pathogens can grow.
 - c. The dish's temperature will decrease too rapidly.
 - d. Most foods need at least 18 hours to thaw at room temperature.

12. What must be immediately done to food after it is thawed in a microwave?
 - a. Hold it.
 - b. Cook it.
 - c. Cool it.
 - d. Freeze it.
13. When slacking food during preparation, the food should never go above what temperature?
 - a. 32°F (0°C)
 - b. 41°F (5°C)
 - c. 50°F (10°C)
 - d. 70°F (21°C)
14. What is the required minimum internal cooking temperature for seafood?
 - a. 135°F (57°C) or higher for 15 seconds
 - b. 145°F (63°C) or higher for 15 seconds
 - c. 155°F (68°C) or higher for 17 seconds
 - d. 165°F (74°C) or higher for <1 second
15. What is the required minimum internal cooking temperature for poultry?
 - a. 135°F (57°C) or higher for 15 seconds
 - b. 145°F (63°C) or higher for 15 seconds
 - c. 155°F (68°C) or higher for 17 seconds
 - d. 165°F (74°C) or higher for <1 second
16. What is the required minimum internal cooking temperature for ground beef?
 - a. 135°F (57°C) or higher for 15 seconds
 - b. 145°F (63°C) or higher for 15 seconds
 - c. 155°F (68°C) or higher for 17 seconds
 - d. 165°F (74°C) or higher for <1 second
17. What is the required minimum internal cooking temperature for rice that will be hot-held for service?
 - a. 135°F (57°C)
 - b. 145°F (63°C)
 - c. 155°F (68°C)
 - d. 165°F (74°C)

18. What is the required minimum internal cooking temperature for a pork roast?
 - a. 135°F (57°C) or higher for 15 seconds
 - b. 145°F (63°C) or higher for 4 minutes
 - c. 155°F (68°C) or higher for 17 seconds
 - d. 165°F (74°C) or higher for <1 second
19. What temperature must meat be cooked to if it will be cooked in a microwave?
 - a. 135°F (57°C)
 - b. 145°F (63°C)
 - c. 155°F (68°C)
 - d. 165°F (74°C)
20. Eggs were placed in a covered dish and cooked in a microwave oven. Half-way through cooking, the eggs were stirred, and once finished were left to stand for 30 seconds before being checked with a thermometer in two places. What mistake was made?
 - a. They were placed in a covered dish.
 - b. They were stirred halfway through cooking.
 - c. They were left to stand for 30 seconds after cooking.
 - d. They were checked with a thermometer in two places.
21. What should be done if the menu includes TCS items that are raw or undercooked?
 - a. It must be noted on the menu.
 - b. Service staff must point it out to guests.
 - c. It must be posted on signs in the establishment.
 - d. It must be listed on the company website.
22. If an operation uses a reduced oxygen packaging method for fish, the fish must be
 - a. frozen before, during, or after packaging.
 - b. thawed before packaging.
 - c. thawed within 30 days after packing.
 - d. frozen no more than 14 days before packaging.
23. Which item would be safe to offer on a children's menu?
 - a. Sushi
 - b. Grilled cheese
 - c. Eggs over easy
 - d. Medium rare hamburger

24. What do some regulatory authorities require food service operations to submit when applying for a variance?
 - a. A list of their suppliers
 - b. Receiving documents
 - c. A HACCP plan
 - d. A crisis management plan
25. When must a consumer advisory be provided for menu items containing TCS food?
 - a. When the item is raw or undercooked
 - b. When the item contains a potential allergen
 - c. When the operation provides only counter service
 - d. When the operation primarily serves a high-risk population
26. When partially cooking food, the initial cooking phase should not last longer than
 - a. 5 minutes.
 - b. 15 minutes.
 - c. 30 minutes.
 - d. 60 minutes.
27. What temperature must partially cooked food reach when it is reheated?
 - a. Between 135°F (57°C) and 70°F (21°C)
 - b. At least 145°F (63°C)
 - c. Up to 165°F (74°C)
 - d. Its required minimum internal temperature
28. A food handler is cooling chicken soup for dinner service. After two hours, the soup's temperature has decreased from 135°F (57°C) to 80°F (27°C). What should the food handler do next?
 - a. Throw the soup away.
 - b. Continue cooling the soup.
 - c. Reheat the soup and cool it again.
 - d. Put the soup back into the holding unit.
29. Food being cooled must pass quickly through which temperature range to reduce pathogen growth?
 - a. 65°F to 20°F (18°C to -6°C)
 - b. 125°F to 70°F (52°C to 21°C)
 - c. 180°F to 130°F (82°C to 54°C)
 - d. 220°F to 195°F (104°C to 90°C)

30. What is the maximum cooling time for TCS food?
 - a. 1 hour
 - b. 2 hours
 - c. 4 hours
 - d. 6 hours
31. How does the density of food affect cooling?
 - a. The denser the food, the more slowly it will cool.
 - b. The denser the food, the more quickly it will cool.
 - c. Density does not affect cooling.
 - d. Density has only a small effect on cooling.
32. What is the first step in cooling a large pot of hot meat sauce?
 - a. Put the pot in the freezer to cool.
 - b. Put the pot in the walk-in cooler to cool.
 - c. Put the pot into a sink full of ice water.
 - d. Pour the meat sauce into several smaller containers.
33. When reheating turkey chili for hot holding, what is the minimum temperature that the chili must reach?
 - a. 135°F (57°C) for 15 seconds
 - b. 145°F (63°C) for 15 seconds
 - c. 155°F (68°C) for 15 seconds
 - d. 165°F (74°C) for 15 seconds
34. What temperature must TCS food for immediate service be reheated to?
 - a. Any temperature
 - b. 145°F (63°C) for 15 seconds
 - c. 155°F (68°C) for 15 seconds
 - d. 165°F (74°C) for 15 seconds
35. What temperature must commercially processed, and packaged ready-to-eat food be reheated to?
 - a. Any temperature
 - b. 135°F (57°C)
 - c. 155°F (68°C) for 15 seconds
 - d. 165°F (74°C) for 15 seconds

SECTION 9

The Flow of Food: Service

Holding Food for Service

Working with food in a home kitchen is very different from cooking in a commercial kitchen or other foodservice operation. The techniques used at home to prepare and hold food can vary widely. But in a restaurant, there are very specific requirements for holding food and these requirements exist to keep food safe. People who are new to the industry may have a hard time remembering all of them. This can be particularly true when it comes to holding food without temperature control. There are so many things to think about at first, but there are some carefully documented steps that can be followed. Sticking to these rules will keep food quality high, keep guests happy, and also ensure that pathogens cannot grow to unsafe levels.

General Rules for Holding Food

To keep food safe during holding, consider the following.

Temperature. Hold TCS food at the correct internal temperature:

- Hold hot food at an internal temperature 135° F or lower.
- Hold cold food at an internal temperature of 41° F or lower.

Thermometer. Use a thermometer to check temperatures. NEVER use the temperature gauge on a holding unit to check the food's temperature. The gauge does not check the internal temperature of the food.

Time. Check food temperatures at least every four hours. Follow these guidelines:

- Throw out food that is not being held at the correct temperature.
- You can also check the temperature every two hours. This will leave time for corrective action. For example; Hot TCS food that has been held below 135° F can be reheated and then placed back in the hot-holding unit.

Reheating food. NEVER use hot-holding equipment to reheat food unless it is built to do so. Most hot-holding equipment does not pass food through the temperature danger zone quickly enough. Reheat food correctly. Then move it to the holding unit.



A food handler is using a thermocouple to check the temperature of a hot-held casserole. The temperature reads 135° F.

Food covers and sneeze guards. Cover food and install sneeze guards to protect food from contaminants. Covers will help maintain a food's internal temperature.

Policies. Create policies about how long the operation will hold food and when it will be thrown out.

Holding Food Without Temperature Control

Your operation may want to display or hold TCS food without temperature control. However, if you primarily serve a high-risk population, you cannot hold TCS food without temperature control.

Here are some examples of when food might be held without temperature control:

- When displaying food for a short time, such as at an off-site catered event.
- When electricity is not available to power holding equipment.

If your operation displays or holds TCS food without temperature control, it should do so under certain conditions. This includes:

- Preparing written procedures and getting write approval in advance by the regulatory authority,
- Maintaining those procedures in the operation, and
- Making sure those procedures are made available to the regulatory authority on request.

There are other conditions that may apply. Also note that the conditions for holding cold food are different from those for holding hot food. Before using time as a method of control, check with your regulatory authority for specific requirements.

Cold Food

You can hold cold food without temperature control for up to six hours if you meet these conditions:

- Hold the food at 41° F or lower before removing it from refrigeration.
- Label the food with the time you removed it from refrigeration and the time you must throw it out.
- Ensure that the discard time on the label is six hours from the time you removed the food from refrigeration. For example; if you remove potato salad from the cooler at 3 p.m. to serve at a picnic, the discard time on the label should be 9 p.m. This equals six hours from the time you removed it from refrigeration.



The above holding unit uses covered containers and sneeze guards to keep food safe.

- Make sure the food temperature does not exceed 70° F while it is being served. Throw out any food that exceeds this temperature.
- Sell, serve, or throw out the food within six hours.

There are alternatives to these requirements for holding cold, ready-to-eat TCS food without temperature control.

If the food is discarded within four hours, it can be allowed to reach any temperature during service:

- The food must be held at 41° F or lower before removing it from temperature control.
- The discard time on the label must be four hours from the time the food was removed from temperature control.
- The food must be sold, served, or thrown out within four hours.

Ready-to-eat fruit or vegetables that become TCS food when cut, chopped, or sliced and hermetically sealed containers of food that become TCS food when opened, like a can of tuna, can have an initial temperature of 70° F or lower.:

- The product must be discarded within four hours.
- The temperature of the product cannot exceed 70° F within the four-hour period.
- The discard time on the label must be four hours from the time when the product became a TCS food.

Hot Food

You can hold hot food without temperature control for up to four hours if you meet these conditions:

- Hold the food at 135° F or higher before removing it from temperature control.
- Label the food with the time you must throw it out. The discard time on the label must be four hours from the time you removed the food from temperature control.
- Sell, serve, or throw out the food within four hours.



This hot pan of mostaccioli is labeled with the time it was removed from temperature control (4 p.m.) and the time it must be discarded (8 p.m.). Which is four hours later.

Temperature Logs

Temperature logs are an important tool to keep food safe. Depending on the operation, they may be required by management or by the local regulator. But who is responsible for checking temperatures and then filling out the logs? Who reviews them? And what should be done if food is found to be at unsafe temperatures? The answers to all of these questions should be found in each operations polices. Many operations ensure that staff members from line cooks to managers know how to take temperatures, fil out logs, and take corrective action when needed. This simple act of checking and recording temperatures can help ensure the food you serve is safe.

Examples of common temperature logs include receiving temperatures, cold storage, cooking, cooling, reheating, and hot holding. Some operations have chosen to partially automate the process by using digital thermometers that connect wirelessly to an electronic temperature log.

Whether paper-based or electronic action must be taken when food is found to be at unsafe temperatures. The action required will depend on the item and the operation’s policies. In some cases, corrective action can be taken such as reheating food. In other instances, however, the food must be discarded.

Knowledge Check

- 1. Why should hot-holding equipment never be used to reheat food?
- 2. Name an example of a situation in which food might be held without temperature control.

Serving food safely

There are many types of service styles – from fine dining to buffets to casual restaurants to carryout. And there are many different places where food might be served in addition to the usual suspects such as restaurants and cafeterias. Many hotels offer breakfast service, for example. A chef may perform cooking demonstrations at a farmers' market or other venue. And, of course, a catered event could happen just about anywhere.

One thing that should be a common theme throughout all service styles and locations is food safety. No matter where the food will be served, first and foremost, hands should always be clean and single-use gloves worn when handling ready-to-eat food. In the front of the house, service staff must know how to handle dishes and flatware without contaminating them. And in self-service areas such as salad bars, care must be taken to ensure that food is kept safe-some-times from the guests themselves.

Preset Tableware

If your operation presets table ware on dining tables, you must take steps to prevent to from becoming contaminated. This might include wrapping or covering the items.

Table settings do not need to be wrapped or covered if extra (or unused) settings meet these requirements:

- They are removed when guests are seated.
- If they remain on the table, they are cleaned and sanitized after guests have left.

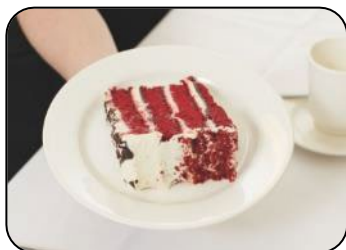


This silverware has been wrapped in a napkin to prevent contamination.

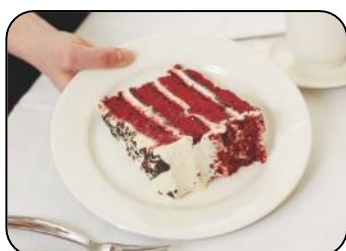
Service Staff Guidelines

Service staff can contaminate food simply by handling the food-contact areas of glasses, dishes, and utensils. Service staff should use these guidelines when serving food. Just keep in mind your hands should never touch ready-to-eat food or food contact surface.

Correct



Incorrect



Re-Serving Food Safely

Service and kitchen staff should also know the rules about re-serving food that was previously served to another guest.

Returned menu items. Do NOT re-serve food returned by a guest.

Plate garnishes. NEVER re-serve plate garnishes such as fruit or pickles. Throw out served but unused garnishes.

Condiments. Serve condiments in their original containers or in containers designed to prevent contamination. Offering condiments in individual packets or portions can also help keep them safe:

- NEVER re-serve uncovered condiments.
- NEVER combine leftover condiments with fresh ones.
- NEVER re-serve opened portions of condiments after serving them to guests. These items, which include salsa, butter, and mayonnaise, should be thrown away.

Bread and rolls. Do NOT re-serve uneaten bread or rolls to other guests. Change linens used in bread baskets after each guest.

Prepackaged food. In general, you may re-serve only unopened, prepackaged food in good condition. This includes condiment packets and wrapped crackers. You may also re-serve bottles of ketchup, mustard, and other condiments, the containers must remain closed between uses.

Kitchen staff Guidelines

Train your kitchen staff to serve food in these ways.

Bare hand contact. Food handlers must wear single-use gloves whenever handling ready-to-eat food. As an alternative, food can be handled with spatulas, tongs, deli sheets, or other utensils. Keep in mind that there are some situations where it may be acceptable to handle ready-to-eat food with bare hands, such as when a dish does not contain raw meat, seafood, or poultry and will be cooked to at least 145° F.

Serving utensils. Use separate utensils for serving each food item. Clean and sanitize them after each serving task. If using utensils continuously, clean and sanitize them at least once every four hours.

Utensil storage. Store serving utensils in the food with the handle extended above the rim of the container. Or, if you are serving a non TCS food item, you can also place them on a clean and sanitized food-contact surface. Spoons or scoops used to serve food, such as ice cream or mashed potatoes, can be stored under running water. Utensils may also be stored in a container of water that is at least 135° F.

Refilling take-home containers. Some jurisdictions allow food handlers to refill take-home containers brought back by a guest with food and beverages. Take-home containers can be refilled if they meet these conditions:

- They were designed to be reused.
- They were provided to the guest by the operation.
- They are cleaned and sanitized correctly.
- Take-home beverage containers can also be refilled as long as the beverage is not a TCS food and the container will be refilled for the same guest. The container must also meet these conditions:
 - It can be effectively cleaned at home and in the operation.
 - It will be rinsed with fresh, hot water under pressure before refilling.
 - It will be refilled by staff in the operation or by the guest using a process that prevents contamination.

Self-Service Areas

Self-service areas can be contaminated easily. Follow these guidelines to prevent contamination and time-temperature abuse.

Protection. Food on display can be protected from contamination using sneeze guards. Food can also be protected by placing it in display cases or by packaging it to protect it from contamination.

Whole, raw fruits and vegetables and nuts in the shell that require peeling or hulling before eating do not require the protection measures discussed above.

Labels. Label food located in self service areas. For example; place the name of the food, such as salad dressing, on ladle handles or signs.

Raw and ready-to-eat food. Typically, raw unpackaged meat, poultry, and seafood can not be offered for self-service. However, these items are an exception:

- Ready-to-eat food at buffets or salade bars that serve food such as sushi or raw shellfish.
- Ready-to-cook portions that will be cooked and eaten immediately on the premises, such as at Mongolian barbecues.
- Raw, frozen, shell-on shrimp or lobster.

Refills. Do NOT let guests refill dirty plates or use dirty utensils at self-service areas. Assign a staff member to monitor guests. Post signs reminding guests not to reuse plates and utensils.

Utensils. Stock food displays with the correct utensils for dispensing food. This might include tongs, ladles, or deli sheets.

Ice. Ice used to keep food or beverages cold should NEVER be used as an ingredient.

Labeling Bulk Food

Label bulk food in self-service areas. The label must be in plain view of the guest.

When labeling food, you can include the manufacturer or processor label provided with the food.

As an alternative, you can provide this information using a card, sign, or labeling method.

Bulk unpackaged food, such as bakery products and unpackaged food portioned for guest, does not need to be labeled if it meets these conditions:

- The product makes no claim regarding health or nutrient content.
- There are no laws requiring labeling.
- The food is manufactured or prepped on the premises.

Knowledge Check

1. Name three items that should never be re-served to guests.
2. How can food be protected in a self-service area?

Off-Site Service

There are plenty of options for great food when heading to a restaurant or foodservice operation. But now, more than ever before, great food is coming right to the diner. This can provide exciting new opportunities for people working in our industry as these options grow. Of course, **off-site service** such as delivery, catering, mobile/temporary kitchens including food trucks, and vending machines can present special challenges. Those who operate these services need to follow the same food safety rules as permanent operations. Food should be protected from contamination and time-temperature abuse. Just like any other restaurant or food-service operation, the facilities and equipment used to prep food need to be clean and safe. Menu items should contribute to safe service. And, of course, food needs to be handled correctly as well.



Food that will be served off-site, such as for catering, must be protected from contamination and time-temperature abuse.

Delivery

Many operations prep food at one location and then deliver it to remote sites. The longer the time between preparation and consumption, the greater the risk that food will be exposed to contamination or time-temperature abuse.

When transporting food and items, follow these safety procedures.

Containers. Pack food in insulated, food-grade containers. They should be designed so food cannot mix, leak, or spill. At the service site, use appropriate containers or equipment to hold food at the correct temperature.

Labels. Label food with a use-by date and time, and reheating and service instructions for staff at off-site locations.

Delivery vehicles. Clean the inside of delivery vehicles regularly.

Personal hygiene. Practice good personal hygiene when distributing food.

Internal food temperatures. Check internal food temperatures. If containers or delivery vehicles are not holding food at the correct temperature, reevaluate the length of the delivery route or the efficiency of the equipment being used.

Storage. Store raw meat, poultry, and seafood separate from ready-to-eat items. For example; store raw chicken separate from ready-to-eat salads.

Catering

Caterers must follow the same food safety rules as permanent operations.

Food must be protected from contamination and time- temperature abuse. Facilities must be clean and sanitary. Food must be prepared and served correctly, and staff must follow good personal hygiene practices.



These disposable hotel pans of hot food have been delivered in insulated food- grade delivery containers.

Meeting the Off-Site Challenge

It's always fun when you get to attend catered events. But people outside of our industry may not realize how complicated the process can be when preparing food in one location and transporting it to another. Making sure food is kept at safe temperatures, for the right amount of time, and transported without contamination requires attention to detail. And keeping it safe once it has arrived is not small task, either.

Imagine setting up and outdoor catered event for 300 guests at a golf course. Where will service staff be able to wash their hands? Will electricity be available to keep food at safe temperatures? If it is not, then what? Ice and chafing dishes could be used to keep food cold or hot. Or, alternatively, food could be held without temperature control. But if this is the case, timing must be precise. Food that arrives at the venue too early might exceed

Safe holding time before the end of the event and have to be discarded. Off-site service and catering come with all of the challenges of any foodservice operation, plus a few of their own. Done right, however, they can provide a one-of-a-kind guest experience.



Catering often presents unique challenges. Follow these guidelines to keep food safe:

Utilities. Make sure the service site has the correct utilities:

- Safe water for cooking, dishwashing and handwashing.
- Garbage containers stored away from food-prep, storage, and serving areas.

Insulated containers. Use insulated containers to hold TCS food. Raw meat should be wrapped and stored on ice. Deliver milk and dairy products in a refrigerated vehicle or on ice.

Cold food. Served cold food in containers on ice or in chilled, gel-filled containers. If that is not desirable, the food may be held without temperature control according to the guidelines specified in this chapter.

Ready-to-eat food. Store ready-to-eat food separate from raw food.

Leftovers. If leftovers are given to guests, provide instructions for how they should be handled. Information such as a discard date and the food's storage and reheating instructions should be clearly labeled on the container.

Temporary Units

Temporary units typically operate in one location for less than 14 days. Foodservice tents or kiosks set up for food fairs, special celebrations, or sporting events may be temporary units.

In some areas, the definition also extends to units set up for longer periods. Temporary units usually serve prepackaged food or food requiring limited prepping, such as hot dogs. It is best to keep the menu simple to limit the amount of on-site food prep. Check with your regulatory authority (health Department) for operating requirements.



Here are some additional guidelines:

- Temporary units should be constructed to keep out dirt and pests. If floors are made of dirt or gravel, cover them with mats or platforms to control dust and mud. Construct walls and the ceiling with materials that will protect food from weather and wind-blown dust.
- Apply the safe-handling rules discussed throughout this book to food prep in temporary units.
- Safe drinking water also needs to be available for cleaning, sanitizing, and handwashing. Since dishwashing facilities will likely be limited too, it is best to use disposable, single-use items.

Mobile units

Mobile units are portable facilities ranging from concession vans to elaborate field kitchens.

Those serving only frozen novelties, candy, packaged snacks, and soft drinks need to meet basic sanitation requirements. However, mobile kitchens prepping and serving TCS food need to follow the same rules required of permanent foodservice kitchens. Both types of operations might be required to apply for a special permit or license from the regulatory authority.

Vending machines

Vending operators should protect food from contamination and time-temperature abuse. This is especially important when prepping and packaging food and during transport and delivery. Follow these guidelines:

- Check product shelf life daily. Products often have an expiration or use-by date. If the date has expired. Throw out the food immediately. Throw out refrigerated food prepped on-site if not sold within seven days of preparation.
- Keep TCS food at the correct temperature. It should be held at 41° F or lower, or at 135° F or higher. These machines must have controls that prevent TCS food from being dispensed if the temperature stays in the danger zone for a specified amount of time. This food must be thrown out.
- Dispense TCS food in its original container.
- Wash and wrap fresh fruit with edible peels before putting it in a machine.



This turkey and cheese sandwich from a vending machine is labeled with a sell-by date.

Knowledge Check

1. Name three examples of off-site services.
2. What are the requirements for containers used to transport food?

STUDY QUESTIONS

1. What is the correct internal temperature for food being hot-held for service?
 - a. 70°F (21°C) or above
 - b. 125°F (52°C) or above
 - c. 135°F (57°C) or above
 - d. 155°F (68°C) or above
2. At 12:00 p.m., a food handler puts soup in hot-holding equipment for lunch service. At 2:00 p.m., the soup's temperature reads 125°F (52°C). What corrective action should the food handler take?
 - a. Throw the soup away.
 - b. Reheat the soup.
 - c. Serve the soup immediately.
 - d. Check the soup again at 3:00 p.m. and reheat if necessary.
3. What is the maximum allowable internal temperature when cold-holding TCS food?
 - a. 41°F (5°C)
 - b. 45°F (7°C)
 - c. 51°F (10°C)
 - d. 55°F (13°C)
4. A power outage has left hot TCS food out of temperature control for six hours. What must be done with the food?
 - a. Throw the food away.
 - b. Cool the food to 41°F (5°C) or lower.
 - c. Serve the food immediately.
 - d. Cook the food to 165°F (74°C).
5. Why is it hazardous to reheat food with hot-holding equipment?
 - a. The equipment can scorch the food.
 - b. The risk of cross-contact is significantly increased.
 - c. Cross-contamination becomes a greater risk later in the cooking process.
 - d. Most equipment does not pass food through the temperature danger zone quickly enough.

6. A food handler has been holding chicken salad for sandwiches in a cold well for seven hours. When they check the temperature of the chicken salad, it is 54°F (12°C). What must the food handler do?
 - a. Sell the remaining chicken salad immediately.
 - b. Sell the remaining chicken salad within 2 hours.
 - c. Cool the chicken salad to 41°F (5°C).
 - d. Discard the chicken salad.
7. Why should food be covered when it is being held?
 - a. Covers help maintain a food's internal temperature.
 - b. Covers primarily protect food from cross-contact.
 - c. Covers help food reach the correct temperature.
 - d. Covers keep hands from contact with food.
8. What is the purpose of a sneeze guard?
 - a. To keep allergens off food
 - b. To prevent time-temperature abuse
 - c. To protect food from contaminants
 - d. To prevent chemicals from contaminating food
9. At 11:00 a.m., a caterer removes a tray of lasagna from the oven and places it on a buffet table without temperature control. By what time must the lasagna be thrown away?
 - a. 1:00 p.m.
 - b. 2:00 p.m.
 - c. 3:00 p.m.
 - d. 4:00 p.m.
10. TCS food should never be held without temperature control at a
 - a. catered event.
 - b. nursing home.
 - c. quick-service operation.
 - d. convenience store.
11. With approved procedures in place, how long can cold food be held without temperature control if it does not exceed 70°F (21°C)?
 - a. 2 hours
 - b. 4 hours
 - c. 6 hours
 - d. 8 hours

12. Cold food being held without temperature control for up to six hours cannot exceed which temperature while it is being served?
 - a. 41°F (5°C)
 - b. 50°F (10°C)
 - c. 60°F (16°C)
 - d. 70°F (21°C)
13. Trays of lasagna were removed from hot-holding at 135°F (57°C) at 4 p.m. and labeled with a discard time of 10 p.m. The lasagna was served to guests without temperature control and discarded at 8 p.m. What mistake was made?
 - a. The food was held at the wrong temperature.
 - b. The discard time on the label was wrong.
 - c. The food was thrown away at the wrong time.
 - d. The trays went too long without temperature control.
14. What must food handlers do when handling ready-to-eat food?
 - a. Wear gloves.
 - b. Use hand sanitizer.
 - c. Cover wounds with bandages.
 - d. Touch the food as little as possible.
15. Which is a safe practice when serving ready-to-eat food?
 - a. Scooping ice with a sanitized glass.
 - b. Plating hamburgers with bare hands.
 - c. Using deli sheets to handle donuts.
 - d. Serving rolls and fried chicken with the same pair of tongs.
16. Which is a safe practice when handling dishware and utensils?
 - a. Holding glasses by their rims.
 - b. Carrying glasses in a stack.
 - c. Storing flatware with the handles down.
 - d. Holding plates by their edges.
17. Which item may be re-served to another customer?
 - a. A partially used cup of salsa
 - b. Unopened condiment packets
 - c. Uneaten bread from a breadbasket
 - d. An uneaten pickle used as a plate garnish

18. An operation has a buffet with 8 different items on it. How many serving utensils are needed to serve the items on the buffet?
 - a. 1
 - b. 2
 - c. 4
 - d. 8
19. How should utensils for serving TCS food be stored during service?
 - a. Lying flat on top of the food
 - b. Alongside the food on a side towel
 - c. On a clean and sanitized plate next to the food
 - d. In the food with the handle above the container rim
20. Soup that is being hot-held on a buffet should be labeled with the
 - a. name of the food.
 - b. prep date.
 - c. soup's ingredients.
 - d. use-by date.
21. Which action could contaminate food at a self-service area?
 - a. Keeping hot TCS food at 135°F (57°C)
 - b. Allowing customers to reuse plates
 - c. Labeling all containers and handles
 - d. Taking food temperatures every hour
22. Which food does not need additional packaging or other protection from contamination when placed on display?
 - a. Pastries
 - b. Bread
 - c. Whole raw fruit
 - d. Open condiments
23. When delivering food for off-site service, raw poultry must be stored
 - a. at a lower temperature than ready-to-eat food.
 - b. separately from ready-to-eat food.
 - c. without temperature control.
 - d. above raw beef.

24. What type of containers should be used to transport food offsite?
 - a. Insulated
 - b. Disposable
 - c. Reusable
 - d. Biodegradable
25. Food for off-site service should be labeled with reheating and service instructions and
 - a. a list of ingredients.
 - b. an inspection stamp.
 - c. the date of preparation.
 - d. the use-by date and time.
26. How should food in vending machines be dispensed?
 - a. In original packaging
 - b. In reusable packaging
 - c. Washed and rewrapped
 - d. In plastic wrap
27. What must an operation do if it plans to display or hold TCS food without temperature control?
 - a. Petition the FDA.
 - b. Receive monthly health inspections.
 - c. Get written approval from the regulatory authority.
 - d. Heat TCS foods to 180°F (82°C) before service.
28. What guideline should vending machine operators follow to help protect food from contamination and time-temperature abuse?
 - a. Keep TCS food above 41°F (5°C).
 - b. Avoid stocking fruit with edible peels.
 - c. Rotate products bi-weekly.
 - d. Check product shelf life daily.
29. A tray of sliced watermelon is removed from the cooler at 10:00 a.m. If the watermelon is served without temperature control but never exceeds 70°F (21°C), what discard time should appear on the label?
 - a. 12:00 p.m.
 - b. 2:00 p.m.
 - c. 4:00 p.m.
 - d. 6:00 p.m.

30. In some jurisdictions, take-home beverage containers can be refilled if
 - a. they are made of a clear material.
 - b. their capacity doesn't exceed 24 ounces.
 - c. they are rinsed with fresh, hot water under pressure.
 - d. guests refill them in a self-service area.

SECTION 10

Food Safety Management Systems

Food Safety Management Systems

Up to this point, you have learned about specific steps you can take to keep food safe and prevent foodborne-illness. Practicing good personal hygiene and purchasing food from safe sources, cooking it to required temperatures, and holding it safely are all examples of those steps. There is more to come in the next several chapters, but managers need something to help them tie all of this information together, in a useful way. They need something that can be used to ensure that the biggest risks to the safety of their food will be controlled – that is the purpose of a food safety management system. A **food safety management system** is a group of practices and procedures intended to prevent foodborne-illness. It does this by actively controlling risk and hazards throughout the flow of food. Having some food safety programs already in place gives you the foundation for your system. The principles presented in ServSafe are the basis of these programs. Examples of the programs needed can be found below.

Food Safety Programs



Knowledge Check

- 1. What is a food safety management system?
- 2. List at least three of the programs that must be in place to establish a food safety management system.

Active Managerial Control

People throw around the term “active managerial control” all the time. But what is it?

Well, if you think about it, the name kind of gives it away. For one thing, it implies that managers are supposed to control something. But what? Earlier you learned that there are five common risk factors for foodborne-illness:

1. Purchasing food from unsafe sources.
2. Failing to cook food correctly.
3. Holding food at incorrect temperatures .
4. Using contaminated equipment and
5. Practicing poor personal hygiene.

Based on data collected by the CDC, we know that these five risk factors repeatedly contribute to foodborne-illness outbreaks. And They are directly related to food preparation practices and employee behaviors in restaurants and foodservice establishments. These risk factors are what managers need to control. Keep in mind that they are not the only risks to food. However, if managers focus on them, them can prevent the majority of foodborne-illnesses.

There is another important part to active managerial control. That’s the word “active’. You see, managers can’t simply wait and react to food safety issues as they arise. They to anticipate risks and plan for them ahead of time. That’s the “active” in active managerial control.

So, putting it all together, **active managerial control** is a food safety management system designed to actively prevent foodborne-illness by addressing the five most common risk factors for foodborne-illness.

There are many ways to achieve active managerial control in the operation. According to the FDA, you can use simple tools including training programs, manager supervision, and the incorporation of SOP’s. Active managerial control can also be achieved through more complex solutions, such as a Hazard analysis Critical Control Point (HACCP) Program.

Managers should practice active managerial control throughout the flow of food. This includes anticipating potential foodborne-illness risk factors and then controlling or eliminating them. You might already be doing some of these things, which include many other skills you have already learned. For example; making sure food is held at the proper temperature or cooking food to its minimum internal cooking temperature, Monitoring the entire flow of food will help keep your customers and operation free from risk. You also must provide your staff with the proper tools such as procedures and training, to make sure food is safe.

There are some important steps to take when implementing active managerial control in your operation.

- 1. Identify risks.** Find and document the potential foodborne-illness risks in your operation. Then, identify the hazards that controlled or eliminated.
- 2. Monitor.** Food will be safe if managers monitor critical activities in the operation, so make note of where employees must monitor food safety requirements. This might include identifying when temperatures should be taken or how often sanitizer concentrations should be tested in a three- compartment sink.
- 3. Corrective action.** Take the appropriate steps to correct improper procedures or behaviors. For example; if a sanitizer concentration level is too low when tested, the situation might be corrected by increasing the concentration level.
- 4. Management oversight.** Verify that all policies, procedures, and corrective actions are followed.
- 5. Training.** Ensure employees are trained to follow procedures and retrained when necessary.
- 6. Re-evaluation.** Periodically assess the system to make sure it is working correctly and effectively.



A manager monitoring a food handler who is reheating food.

The FDA's Public health interventions

The FDA Food Code provides five specific recommendations controlling the common risk factors for foodborne-illness. These are known as the FDA's public health interventions. They are designed to protect public health.

Demonstration of knowledge. As a manager you must be able to show that you know what to do to keep food safe. Becoming certified in food safety is one way to show this.

Staff health controls. Procedures must be put in place to make sure staff is practicing good personal hygiene. For example; staff members must understand that they are required to report illnesses and illness symptoms to management.

Controlling hands as a vehicle of contamination.

Controls must be put in place to prevent bare hand contact with ready-to-eat food. This might include requiring the use of tongs to handle ready-to-eat foods.



A food handler using tongs to plate salads to prevent bare hand contact with food.

Time and temperature parameters for controlling pathogens. Procedures must be put in place to limit the time food spends in the temperature danger zone. Requiring food handlers to check the temperature of food being hot held every two hours is an example of this.

Consumer advisories. Notices must be provided to customers if you serve raw or undercooked menu items. These notices must include a statement about the risks of eating these foods.

Managing the Five Risk Factors

You've heard a lot about the five risk factors for food borne illness. But what exactly should a manager focus on when it comes to each risk factor? Here are some of the areas identified by the FDA:

1. Purchasing food from unsafe sources:

- Food is from regulated (inspected) processing plants and other approved sources.
- Food is protected for contamination during transportation food is received at 41° or lower.

2. Failing to cook food correctly:

- Raw meat, seafood, poultry, and shell eggs are cooked to required temperatures.
- Cooked foods are reheated to required temperatures.
- Consumer advisories are in place.
- Requirements are met when holding food without temperature control.

3. Holding food at incorrect temperatures:

- Hot and cold TCS food is being held/displayed at the correct temperature.
- Food is being properly date-marked and discarded.
- Food is being properly cooled .

4. Using contaminated equipment:

- Food is being protected from cross-contamination during storage, preparation, and display.
- Food-contact surfaces are being cleaned and sanitized properly.

5. Poor personal hygiene:

- Food handlers are practicing proper handwashing.
- Food handlers are avoiding bare hand contact with ready-to-eat food.
- Food handlers are eating, drinking, and smoking in designated areas.
- Handwashing facilities are stocked and accessible.
- Food handlers are NOT working with food while ill or symptomatic.

HACCP

There are many systems you can implement to achieve active managerial control of foodborne-illness risk factor. A Hazard Analysis Critical Control Point (HACCP) Program is one such system. A **HACCP** (pronounced HASS-ip) System is Based on identifying significant biological, chemical, or physical hazards at specific points within a product's flow. Once identified, the hazards can be prevented, eliminated, or reduced to safe levels.

An effective HACCP system must be based on a written plan. This plan must be specific to each facility's menu, customers, equipment, processes, and operations. Since each **HACCP plan** is unique, a plan that works for one operation may not work for another. "Your cafeterias HACCP plan will not work for another restaurant"

The HACCP Approach

A HACCP plan is based on seven basic principles. They were created by the National Advisory Committee on Microbiological Criteria for Foods. These principles are the seven steps that outline how to create a HACCP plan.

The seven HACCP Principles

Each HACCP principle builds on the information gained from the previous principle. You must consider all seven principles, in order, when developing your plan. Here are the seven principles:

1. Conduct a hazard analysis.
2. Determine critical control points (CCP's).
3. Establish critical limits.
4. Establish monitoring procedures.
5. Identify corrective actions.
6. Verify that the system works.
7. Establish procedures for record keeping and documentation.

In general terms, the principles break into three groups:

- Principles 1 and 2 help you identify and evaluate your hazards.
- Principles 3, 4 and 5 help you establish ways for controlling those hazards.
- Principles 6 and 7 help you maintain the HACCP Plan and system and verify its effectiveness.

The next few pages provide an introduction to these principles. They also present an overview of how to build a HACCP program. A real-world example has also been included for each principle. It shows the efforts of Filippo's, an Italian restaurant, as it implements a HACCP program. The example will appear after the explanation of each principle.

Principle 1: Conduct a Hazard Analysis

First, identify and assess a potential hazard in the food you serve. Start by looking at how food is processed in your operation. Many types of food are processed in similar ways. Here are some common processes:

- Prepping and serving without cooking (salads, cold sandwiches, etc.).
- Prepping and cooking for same-day service (grilled chicken sandwiches, Hamburgers, etc.).
- Prepping, cooking, holding, cooling, reheating, and serving (chili, soup, pasta sauce with meat, etc.).

Look at your menu and identify items that are processed like this. Next, identify the TCS food. Determine where food safety hazards are likely to occur for each TCS food. They can come from biological, chemical, or physical contaminants.

Principle 1 Example: The management team at Filippo's decided to implement a HACCP program. They began by analyzing their hazards.

The team noted that many of their dishes were received, stored, prepared, cooked, and served the same day. The most popular of these items was the spicy charbroiled chicken breast.

The team determined that bacteria were the most likely hazard to food prepared this way.

Principle 2: Determine Critical Control points (CCP's)

Find the points in the process where the identified hazard(s) can be prevented, eliminated, or reduced to safe levels. These are the **critical control points (CCP's)**. Depending on the process, there may be more than one CCP.

Principle 2 Example: Filippo's management identified cooking as the CCP for food prepared and cooked for immediate service. This included the chicken breasts.

These food items must be handled correctly throughout the flow of food. However, correct cooking is the only step that will eliminate or reduce bacteria to safe levels.

Since the chicken breasts were prepared for immediate service, cooking was the only CCP identified.

Principle 3: Establish Critical Limits

For each CCP, establish minimum or maximum limits. These limits must be met to prevent or eliminate the hazard, or to reduce it to a safe level.

Principle 3 Example: With cooking identified as the CCP for Filippo's chicken breasts, a critical limit was needed. Management determined that the critical limit would be cooking the chicken to a minimum internal temperature of 165° F for less than one second.

They decided that the critical limit could be met by cooking chicken breasts on the charbroiler for 16-minutes.

Principle 4: Establish Monitoring procedures

Once critical limits have been created, determine the best way for your operation to check them. Make sure the limits are consistently met. Identify who will monitor them and how often.

Principle 4 Example: At Filippo's, each charbroiled chicken breast is cooked to order. The team decided to check the critical limit by inserting a clean and sanitized thermocouple probe into the thickest part of each chicken breast.

The grill cook must check the temperature of each chicken breast after cooking. Each chicken breast must reach the minimum internal temperature of 165° F for less than one second.

Principle 5: Identify Corrective Actions

Identify steps that must be taken when a critical limit is not met. These steps should be determined in advance,

Principle 5 Example: If the chicken breast has not reached its critical limit within the 16-minute cook time, the grill cook at Filippo's must keep cooking the chicken breast until it has reached an internal temperature of 165° F for less than one second.

Principle 6: Verify That the System Works

Determine if the plan is working as intended, Evaluate it on a regular basis. Use your monitoring charts, records, hazard analysis, etc., and determine if your plan prevents, reduces, or eliminates identified hazards.

Principle 6 Example: Filippo's management team performs HACCP checks once per shift. They make sure that critical limits were met, and appropriate corrective actions were taken when needed.

They also check the temperature logs on a weekly basis to identify patterns. This helps to determine if processes or procedures needed to be changed. Over several weeks, they noticed problems occurring toward the end of each week. The chicken breasts often failed to meet the critical limit. The appropriate corrective action needed to be taken to bring the chicken to the internal temperature of 165° F.

Management discovered that Filippo's received chicken shipments from a different supplier on Thursdays. This supplier was providing a six-ounce chicken breast. Filippo's chicken specifications listed a four-ounce chicken breast. Management worked with the supplier to ensure they received the required four-ounce chicken breast. The receiving procedures were then changed to include a weight check for the chicken breasts.

Principle 7: Establish Procedures for Record Keeping and Documentation

Maintain your HACCP plan and keep all documentation created when developing it. Keep records for the following actions:

- Monitoring activities.
- Taking corrective action.
- Validating equipment (checking for good working condition).
- Working with suppliers (i.e., shelf-life studies, invoices, specifications, challenge studies, etc.).

Principle 7 Example: Filippo’s management team determined that time-temperature logs would be kept for three months. Receiving invoices would be kept for 60 days. The team used this documentation to support and revise their HACCP plan.

Notes: _____

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Another HACCP Example

The Filippo's example shows one type of HACCP plan. Another plan may look very different when it deals with food that is processed more simply. For example; food that is prepared and served without cooking needs a different approach.

Here is an example of the HACCP plan developed by The Fruit Basket. This fruit only operation is known for its signature item-the Melon Medley Salad.

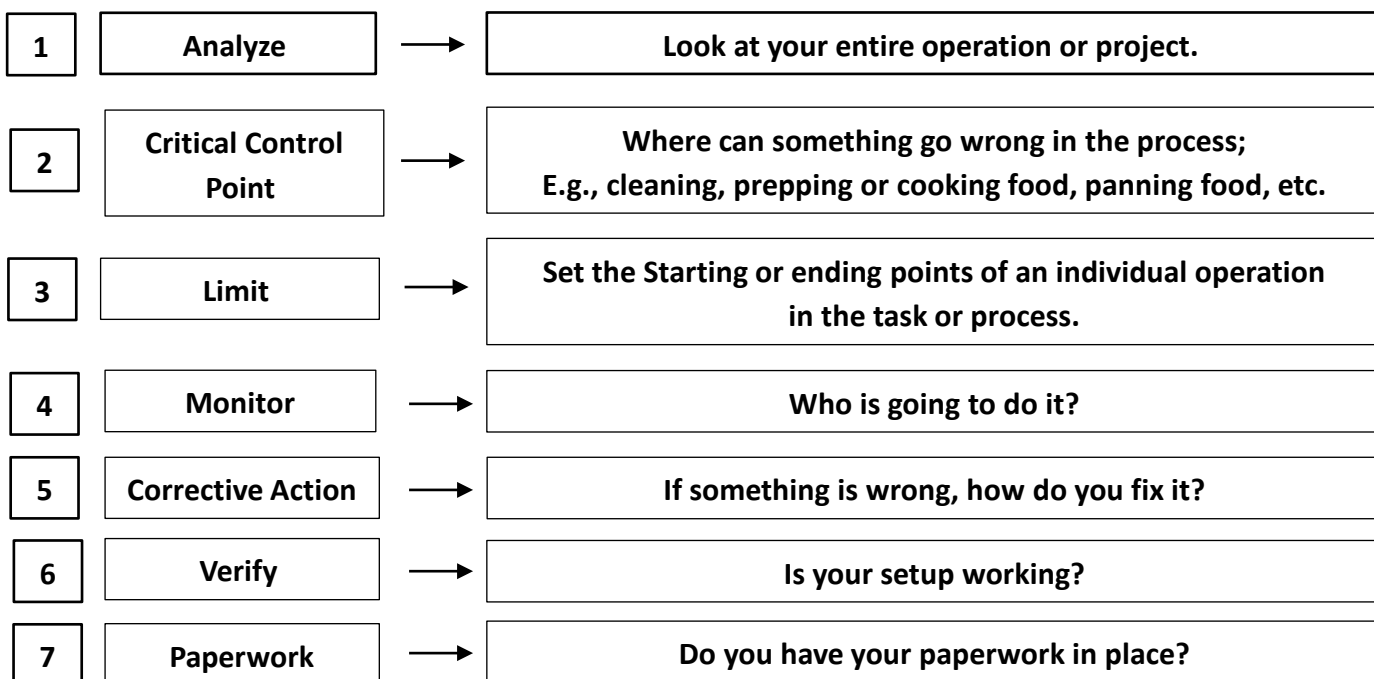
- 1. Analyzing hazards.** The HACCP team at The Fruit Basket decided to look at hazards for the Melon Medley. The salad has fresh watermelon, honeydew, and cantaloupe. The team determined that bacteria pose a risk to these fresh-cut melons.
- 2. Determining CCPs.** The melons are prepped, held, and served without cooking. The team determined that preparation and holding are CCPs for the salad. They decided that cleaning and drying the melons' surfaces during prep would reduce bacteria. Holding the melon at the correct temperature could prevent the bacteria's growth. The operation only purchases melons from approved suppliers.
- 3. Establishing critical limits.** For the preparation CCP, the team decided the critical limit would be met by washing, scrubbing, and drying whole melons. They created an SOP with techniques for washing the melons. For the holding CCP, they decided that the salad must be held at 41° F or lower because it had cut melons.
- 4. Establishing monitoring procedures.** The team decided that the operation's team leader should monitor the salad's critical limits. The team leader must observe food handlers to make sure they are prepping the melons the correct way. Food handlers must remove all surface dirt from the washed melons. Then they must cut, mix, and portion the salad into containers. The finished salads are put in the display cooler. The team leader must then monitor the temperature of the held salads to make sure the holding critical limit is met. The internal temperature of the salads must be 41° F or lower. It must be checked three times per day.
- 5. Identifying corrective actions.** Sometimes, after the melons are washed and dried, they still have surface dirt. The team had to determine a corrective action for this. They decided that the action would be to rewash the melons. Then the team leader must approve the melons before they are sliced.
To correct a holding temperature that is higher than 41° F the team leader must check the temperature of every Melon Medley in the cooler. Any salad that is above 41° F must be thrown out.
- 6. Verifying that the system works.** To make sure the system is working correctly, the team decided that the operation team leader must review the Manager daily HACCP Check Sheet and the end of each shift. The team leader makes sure that each item was checked and initialed. The team leader confirms that all corrective actions have been taken and recorded. The Fruit basket also evaluates the HACCP system quarterly to see if it is working.
- 7. Establishing procedures for record keeping.** Since a foodborne-illness associated with fresh produce can take as long as 16 weeks to emerge, the team determined that all HACCP records must be maintained for 16 weeks and kept on file.

The 7 Steps of HACCP break down & review:

- (1) Analyze
- (2) Critical Control Point
- (3) Limits
- (4) Monitor
- (5) Corrective Actions
- (6) Verify
- (7) Paperwork

1. Analyze: Look at your establishments set-up.
2. Critical Control Point: Where can something go wrong?
3. Limit: Set a beginning or ending limit.
4. Monitor: Who will be doing the work?
5. Corrective Action: How do you fix the problem (issue)?
6. Verify: Is the system working?
7. Paperwork: Your records/logs.

By using this simple breakdown, you will learn how to understand the HACCP process.



Example: Cooking Hamburgers

1	Analyze	→	Look at your entire operation or project: Cooking hamburgers
2	Critical Control Point	→	Where can something go wrong in the process; E.g. The Food Temperature may be under or over done
3	Limit	→	Set the Starting or ending points of an individual operation in the task or process: The Hamburgers must reach a temperature of 155° F
4	Monitor	→	Who is going to do it? The Cafeteria Worker
5	Corrective Action	→	If something is wrong, how do you fix it? *You take the hamburgers out of the oven to check the temperature and they are at a temperature is 145° F Put the hamburgers back in the oven to cook
6	Verify	→	Is your setup working? Did the hamburgers reach 155° F
7	Paperwork	→	Do you have your paperwork in place? Fill out your Batch Temperature Log

Example: Pest Control

1	Analyze	→	Look at your entire operation or project: Are there any pests in the operation
2	Critical Control Point	→	Where can something go wrong in the process; E.g., Evidence of pests are found
3	Limit	→	Set the Starting or ending points of an individual operation in the task or process: Eliminate all pests in the operation
4	Monitor	→	Who is going to do it? The Cafeteria Manager
5	Corrective Action	→	If something is wrong, how do you fix it? *You see a Cockroaches crawl out of a crack in the floor around the base of a drain-pipe. Inspect the cafeteria for openings where pests can enter. Call Pest Control (PCO)
6	Verify	→	Is your setup working? Did sealing the crack in the floor stop cockroaches from entering the cafeteria?
7	Paperwork	→	Do you have your paperwork in place? Get a report from the PCO

Fill in the steps of HACCP:

Where can something go wrong in the process:

Step Number:_____ Is: _____

Is your setup working?

Step Number:_____ Is: _____

Set the Starting or ending points of an individual operation in the task or process:

Step Number:_____ Is: _____

Do you have your paperwork in place?

Step Number:_____ Is: _____

Look at your entire operation or project:

Step Number:_____ Is: _____

Is your setup working?

Step Number:_____ Is: _____

Who is going to do it?

Step Number:_____ Is: _____

Fill in the steps HACCP:

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____
- 6. _____
- 7. _____

Learning the seven steps of HACCP is the key to understanding the HACCP processes.

Knowledge Check

1. List the steps for implementing active managerial control in an establishment.
2. Summarize the seven HACCP principles.

Crisis Management

Putting the food safety principles, you learned into action can help keep food safe in your operation. However, despite your best efforts, a foodborne-illness outbreak or another type of crisis affecting food safety can still occur. How you respond can influence the outcome.

To handle these crises, you will need a crisis management program. To be successful, the program needs to have a written plan that focuses on three phases-preparation, response, and recovery. For each phase, the plan should identify resources needed and procedures to be followed.

The time to prepare for a crisis is before one happens. Why? Because without planning, things can get out of control quickly. Crises are stressful situations and it's easy to make a bad decision if you are not careful. Even a small mistake could have big consequences for your reputation and your brand. Through careful planning, you can stay in control of the situation, which can make the difference between a bad outcome and a better one. There is no "off-the-shelf" disaster plan that works for everyone. Each plan needs to be customized to the operation.

A good way to ensure your plan works is to test it once it is complete. The results will help you identify potential gaps or problems. Testing the plan will also ensure it works as intended. You can do this yourself or hire a consulting firm with crisis management experience. In either case, the test should simulate a crisis that will be as close as possible to what could happen.

Creating a Crisis Management Team

To begin, create a crisis management team. The size of the team will depend on the size of the operation. If your operation is large, the team may include representatives from the following departments:

- Senior management (president/CEO, etc.)
- Risk management (quality assurance, legal, etc.).
- Public relations.
- Operations
- Finance
- Marketing
- Human resources.

Smaller operations may include the chef, the general manager, and the owner-operator.

Regardless of size, you should also consider using other external resources, such as your regulatory authority and experts from your suppliers and manufacturers.

Preparing for a Crisis

Your crisis management team should consider the following when preparing for a crisis.

Emergency contact list. Create an emergency contact list and post it by phones. It should include the names and numbers of all crisis management team members; the media spokesperson; management or headquarters personnel; and the side resources such as testing labs, subject matter experts, the police and fire departments, and the regulatory authority.

Crisis communication plan. Develop a crisis communication plan that includes the following:

- List of media responses or a question-and-answer sheet suggesting what to say for each crisis.
- Sample press releases that can be tailored quickly to each incident.
- List of media contacts to call for press conferences or news briefings. Include a media relations plan with “dos and don’ts” for dealing with the media.
- Plan for communicating with staff during the crisis. Possibilities include meetings, email, a telephone tree, etc.

Make a Crisis kit. Assemble a crisis kit for the operation. It can be a three-ring binder or notebook enclosing the plan’s materials. Keep the kit in an accessible place, such as the manager’s or chef’s office.

Preparing for a Foodborne-Illness Outbreak

Develop the form with legal guidance and include all critical information.

The form may contain the following:

- Contact information for the customer.
- What and when the customer ate at the operation.
- When the customer first got sick, what the symptoms were, and how long the customer experienced them.
- When the customer first got sick, what the symptoms were, and how long the customer experienced them.
- When and where the customer sought medical attention, what the diagnosis was, and what treatment was received.
- What other food was eaten by the customer.

Crisis Response

A crisis management plan should include response procedures to help manager a crisis more effectively. When a crisis occurs gather your crisis management team to implement your plan.

Media relations. Work with the media, Make sure your spokesperson is fully informed before arranging a press conference.

Solution. Fix the problem. Then communicate to both the media and your customers what you have done. This will show that you are working hard to ensure that you will not have an issues in the future. Also work with your regulator authority to ensure all issues are resolved.

What are Imminent health Hazards?

- Water service interruption.
- Power outage.
- Fire
- Flood

Notes:

STUDY QUESTIONS

1. Three components of active managerial control include identifying risks, training, and
 - a. creating specifications.
 - b. corrective action.
 - c. creating purchase orders.
 - d. recordkeeping.
2. A manager's responsibility to actively control risk factors for foodborne-illnesses is called
 - a. hazard analysis critical control point (HACCP).
 - b. quality control and assurance.
 - c. food safety management.
 - d. active managerial control.
3. A manager asks a chef to continue cooking chicken breasts after seeing them cooked to an incorrect temperature. This is an example of which step in active managerial control?
 - a. Identifying risks
 - b. Monitoring
 - c. Corrective action
 - d. Re-evaluation
4. A manager walks around the kitchen every hour to answer questions and to see if staff members are following procedures. This is an example of which step in active managerial control?
 - a. Management oversight
 - b. Corrective action
 - c. Re-evaluation
 - d. Identify risks
5. What is one way that managers can show they know how to keep food safe?
 - a. Become certified in food safety.
 - b. Check cooking temperatures.
 - c. Monitor employee behaviors.
 - d. Conduct self-inspections.

6. Which is an FDA public health intervention for controlling the risk factors for foodborne-illness?
 - a. Noting allergens on menus
 - b. Reviewing of construction plans
 - c. Implementing consumer advisories
 - d. Providing variances for special processes
7. A pest-control program is an example of a(n)
 - a. HACCP program.
 - b. food safety program.
 - c. workplace safety program.
 - d. active managerial control program.
8. What is the purpose of a HACCP program?
 - a. Preventing, eliminating, or reducing hazards to food
 - b. Preventing any hazards to food from occurring
 - c. Eliminating all hazards in food
 - d. Ensuring that all hazards never occur in food
9. What is a critical control point (CCP)?
 - a. A step that must be taken when a critical limit has not been met
 - b. An evaluation that determines whether the HACCP plan is working as intended
 - c. A minimum or maximum limit which must be met to prevent or eliminate a hazard
 - d. A point in the process where a hazard can be prevented, eliminated, or reduced to safe levels
10. Which is an example of a critical control point (CCP)?
 - a. Required minimum internal cooking temperatures
 - b. Washing hands before preparing food
 - c. Using color-coded cutting boards
 - d. Cleaning and sanitizing surfaces correctly
11. The temperature of a beef roast is periodically checked to see if it has finished cooking. Each time it is determined that the roast has not reached 145°F (63°C), so it is placed back in the oven to continue cooking. Which of these actions is the corrective action?
 - a. Physically checking the temperature of the roast
 - b. Having a target temperature of 145°F (63°C)
 - c. Placing the roast back into the oven
 - d. Periodically monitoring the temperature of the roast

12. How can a manager determine if a HACCP plan is working?
 - a. Higher guest check averages
 - b. Fewer products rejected during receiving
 - c. Improvement in health inspection scores
 - d. Monitoring charts indicate hazards are being prevented
13. Which is an FDA public health intervention for controlling the risk factors for foodborne-illness?
 - a. Keeping detailed supplier records
 - b. Developing standard operating procedures
 - c. Conducting annual equipment checks
 - d. Controlling hands as a vehicle of contamination
14. What is the purpose of a food safety management system?
 - a. To prevent foodborne-illness by controlling the hazards throughout the flow of food
 - b. To teach employees to recognize the signs of foodborne-illness
 - c. To identify and address critical control points (CCPs) in the operation
 - d. To prepare for an imminent health hazard
15. What does a crisis management program need to be successful?
 - a. A written plan
 - b. Corrective actions
 - c. Hired consultants
 - d. Extensive food safety knowledge
16. What three phases must a crisis management program focus on?
 - a. Monitoring, Response, Prevention
 - b. Preparation, Response, Recovery
 - c. Prevention, Response, Corrective Action
 - d. Hazard Analysis, Corrective Action, Monitoring
17. What should be done when responding to a crisis?
 - a. Work with the media.
 - b. Deny any accountability.
 - c. Rely on the media to relay facts.
 - d. Respond to media questions rather than take control.

18. A guest calls a restaurant and reports a foodborne-illness that they believe came from eating at the establishment. What should the manager do next?
 - a. Avoid expressing concern.
 - b. Complete a foodborne-illness incident report.
 - c. Admit responsibility if they think they customer is correct.
 - d. Disregard the complaint until there are more facts.
19. What should a manager do after receiving multiple complaints of foodborne-illness?
 - a. Contact the regulatory authority to assist.
 - b. Speak with their lawyer or legal team immediately.
 - c. Admit responsibility to all guests who call to report.
 - d. Throw out all product suspected in the incident.
20. What should a manager do if the regulatory authority confirms their operation is the source of a foodborne-illness outbreak?
 - a. Deny accountability and seek legal counsel.
 - b. Throw out all product suspected in the incident.
 - c. Hire a third-party laboratory to conduct a private investigation.
 - d. Provide the regulatory authority with all appropriate documentation.
21. A broken water main has caused the water in an operation to appear brown. What should the manager do?
 - a. Contact the local regulatory authority before use.
 - b. Use the water for everything except dishwashing.
 - c. Boil the water for one minute before use.
 - d. Use the water for everything except handwashing.
22. In the event of an imminent health hazard, such as a water supply interruption, the operation must
 - a. execute a HACCP plan.
 - b. reduce the hours of operation.
 - c. notify the regulatory authority.
 - d. maintain normal operating procedures.
23. An imminent health hazard, such as a water supply interruption, requires immediate correction or
 - a. a HACCP plan.
 - b. closure of the operation.
 - c. evaluation of the situation.
 - d. normal operating procedures.

24. When should an imminent health hazard be corrected?
 - a. Immediately
 - b. Within 24 hours
 - c. Within 48 hours
 - d. Within 30 days
25. If an imminent health hazard has occurred and there is a significant risk to food safety, service must be stopped and
 - a. the regulatory authority must be notified.
 - b. the public must be notified.
 - c. contaminated food must be cooked quickly.
 - d. food in packaging that is not intact must be used immediately.
26. A group of practices and procedures intended to prevent foodborne-illness is called
 - a. a HACCP plan.
 - b. a food safety management system.
 - c. active managerial control.
 - d. corrective action.
27. What information would be relevant to include in a foodborne-illness incident report?
 - a. Whether the guest has any food intolerances
 - b. Whether the guest consumed any alcohol
 - c. When and where the customer sought medical attention
 - d. Contact information of the other guests in the party
28. Which HACCP principle is intended to help an operation maintain a HACCP plan and verify its effectiveness?
 - a. Conduct a hazard analysis.
 - b. Determine critical control points.
 - c. Identify corrective actions.
 - d. Establish procedures for record keeping and documentation.
29. A personal hygiene program, food safety training, and standard operating procedures are components of a
 - a. HACCP plan.
 - b. food safety management system.
 - c. workplace security program.
 - d. public health intervention.

30. While creating a HACCP plan, an operation determines that porkchops should be cooked for 17 minutes on the grill to reach a minimum internal temperature of 145°F (63°C). What should be established as a monitoring procedure?
- a. Record the temperature of each porkchop and review logs daily.
 - b. Clean and inspect the grill at regular intervals.
 - c. Check the temperature of each pork chop with a thermocouple thermometer.
 - d. Stop cooking a porkchop if it doesn't reach 145°F (63°C) after 18 minutes.

SECTION 11**Safe Facility and Equipment****Learning Objectives**

After completing this chapter, you should be able to:

- Describe the proper operation of facilities and equipment.
- Explain requirements for installing equipment.
- Identify requirements for handwashing sinks and accessibility.
- List requirements for proper garbage and biohazard removal .
- Identify whether or not equipment meets approved standards for foodservice equipment.

Designing a Safe Operation

Many restaurant managers dream of designing their own operation from the ground up. There are a million decisions to be made, and many factors need to be considered. Menu offerings and service style are tow important examples. A buffet operation will have very different requirements compared to a quick service restaurant or a fine dining operation. Not every manager will have the opportunity to design from a blank slate. But every manager really needs to understand the basics of the design of an operation.

When designing or remodeling a facility, consider how both the building and its equipment will be kept clean.

Construction Plan Review

Construction plans require approval from the regulatory authority.

- Ensures design meets requirements.
- Ensures the safe flow of food.
- Can save time and money.
- It assures that contractors are constructing the facility correctly and approved equipment is being used.

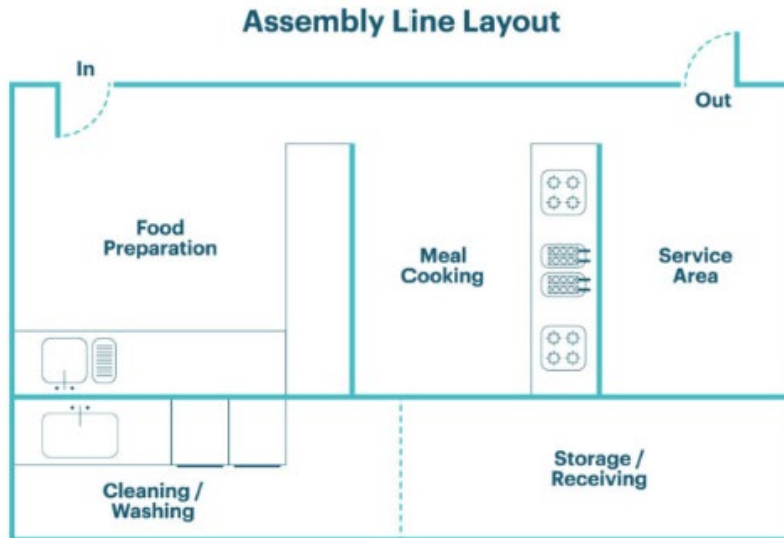
A well-designed kitchen:

- Has a workflow that minimizes the time food is in the temperature danger zone and how often the food is handled.
- Positions equipment to minimize opportunities for cross-contamination.
- Makes equipment accessible for regular cleaning.

Layout

A well-designed kitchen will address the following factors.

Workflow. Establish a workflow that will minimize the time food is handled. The more food is handled, results in the more chances it will be contaminated.



Material for Interior Construction

Each area of the operation will have its own flooring needs.

Nonporous, resilient flooring:

- Examples: vinyl or rubber tiles.
- Slippery when wet.
- Good for locker rooms and offices.

Hard-surface flooring:

- Examples: marble, quarry tiles, wood.
- Good for public restrooms and high-dirt areas.

Carpeting:

- Not recommended for high-dirt areas.

Special Flooring Needs:

- Use non-slip surfaces.
- Coving is required for resilient and hard-surface flooring materials.



This food handler is mopping a kitchen floor covered with vinyl tile. Two tiles appear to have been replaced.

An establishment that is difficult to clean will not be cleaned well. Sanitation efforts will be more effective if a facility is designed and equipped with ease of cleaning in mind.

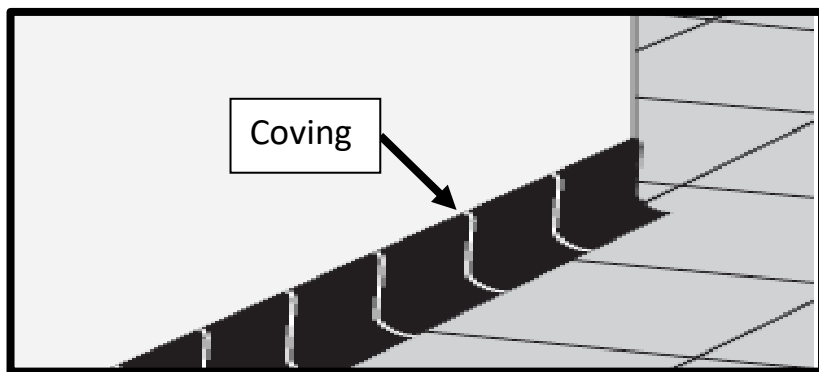
When designing or remodeling a facility:

- Arrange equipment/fixtures to comply with sanitary standards.
- Select materials that will be easy to clean.
- Have plans reviewed by the local regulatory agency.
- Make sure the building meets The Americans with Disabilities Act (ADA).

Flooring**Non-absorbent flooring should be used in:**

- Food preparation areas.
- Ware washing areas.
- Restrooms.
- Other areas subject to moisture, flushing, or spray cleaning.
- Carpeting is popular in dining rooms because it absorbs sound, beverage station, wait staff, and major traffic aisles.

Coving is a curved, sealed edge placed between the floor and the wall to eliminate sharp corners and gaps that would be difficult to clean.

**Nonporous, Resilient flooring:**

- Rubber tile – Used in kitchens, and restrooms.
- Vinyl sheet – Used in office kitchens, and corridors.
- Vinyl tile – Used in office restrooms.

Hard-Surface Flooring:

- Marble; terrazzo – Used in Public corridors, dining rooms, and public restrooms.
- Quarry tile – Used in kitchen, service, dishwashing, receiving areas, offices, restrooms and dining rooms.
- Wood – Used in offices, dining rooms.

Carpeting

Carpeting is a popular choice for certain areas, such as dining rooms, because it absorbs sound. However, it is not recommended in high-dirt areas such as waitstaff service areas, tray and dish drop-off food areas, beverage stations, and major traffic aisles.

Carpet can be maintained by simple vacuuming. Areas prone to heavy traffic and moisture will require routine cleaning. You can also purchase special carpet for areas where sanitation, dirt, moisture, and fire safety are concerns.

Special Flooring Needs

Use nonslip surfaces in traffic areas. Nonslip surfaces are ideal for the entire kitchen as well, because slips and falls are a potential hazard.

Finishes for Interior Walls and Ceilings

Interior finishes are the materials used on the surface of an operation's walls and ceilings. As with flooring, these finishes need to be smooth, nonabsorbent, durable, and easy to clean.

Consider the location when selecting finishes for walls and ceilings, a material that might be suitable in one area may be a poor choice for another. Walls are easier to spot dirt when cleaning. They should also be kept free of cracks, holes, and peeling paint.

The best wall finishing for cooking areas is ceramic tile. However, it needs to be monitored for grout loss and regouted when needed. Stainless steel is used occasionally because it is durable and moisture resistant.

The most common ceiling materials are acoustic tile, painted drywall, painted plaster and exposed concrete.

Wall and ceiling support structures (studs, joists, and rafters) as well as pipes should not be exposed unless finished and sealed for cleaning.

Flexible materials such as paper, vinyl, and wood veneers are often used for walls and ceilings. Vinyl wall coverings are popular because they are attractive, relatively inexpensive, easy to clean, and durable. They are also rated for flammability by testing agencies.



This employee is using a scrub brush to clean a ceramic tile wall in a cooking area,

Plaster or cinder block walls that have been sealed and painted with oil-resistant, easy-to wash glossy paints are appropriate for dry areas of the facility.

Knowledge Check

1. Which three factors will be addressed by a well-designed kitchen layout?
 2. Name four qualities that flooring should have for most areas of the operation.
-
-
-

Considerations for Other Areas of the Facility

Once you have the general layout of how the kitchen should be and the materials complete it, you need to think about other areas of the facility. There are so many to consider – from dry storage to handwashing stations to sinks and restrooms, and sometimes even locker areas for employees. And these areas need to be well thought out. You don't want to put sinks in inconvenient places or require guests to walk through food prep areas to get to restrooms. These types of mistakes can cause contamination and make food unsafe. As a manager, owner operator, you want to ensure you have all the right items in the right places in order to maintain food safety.

Dry storage

Construct dry-storage areas with easy-to-clean materials that allow good air circulation. Shelving, tabletops, and bins for dry ingredients should be made of corrosion-resistant metal or food-grade plastic.

Handwashing stations must be:

- Used only for handwashing.
- Installed with adequate barriers or distance from food and food-contact surfaces.
- Available at all times.
 - Do not block them.

Requirements at a Handwashing Station:

- Hot and cold running water. The water must be supplied through a mixing valve or combination faucet that delivers the water at a temperature of at least 85°F. The water must also be drinkable.
- Soap
- A way to dry hands – Disposable paper towels or an air hand dryer.
- Garbage container.
- Signage



Sinks

To prevent cross- contamination, staff must use each sink in an operation for its intended purpose. Handwashing sinks are for handwashing only. Prep sinks are for prep sinks are for prepping food. Service sinks are for cleaning mops and disposing of wastewater. At least one service sink or curbed drain area is required for disposing of dirty water.

Restrooms

If possible, provide separate restrooms for staff and customers. If this is not possible, the operation must be designed so patrons do not pass trough prep areas to reach the restroom. Otherwise, they could contaminate food or food-contact surfaces. Restrooms should be convenient, sanitary, and have self-closing doors. They must be adequately stocked with toilet paper. Garbage containers must be provided if disposable paper towels are used. Women’s restrooms also need covered garbage containers for disposing of sanitary supplies.

Dressing Rooms and Lockers

Dressing rooms are not required. If available, they should not be used for food prep, storage, or utensil washing. Lockers should be located in a separate room or one where food, equipment, utensils, linens, and single-service items cannot be contaminated.

Premises

Parking lots and walkways should be graded so standing pools of water do not form. They should also be surfaced to minimize dirt and blowing dust. Concrete and asphalt are recommended for walkways and parking lots. Gravel, while acceptable, is not recommended. Customer traffic through prep areas is prohibited, although guided tours are allowed. Do not allow the premises to be used for living or sleeping quarters.

Knowledge Check

1. Why should windows in dry-storage areas have frosted glass or shades?
2. Why must staff use each sinks in an operation for its intended use?

Equipment Selection

Choosing equipment can be a difficult task, but it is certainly an important one. For those who are new to the industry, the choices can seem overwhelming. Most people will be familiar with appliances used at home such as simple dishwashing machines and kitchen sinks. But in a restaurant or foodservice operation the choices for equipment are much more complicated. For example; coolers can range in size from under counter units used for a bar area up to walk-in units as large as a suburban garage. And commercial equipment must also meet different standards than items intended for home use. Choosing and using the right equipment can mean the difference between food being safe and unsafe.

Equipment Standards

Foodservice equipment must meet specific standards if it will come in contact with food, such as being smooth, easy to clean durable, and resistant to damage. Organizations such as **NSF International** have developed standards like these for the sanitary design and construction of foodservice equipment. They also certify equipment that meet these standards. Other organizations classified mark, or the ETL sanitation mark. These indicate that the equipment has been certified or classified for sanitation under an ANSI – accredited program. Only commercial foodservice equipment should be used in operations. Household equipment is not built to withstand heavy use.



An NSF logo on a cutting board indicates the equipment is approved for use with food.

Dishwashing machines

Dishwashing machines vary widely by size, style, and method of sanitizing. High-temperature machines sanitize with extremely hot water. Chemical-sanitizing machines use a chemical solution. The following machines are common in food-service operations.

Single-tank, stationary-rack machine, with doors. Sanitizing temperature 165° F.

This is a low temperature machine

Conveyor machine, and carousel or circular-conveyor machine. Sanitizing temperature 180° F.

This is a high temperature machine.

Dishwasher Selection and Installation Guidelines

Consider these guidelines when selecting and installing dishwashers:

- Installation must be 6 inches off the floor.
- Plumbing
- Chemicals

Settings Purchase dishwashers that can measure the following:

- Water temperature.
- Water pressure.
- Cleaning and sanitizing chemical concentration.

Information about the correct settings should be posted on the machine.

Thermometer. The machine's thermometer should be located so it is readable, with a scale in increments no greater than 2° F.

Cleaning. Dishwashers should be easy to clean.

Many operations use three-compartment sinks to clean and sanitize items manually in the operation. Purchase sinks that can accommodate large equipment and utensils. Have other ways of cleaning these items as well, such as cleaning a large piece of equipment in place.

Coolers and freezers

There are several types of cooler and freezer units. The two most common are walk-in and reach-in coolers and freezers. The doors should withstand heavy use and close with a slight nudge. A drain must be provided and maintained for disposal of condensation and defrost water as well. A correctly plumbed, indirect drain can be used in the walk-in cooler. You can minimize and excess condensation by maintaining a flash-fitting floor sweep (gasket) under the door. Blast chillers and tumble chillers are used to cool food.

Considerations when purchasing coolers or freezers:

- Installation
- Temperature
- Cook-Chill Equipment.

Cutting Boards

Many regulatory authorities allow the use of either wooden or synthetic cutting boards. If wood is used it must be made of a hard wood like maple.



Dishwashing machines which use hot water to sanitize must have a built-in thermometer. The final sanitizing rinse for this machine must be at least 180° F.

Knowledge Check

1. When comparing dishwashing machines, what is the difference between high temperature machines and chemical-sanitizing machines?
2. Name two pieces of equipment that can cool food quickly.

Installing stationary tabletop equipment:

- Floor mounted equipment must be 6 inches off the floor.
- Tabletop mounted equipment on legs with a 4 inches clearance between equipment base and tabletop.
- If not mounted, sealed to a masonry base with a food -grade sealant.

Maintaining equipment:

- Must receive regular maintenance.
- Must be maintained by qualified personnel.
- Follow the manufacturer's recommendation.

Water sources:

Potable water must be used for drinking, cooking, cleaning, hand washing, thawing, and cooling. Acceptable sources of potable water include:

- Public water mains.
- Regularly tested private sources.
 - Private water well must be tested annually.
- Bottled water.
- Water, in on-premise storage tanks.
- Water transport vehicles that are properly maintained.

Plumbing:

- Only licensed plumbers should install and maintain grease traps.
- Repair leaks from overhead pipes.
- Install a vacuum breaker to prevent the mixing of potable and non-potable water.

Utilities

An operation uses many utilities and building systems. Utilities include:

- Water
- Electricity
- Gas
- Sewage disposal.
- Garbage disposal.
- Plumbing
- Lighting
- Ventilation

Water Supply

Each regulatory authority establishes standards for water in its jurisdiction. Only water that is drinkable can be used for prepping food and come in contact with food-contact surfaces.

Drinkable water is called potable water.

This water may come from the following sources:

- Approved public water mains.
- Private water sources that are regularly tested and maintained.
- Closed, portable water containers.
- Water transport vehicles.

Plumbing

- Only licensed plumbers should install and maintain grease traps.
- Repair leaks from overhead pipes.
- Install a vacuum breaker to prevent the mixing of potable and non-potable water.

Cross-connection

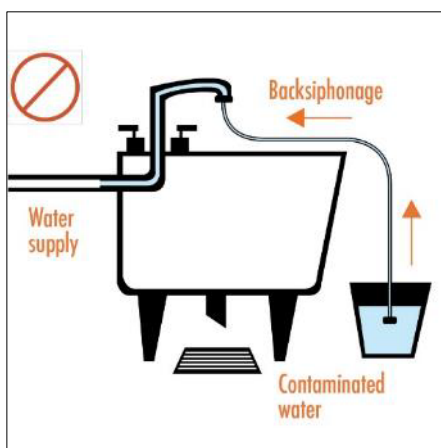
- Is a physical link between safe water and dirty water, which can come from drains, sewer or running a hose in the mop bucket.

Backflow

Is a reverse flow of contaminants through a cross-connection into the potable water supply:

- Connecting a water hose to the faucet then inserting the end of the hose into dirty water inside a bucket.
- This happens when the pressure in the potable water supply drops below the pressure of the contaminated supply.

Cross-Connection and Backflow

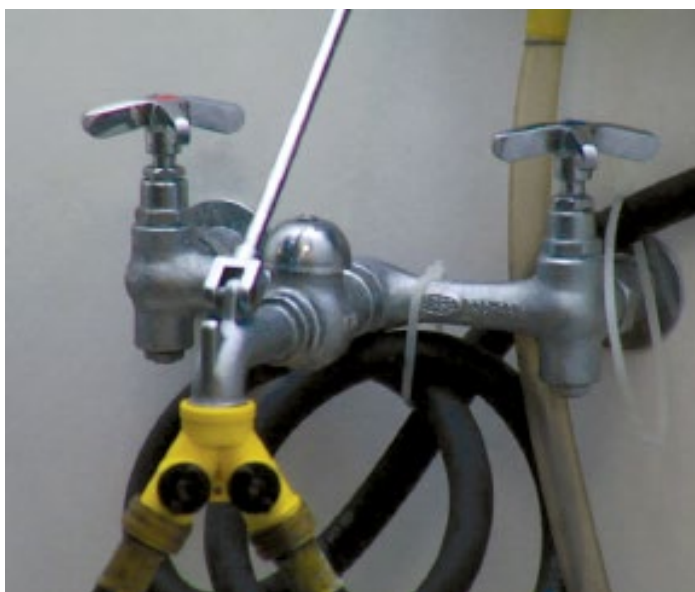


Water Contamination Prevention Methods

Install Vacuum Breaker:

- A vacuum breaker is an attachment that is installed between **two pipes** to prevent contaminated water from being siphoned backward into the public drinking water system.
- This prevents contamination should the public drinking water system's pressure drop.

Vacuum Breaker



Create an Air Gap

- An air gap is an air space used to separate a water supply outlet from any potentially contaminated source.
- The area between the faucet and the sink rim is an air gap.
- An air gap should also be between the short drainpipe of the sink and the floor drain.
- The only completely reliable method for preventing backflow is creating an air gap.

Grease buildup in pipes:

- Grease traps can be installed to prevent grease from blocking drains.
- Grease traps must be:
 - Installed by a licensed plumber.
 - Easy to access.
 - Cleaned regularly.

Sewage

- A backup of raw sewage is cause for immediate closure.
- The problem must be corrected, as well as, thoroughly cleaned.
- A county inspection must be completed before re-opening for business.

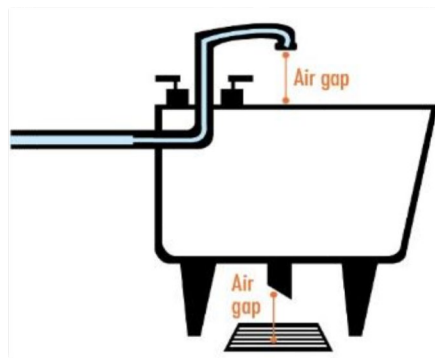
To prevent lighting from contaminating food you should use:

- Shatter resistant light bulbs.
- Protective covers made of metal, mesh, or plastic.
- Shields for heat lamps.

Garbage containers must be:

- Leak proof, waterproof, and pest proof.
- Lined with plastic bags.
- Easy to clean.
- Covered at all times with tight fitting lids.
- Cleaned frequently inside and out.

Air Gap



Grease Trap



A grease trap on the floor of an operation near a sink. Grease traps are often installed to prevent the buildup of grease in drains.



This food handler is tying off a garbage bag set on a prep table, contaminating the surface of the prep table.

Outdoor containers. Place garbage containers on a surface that is smooth, durable, and nonabsorbent. Asphalt and concrete are good choices. Make sure the containers have tight-fitting lids and are kept covered at all times. Keep their drain plugs in place.

Knowledge Check

1. What risks do backflow and back-siphonage present to food safety?
 2. How does proper ventilation improve the air inside of an operation?
-
-
-



Lighting intensity

- Minimum intensity: 50-foot candles (540 lux):
 - In food preparation areas.
- Minimum intensity: 20-foot candles (215 lux):
 - In hand washing or dishwashing areas.
 - Buffets and salad bar.
 - Wait stations.
 - Restrooms
- Minimum intensity: 10-foot candles (108 lux):
 - Inside walk-in refrigerators and freezers.
 - Dry storage areas.
 - Dining rooms.



Ventilation

Ventilation improves the air inside an operation. It removes heat, steam, and smoke from cooking lines. It also eliminates fumes and odors. If ventilation systems are not working correctly, grease and condensation will build on walls and ceilings.

To prevent this, clean and maintain ventilation systems according to the manufacturer's recommendations and/or your local regulatory requirements.

Mechanical ventilation must be used in areas for cooking, frying, and grilling. Ventilation must be designed so that hoods, fans, guards, and ductwork do not drip onto food or equipment. Hood filters or grease extractors need to be tight fitting and easy to remove. They should be cleaned often.

The hood and ductwork should be cleaned periodically by professionals as well.

STUDY QUESTIONS

1. When is the regulatory authority required to review an establishment's construction plans?
 - a. When starting new construction or large remodeling
 - b. When starting any construction in the establishment
 - c. When the local building department requires it
 - d. When construction is occurring in a full-service establishment
2. What is the advantage of having the regulatory authority review construction plans?
 - a. It ensures that the facility will be constructed correctly.
 - b. It holds contractors accountable for their work.
 - c. It ensures that the construction meets FDA requirements.
 - d. It reduces the cost of the construction.
3. What are the most important food safety features to look for when selecting flooring, wall, and ceiling materials?
 - a. Absorbent and durable
 - b. Hard and durable
 - c. Porous and durable
 - d. Smooth and durable
4. What is the most important food safety consideration when selecting construction materials for the establishment?
 - a. The cost of the materials
 - b. The durability of the materials
 - c. The simplicity of cleaning the materials
 - d. The speed at which the materials can be installed
5. What should be considered when constructing restrooms?
 - a. They should be adjacent to storage areas.
 - b. They should not have self-closing doors.
 - c. Staff and guests should use the same restrooms.
 - d. Patrons should not pass-through prep areas to reach them.

6. What must be included in restrooms?
 - a. Hand sanitizers
 - b. Signage
 - c. Warm-air hand dryer
 - d. Garbage containers if paper towels are provided
7. Where are handwashing stations required?
 - a. Receiving areas
 - b. Dishwashing areas
 - c. Dry storage areas
 - d. Breakroom areas
8. What is an acceptable method for drying hands at a handwashing station?
 - a. A common-cloth towel
 - b. A cold air hand dryer
 - c. A continuous towel system
 - d. A freshly laundered apron
9. Food contact surfaces must be easy to clean, durable, resistant to damage, and
 - a. thick.
 - b. porous.
 - c. smooth.
 - d. absorbent.
10. Which organization develops standards for the sanitary design and construction of foodservice equipment?
 - a. USDA
 - b. NSF
 - c. FDA
 - d. EPA
11. Organizations that certify or classify that foodservice equipment meets sanitary design and construction standards must be accredited by the
 - a. Edison Testing Laboratories (ETL).
 - b. Underwriters Laboratory (UL).
 - c. National Sanitation Foundation (NSF).
 - d. American National Standards Institute (ANSI).

12. What requirement must be met when selecting and installing dishwashing machines?
 - a. Plumbing to the machine should be as short as possible.
 - b. Machines must be mounted 4" (10 centimeters) off the floor.
 - c. Machine thermometers must be scaled in increments no greater than 10°F (-12°C).
 - d. Machines should be mounted as close to three-compartment sinks as possible.
13. How high above the floor should floor-mounted equipment be?
 - a. At least 1 inch (3 centimeters)
 - b. At least 2 inches (5 centimeters)
 - c. At least 4 inches (10 centimeters)
 - d. At least 6 inches (15 centimeters)
14. How high must legs be on table-mounted equipment?
 - a. At least 1 inch (3 centimeters)
 - b. At least 2 inches (5 centimeters)
 - c. At least 4 inches (10 centimeters)
 - d. At least 6 inches (15 centimeters)
15. What is an approved source of potable water?
 - a. Irrigation systems
 - b. Regularly tested private wells
 - c. Any public water main
 - d. Open, portable water containers
16. How often should private wells be tested?
 - a. Once per year
 - b. Once every two years
 - c. Once every five years
 - d. Once every ten years
17. What is a cross-connection?
 - a. A threaded faucet
 - b. A device that prevents a vacuum
 - c. A brass valve that mixes hot and cold water
 - d. A physical link between sources of safe and dirty water

18. To prevent backflow, a sink must be equipped with
 - a. an air gap.
 - b. a vacuum assist.
 - c. an overflow drain.
 - d. a touchless control system.
19. A food handler drops the end of a hose into a mop bucket and turns the water on to fill it. What has the food handler done wrong?
 - a. Prevented backflow
 - b. Created a cross-connection
 - c. Created an air-gap separation
 - d. Prevented atmospheric vacuuming
20. Which part of a sink prevents backflow of dirty water?
 - a. Air gap
 - b. Tap valves
 - c. Floor grate
 - d. Aerator
21. What is the best way to prevent backflow?
 - a. Never create an air gap.
 - b. Attach hoses directly to faucets.
 - c. Do not use vacuum breakers.
 - d. Avoid creating a cross-connection.
22. What is the first step that should be taken if raw sewage has backed up around a floor drain?
 - a. Service must be stopped.
 - b. The operation must be closed.
 - c. The affected area must be closed.
 - d. The regulatory authority must be notified.
23. What is the lighting intensity requirement for a prep area?
 - a. 10 foot-candles (108 lux)
 - b. 20 foot-candles (215 lux)
 - c. 50 foot-candles (540 lux)
 - d. 70 foot-candles (754 lux)

24. What is the lighting intensity requirement for a dishwashing area?
 - a. 10 foot-candles (108 lux)
 - b. 20 foot-candles (215 lux)
 - c. 50 foot-candles (540 lux)
 - d. 70 foot-candles (754 lux)
25. What is the lighting intensity requirement inside a walk-in cooler?
 - a. 10 foot-candles (108 lux)
 - b. 20 foot-candles (215 lux)
 - c. 50 foot-candles (540 lux)
 - d. 70 foot-candles (754 lux)
26. How can lighting sources be prevented from contaminating food?
 - a. By using LED bulbs
 - b. By using halogen bulbs only
 - c. By using fluorescent bulbs
 - d. By using shatter-resistant bulbs
27. Grease and condensation buildup on surfaces can be avoided with correct
 - a. garbage disposal.
 - b. ventilation.
 - c. sanitizing.
 - d. lighting.
28. What should employees do regularly to maintain ventilation hoods?
 - a. Inspect fan belts.
 - b. Clean interior ductwork.
 - c. Clean grease extractors.
 - d. Disassemble and clean wall-mounted fans.
29. Outdoor garbage containers must be
 - a. washed frequently.
 - b. kept covered with tight-fitting lids.
 - c. stored away from customer parking areas.
 - d. lined with plastic or wet-strength papers.

30. Where should garbage cans be cleaned?
 - a. In food storage areas
 - b. Next to food-prep areas
 - c. In dishwashing areas
 - d. Away from food and utensils

31. When the kitchen garbage can was full, an employee placed the full garbage bag on a prep table and tied it securely. Then he carried it to the dumpster and disposed of it. What was done incorrectly?
 - a. The employee waited until the garbage was full.
 - b. The bag was disposed of in a dumpster.
 - c. The bag was placed on a prep table.
 - d. The employee tied the bag shut.

32. Kitchen equipment should be maintained regularly by
 - a. qualified professionals.
 - b. appointed employees.
 - c. managers.
 - d. skilled owners.

SECTION 12

Cleaning and Sanitizing

Cleaning

Keeping both the front-of-the-house and the back-of-the-house clean sends an important message to your guests. It shows them that you take your business seriously, and that you know what you're doing. But a visibly dirty operation? That can send the opposite message, and it just looks bad. There are also some genuinely serious food safety concerns related to cleaning. When an operation is not cleaned the right way at the right times, the risk of cross-contamination and foodborne-illness increases. That's why some very specific cleaning techniques have been developed to keep everyone clean and safe. While many home cooks find that a bottle of spray cleaner and a rag are sufficient, that would not meet the standards for a foodservice operation. Different cleaning jobs have different cleaning tools, chemicals, and techniques. The final result; a clean operation, happy guests, and safe food, is worth the effort.

Factors That Affect Cleaning

Everything in your operation must be kept clean. **Cleaning** removes food and other dirt from a surface. There are several factors that affect the cleaning process.



This employee is using a type of cleaner called delimer. It is used to remove mineral buildup caused by hard water

Type and condition of the dirt. Certain types of dirt require special cleaning methods. The condition of the dirt also affect how easily it can be removed. For example; dried or baked-on dirt will be more difficult to remove.

Water hardness. Cleaning is more difficult in hard water. Minerals react with the detergent and decrease how effective it is. Hard water can also cause scale or lime deposits to build up on equipment. This can require the use of lime-removal cleaners.

Water temperature. In general, the hotter the water, the better it dissolves detergent and loosens dirt.

Surface. Different surfaces call for different cleaners. Some cleaners work well in one situation but not in another. The wrong cleaner might even damage equipment

Agitation or pressure. Scouring or scrubbing a surface helps remove the outer layer of dirt. This allows the cleaner to penetrate deeper.

Length of treatment. The longer dirt on a surface is exposed to a cleaner, the easier the dirt is to remove.

Types of Cleaners

Cleaners are chemicals that remove food, dirt, rust, stains, minerals, or other deposits. They must be stable, noncorrosive, and safe to use. They must also be provided to employees and available during all hours of operation. Ask your supplier to help you pick cleaners that meet your needs.

To use cleaners correctly, follow these guidelines:

- Follow manufacturers' instructions carefully. If not used the correct way, cleaners may not work and can even be dangerous.
- Only use cleaners for their intended purpose. NEVER use one type of cleaner in place of another unless the intended use is the same.

Cleaners are divided into four categories, each with a different purpose. These include detergents, degreasers, delimers and abrasive cleaners. Some categories may overlap.

For example; most abrasive cleaners and some delimers contain detergents. Some detergents may also contain degreasers.

Detergents

Different **detergents** are used for different cleaning tasks. However, all detergents contain surfactants (surface acting agents) that deduce surface tension between the dirt and the surface being cleaned. These allow the detergent to quickly penetrate and soften the dirt.

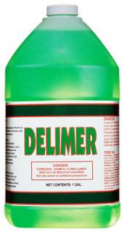
General purpose detergents are mildly alkaline cleaners that remove fresh dirt form floors, walls, ceilings, prep surfaces, and most equipment and utensils. Heavy duty detergents are highly alkaline cleaners that remove wax, aged or dried dirt, and baked-on grease. Dishwashing detergents, for example are highly alkaline.



Degreasers

Degreasers are detergents that contain a grease-dissolving agent.

These cleaners work well in areas where grease has been burned on, such as grill backsplashes, oven doors and range hoods.



Delimers

Delimers are used on mineral deposits and other dirt that other cleaners cannot remove. They are often used to remove scale or mineral deposits in dishwashing machines, and on steam tables. Follow the instructions carefully and use delimers with caution.

Abrasive cleaners contain a scouring agent that helps hard-to-remove dirt. These cleaners are often used to remove baked-on food in pots and pans. Use abrasives with caution because they can scratch surface.



Knowledge Check

1. Name at least three factors that can affect the cleaning process.
2. Which type of cleaner would be the best choice when cleaning burned on grease from a grill backsplash?

Sanitizing

Cleaning removes the soil that you can see, and every part of the operation needs to be cleaned regularly. But cleaning alone will not necessarily destroy the pathogens that can make people sick. Food-contact surfaces will require an additional step to do this.

Sanitizing reduces pathogens on a surface to safe levels. Food-contact surfaces must be sanitized after they have been cleaned and rinsed. This can be done by using heat or chemicals.



Sanitizing doesn't mean that every single pathogen has been destroyed. There are other actions, such as disinfection or sterilization, that eliminate a greater number of pathogens. But the chemical concentrations, temperatures and contact times required to do that are not always safe or appropriate for equipment. The goal is to keep guests safe by reducing pathogens to safe levels. Excessive sanitizer concentrations could leave a toxic residue on surfaces and, in some cases, can even damage stainless steel!

Heat Sanitizing

One way to sanitize items is to soak them in hot water. For this to work, the water must be at least 171° F must be soaked for at least 30 seconds. You may need to install a heating device to maintain this temperature. Another way to sanitize items with heat is to run them through a high-temperature dishwasher.

Chemical Sanitizing

Tableware, utensils can be sanitized by soaking items in a chemical sanitizing solution. Or you can rinse, swab, or spray them with sanitizing solution.

Three common types of chemical sanitizers are chlorine, iodine, and quaternary ammonium compounds, or quats. Chemical sanitizers are regulated by state and federal environmental protection agencies. They must be provided to employees and available during all hours of the operation.

In some cases, you can use detergent-sanitizer blends to sanitize. Operations that have two-compartment sinks often use these. If you use a detergent-sanitizer blends use it once to clean, and then use it a second time to sanitize.



Chemical sanitizer can be applied, by rinsing, swabbing, or spraying,



Sanitizer test kits are used to check the concentration of sanitizer solutions.

Sanitizer Effectiveness

Several factors influence the effectiveness of chemical sanitizers. The most critical include concentration, water temperature, contact time, water hardness, and pH.

Concentration. Sanitizer solution is a mix of chemical sanitizer and water. The **concentration** of this mix-the amount of sanitizer for a given amount of water – is critical. Too little sanitizer may make the solution weak and useless. Too much sanitizer may make the solution too strong and unsafe. It can also leave a bad taste on items or corrode metal.

Concentration is measured in parts per million (ppm). To check the concentration of a sanitizer solution, use a test kit. Make sure it is made for the sanitizer being used. These kits are usually available from the chemical manufacturer or supplier. Make sure they are available at all times and easily accessible to employees.

Hard water, food bits, and leftover detergent can reduce the solution's effectiveness. Change the solution when it looks dirty, or its concentration is too low. Check the concentration often.

Temperature. The water in sanitizing solution must be the correct temperature. Follow the manufacturer's recommendations.

Contact time. For a sanitizer solution to kill pathogens, it must make contact with the object being sanitized for a specific amount of time. This is called contact time

Water hardness. Water hardness can affect how well a sanitizer works. **Water hardness** is determined by the amount of minerals in your water. Find out what your water hardness is from your municipality. Then work with our supplier to identify the correct amount of sanitizer to use for your water.

pH. Water pH can also affect a sanitizer. Find out what the pH of your water is from your municipality. Then work with our supplier to find out the correct amount of sanitizer to use for your water.

This table summarizes some guidelines for using different types of sanitizers.






General Guidelines for the Effective Use of Chlorine, Iodine, and Quats				
	Chlorine		Iodine	Quats
Water temperature	12	≥75° F	68° F	75° F
Water pH	≤10	≤8	≤5 or As per manufacture’s recommendation	As per manufacturer's recommendation
Water hardness	As per manufacturer's recommendation		As per manufacturer's recommendation	≤500 ppm or As per manufacturer's recommendation
Sanitizer concentration	50-99 ppm	50-99 ppm	12.5-25 ppm	As per manufacturer's recommendation
Sanitizer contact time	≥7 seconds	≥7 seconds	≥30 seconds	≥30 seconds

How and When to Clean and Sanitize

Surfaces that do not touch food only need to be cleaned and rinsed to prevent the accumulation of dirt. However, any surface that touches food must be cleaned, rinsed and sanitized.

How to Clean and Sanitize

To clean and sanitize a surface, follow the steps detailed here. If surfaces have not been cleaned and sanitized properly, take corrective action immediately.

	<ol style="list-style-type: none"> 1. Scrape or remove food bits from the surface <ul style="list-style-type: none"> Use the correct cleaning tool, such as a nylon brush or pad or a cloth towel.
	<ol style="list-style-type: none"> 2. Wash the surface. <ul style="list-style-type: none"> Prepare the cleaning solution with an approved cleaner. Wash the surface with the correct cleaning tool, such as a cloth towel.
	<ol style="list-style-type: none"> 3. Rinse the surface. <ul style="list-style-type: none"> Use clean water. Rinse the surface with the correct cleaning tool, such as a cloth towel.
	<ol style="list-style-type: none"> 4. Sanitize the surface. <ul style="list-style-type: none"> Use the correct sanitizing solution. Prepare the concentration per manufacturer requirements. Use the correct tool, such as a cloth towel, to sanitize the surface. Make sure the entire surface has come in contact with the sanitizing solution.
	<ol style="list-style-type: none"> 5. Allow the surface to air-dry.

When to Clean and Sanitize

All food-contact surfaces need to be cleaned and sanitized at these times:

- After they are used.
- Before working with a different type of food, for example between prepping raw chicken and cutting lettuce.
- After handling different raw TCS fruits and vegetables, for example between cutting melons and leafy greens.
- Any time there is an interruption during a task and the items being used may have been contaminated.
- After four hours, if items are in constant use.

Cleaning and Sanitizing Stationary Equipment

- Equipment manufacturers will usually provide instructions for cleaning and sanitizing stationary equipment, such as a slicer. In general, follow these steps:
- Unplug the equipment.
- Take the removeable parts off the equipment. Wash, rinse and sanitize them by hand. You can also run the parts through a dishwasher if allowed.
- Scrape or remove food from the equipment surfaces.
- Wash the equipment surfaces. Use a cleaning solution prepared with an approved detergent. Wash the equipment with the correct cleaning tool, such as a nylon brush or pad, or cloth towel.
- Rinse the equipment surfaces. Make sure the sanitizer comes in contact with each surface. The concentration of the sanitizer must meet manufactures requirements.
- Allow all surfaces to air-dry. Put the unit back together.



Stationary equipment that cannot be easily moved, such as this slicer, can be cleaned and sanitized in place.

Clean-in-Place Equipment

Some pieces of equipment, such as soft-serve yogurt machines, are designed to have cleaning and sanitizing solutions pumped through them. Because many of them hold and dispense TCS food, they must be cleaned and sanitized every day unless otherwise indicated by the manufacturer.

Don't Use That Drying Towel

The steps to clean and sanitize food-contact surfaces are scrape, wash, rinse, sanitize and air-dry.

Air-drying takes time, and it can seem like an inconvenience. So, why is that last step so important? The risk is contamination. You have worked hard to clean that surface and reduce pathogens. But if an employee were to use a dirty or contaminated towel to dry the surface, they could re-contaminate it-undoing all of that work!

And there's another benefit to air-drying.

Chemical sanitizer needs time to work correctly. Surfaces must be in contact with the sanitizer for the minimum contact time. If an employee were

to use a towel to dry off the sanitizer right away, that could cause problems.

The sanitizer may not have had enough contact time to do its job. Ultimately, all five steps in the cleaning and sanitizing process are critical.

Knowledge Check

1. When heat sanitizing items by soaking them in hot water, what are the time and temperature requirements?
2. What are the five steps to properly clean and sanitize a food contact surface such as a prep table?

Dishwashing

Operations use two methods to wash dishes: machine dishwashing and manual dishwashing.

In most cases, machine dishwashing is the primary way to clean and sanitize smaller items.

But, of course, not everything will fit in a dishwashing machine. For example, a very large stock pot or mixing bowl won't likely fit. But large items must be cleaned and sanitized as well. Typically, a three-compartment sink is used for manually washing items. These sinks have separate compartments for washing, rinsing, and sanitizing items. Staff responsible for dishwashing should be trained on how to perform these tasks correctly.

Machine Dishwashing

- Tableware and utensils are often cleaned and sanitized in a dishwashing machine. The effectiveness of your dishwashing program will depend on the following factors:
- Well-planned layout in the dishwashing area, including a scraping and soaking area and enough space for both dirty and clean items.
- Sufficient water supply, especially hot water.
- Separate area for cleaning pots and pans.
- Devices that indicate water pressure and temperature of the wash and rinse cycles.
- Protected storage areas for clean tableware and utensils.
- Staff trained to operate and maintain the equipment and use the correct chemicals.



Dishwashing machines which use hot water to sanitize must have a built-in Thermometer. The final sanitizing rinse for this machine must be at least 180° F.

High-Temperature Machines

High-temperature machines use hot water to clean and sanitize. If the water is not hot enough, items will not be sanitized. Extremely hot water can also bake food onto the items.

The temperature of the final sanitizing rinse must be at least 180°F (82°C). For stationary-rack, single temperature machines, it must be at least 165°F (74°C). The dishwasher must have a built-in thermometer that checks water temperature at the manifold. This is where the water sprays into the tank.

Chemical-Sanitizing Machines

Chemical-sanitizing machines can clean and sanitize at much lower temperatures. Different sanitizers require different temperatures, so follow the manufacturer's dishwashing guidelines.

Dishwashing Machine Operation

Operate your dishwasher according to the manufacturer's recommendations and keep it in good repair. However, no matter what type of machine you use, you should follow these guidelines.

Cleanliness. Clean the machine as often as needed, checking it at least once a day. Clear spray nozzles of food and foreign objects. Remove mineral deposits when needed. Fill tanks with clean water, and make sure detergent and sanitizer dispensers are filled.

Preparation. Scrape items before washing them. If necessary, items can be rinsed or presoaked. This may be necessary when handling items with dried-on food.

Loading. Use the correct dish racks. Load them so the water spray will reach all surfaces. NEVER overload dish racks.

Air-drying. Air-dry all items. NEVER use a towel to dry items. Doing this could contaminate the items. Make sure items are completely dry before stacking or storing them.

Monitoring. Check water temperature, pressure, and sanitizing levels. Take appropriate corrective action if necessary.

Operations using high-temperature dishwashing machines must provide staff with an easy and quick way to measure the surface temperatures of items being sanitized.

The method used must provide an irreversible record of the highest temperature reached during the sanitizing rinse. This ensures that the dishwasher can reach correct sanitizing temperatures during operation. Maximum registering thermometers and heat-sensitive tape are good tools for checking temperatures.

Manual Dishwashing

Operations often use a three-compartment sink to clean and sanitize large items.

Preparing a Three-Compartment Sink

The sink needs to be set up correctly before use;

- Clean and sanitize each sink and drainboard.
- Fill the first sink with detergent and water. The water temperature must be at least 110° F. Follow the manufacturer's recommendations.
- Fill the second sink with clean water. This is not necessary if items will be spray-rinsed instead of being dipped.
- Fill the third sink with water and sanitizer to the correct concentration. Hot water can be used as an alternative. Follow the sanitizing guidelines presented earlier in this chapter and the manufacturer's recommendations.
- Provide a clock with a second hand. This will let food handlers time how long items have been in the sanitizer.



This dish rack has been loaded correctly so water spray can reach all of the dish surfaces.



A maximum registering thermometer like this is one way to make sure that items are being correctly sanitized in high temperature machines.

Cleaning and Sanitizing in a Three-Compartment Sink

Follow these steps to clean and sanitize items in a three-compartment sink:

1. Scrape items Before washing them.

If necessary, items can be rinsed or soaked.

2. Wash items in the first sink

Use a brush, cloth towel, or nylon scrub pad to loosen dirt. Change the water and detergent when the suds are gone, or the water is dirty.

3. Rinse the items in the second sink.

Spray the items with water or dip them in it. Make sure to remove all traces of food and detergent from the items being rinsed. If dipping the items, change the rinse water when it becomes dirty or full of suds

4. Sanitize items in the third sink.

Change the sanitizing solution when the temperature of the water or the sanitizer concentration falls below requirements.

NEVER rinse items after sanitizing them. This could contaminate their surface.

5. Air-dry items on a clean and sanitized surface.

Place the items upside down so they will drain. NEVER use a towel to dry items, as it could contaminate them.



This three-compartment sink has been correctly set up and is ready for use.

Storing Tableware and Equipment

Once utensils, tableware, and equipment have been cleaned and sanitized, they must be stored in a way that will protect them from contamination. Follow these guidelines.

Storage. Store tableware and utensils at least six inches off the floor. Protect them from dirt and moisture.

Storage surfaces. Clean and sanitize drawers and shelves before storing clean items.

Glasses and flatware. Store glasses and cups upside down on a clean and sanitized shelf or rack. Store flatware and utensils with handles up. Staff can then pick them up without touching food-contact surface.

Trays and carts. Clean and sanitize trays and carts used to carry clean tableware and utensils. Check them daily, and clean as often as needed.

Stationary equipment. Keep the food-contact surfaces of stationary equipment covered until ready for use.

Cleaning the Premises

One of the first things a guest will notice when arriving in your operation is how clean, or how dirty, it looks. While it is obvious to most people that anything that touches food should be cleaned and sanitized, the rest of the operation matters, too!

Keeping your operation clean means using the correct tools, supplies, and storage to prevent contamination. Many of the chemicals you will use are hazardous.

For all of your cleaning efforts to come together, you need a master cleaning schedule. Making this schedule work also means training and monitoring your staff to be sure they can follow it.



Knowledge Check

1. After cleaning and sanitizing glasses and cups, how should they be stored?
2. How should a three-compartment sink be prepared for dishwashing?

Using Wiping Cloths

Wiping cloths are often used in operations to wipe up food spills and to wipe down equipment surfaces. There are two types of wiping clothes used in operations, wet clothes and dry clothes. Each has its own requirements. NEVER use clothes that are meant for wiping food spills for any other purpose.

Wet clothes. Store wet wiping clothes used for wiping counters and other equipment surfaces in a sanitizer solution between uses. Change the solution when it no longer meets requirements for the sanitizer being used. Always keep clothes that come in contact with raw meat, fish, and poultry separate from other cleaning cloths.

Dry clothes. Wiping clothes that will be used to wipe food spills from tableware, such as from a plate during service, must be kept dry while in use. These clothes must NOT contain food debris or be visibly dirty during use.

Cleaning Nonfood-Contact Surfaces

Many surfaces in the operation do not normally come in contact with food. These are called **nonfood-contact surfaces**. Examples include floors, walls, ceilings, and equipment exteriors. Since they are not food-contact surfaces, they do not need to be sanitized. However, they do need to be cleaned regularly. This prevents dust, dirt, and food residue from building up. Not only will this prevent the growth of pathogens, but it will also prevent pest.

Cleaning Up after People Who Get Sick

If vomit or diarrhea contact surfaces in the operation, they must be cleaned correctly. These substances can carry Norovirus, which is very contagious. Cleaning surfaces correctly can prevent food from becoming contaminated. It will also keep others from becoming sick.

To be effective, operations must have written procedures for cleaning up vomit and diarrhea. These procedures must address specific actions that employees must take to minimize contamination and exposure to food, surfaces, and people. It is critical that employees be trained on these procedures.



Wet wiping cloths should be stored in a sanitizer solution between uses.



If your operation uses cloths to wipe food spills from tableware as this chef is doing. Always make sure the cloths are clean and dry.

Using and Storing Cleaning Tools and Supplies

Cleaning tools can contaminate surfaces if not handles carefully. You can help prevent this by cleaning the tools before storing them and by designating tools for tasks.

For example; some operations assign one set of tools for cleaning food-contact surfaces and another for nonfood-contact surfaces. Likewise, one set of tools can be used for cleaning and another for sanitizing. Color coding each set of tools helps reinforce their different uses. Always use a separate set of tools for cleaning the restroom.

Storing Cleaning Tools and Supplies

Cleaning tools must be stored so that they do not contaminate food and equipment.

It is a best practice to store these items in a designated area away from food.

Cleaning tools should also be stored in a way that makes it easy to clean the area in which they are stored. The storage area should have the following:

- Good lighting so staff can see chemicals easily.
- Hooks for hanging mops, brooms, and other cleaning tools.
- Utility sink for filling buckets and washing cleaning tools.
- Floor drain for dumping dirty water.

To prevent contamination, NEVER clean mops, brushes, or other tools in sinks used for handwashing, food prep, or dishwashing. Additionally, NEVER dump mop water or other liquid waste into toilets or urinals.

When storing cleaning tools, consider the following:

- Placed mops in a position to air-dry without soiling walls, equipment, or supplies.
- Clean and rinse buckets. Let them air-dry, and then store them with other tools.



To prevent splashes and contamination, empty mop buckets and dirty water in an appropriate place, such as this curbed floor drain. This sink is also called a service sink.



Review labels and make sure to use only chemicals that are approved for use in a foodservice.

Using Foodservice Chemicals

Many of the chemicals used in an operation can be hazardous, especially if they are used or stored the wrong way. One of the biggest dangers is contamination. To reduce your risk, follow these guidelines:

Use. Only chemicals approved for use in a foodservice operation should be used. NEVER keep chemicals in the facility that are not required for the operation or maintenance of the establishment. To prevent contamination, always cover or remove items that could become contaminated before using chemicals. After using chemicals, make sure to clean and sanitize equipment and utensils.

Always follow the law and manufacturers' directions when using chemicals.

Storage. Chemicals must be stored in their original containers. Some operations also designate specific areas for storing chemicals. Whether or not this is done, chemicals must be kept separate from food, equipment, utensils and linens. This separation can be done either of these ways:

- By spacing chemicals apart from other items.
- By partitioning off chemicals from other items stored in the same area.

Regardless of the method used, chemicals must always be stored below food, equipment, utensils, and linens.



This smaller working container has been labeled with the common name of the chemical.

Labels. Chemicals stored in their original container should have a manufacturer's label. That label must include the directions for use and be clear enough to read. If chemicals are transferred to a new working container, the label on that container must list the common name of the chemical.

Knowledge Check

1. Which area of the operation must always have its own, separate set of cleaning tools?
2. Which surfaces in the operation do not require sanitizing?

Developing a Cleaning Program

Restaurants and foodservice operations are busy, complicated environments with a lot of moving parts. It would be challenging for any one person to keep track of every cleaning task, tool, and chemical with 100% accuracy. And it becomes even more complex when you consider all of the different employees and their roles. They arrive at different times throughout the day, and each is responsible for a different part of the operation. To understand what must be done when, and how, you are going to need a written plan.

A clean and sanitary operation is a foundation for a successful food safety management system. You can keep your operation in this condition with an effective cleaning program.

To develop your program, first identify what the operation needs. Then create a master cleaning schedule. Also train staff to clean equipment and surfaces correctly. Lastly, monitor the program to ensure that it is effective.

Identifying Cleaning Needs

Identify cleaning needs using the following guidelines:

- Review the facility to identify all surfaces, tools, and equipment that need cleaning.
- Look at how cleaning is currently done. Get input from staff. Ask them how and why they clean a certain way. Find out which procedures can be improved.
- Estimate the time and skills needed for each task. Some jobs may be done more efficiently by two or more people. Other jobs might require an outside contractor. Determine cleaning frequency as well.

Creating a Master Cleaning Schedule

Use the information you gather while identifying your cleaning needs to develop a master cleaning schedule. The schedule should include the following.

What should be cleaned. Arrange the schedule so that nothing is left out. List all cleaning jobs in one area or list jobs in the order in which they should be performed. Include both food and nonfood-contact surfaces as items that need to be cleaned. Keep the schedule flexible enough that you can adjust it if needed.

Who should clean it. Assign each task to a specific person. In general, staff members should clean their own areas. Rotate other cleaning tasks to distribute them fairly.

When it should be cleaned. Staff should clean and sanitize as needed. Schedule major cleaning when food will not be contaminated, or service will not be interrupted-usually after closing. Schedule work shifts to allow enough time as well. Staff members rushing to clean before the end of their shifts may cut corners.

How it should be cleaned. Provide clearly written procedures for cleaning. Guide staff through the process. Always follow manufacturer's instructions when cleaning equipment. Specify cleaning tools and chemicals by name. Post cleaning instructions near the item to be cleaned.

Choosing Cleaning Materials

Consider the following when selecting cleaning tools and supplies for your operation.

Correct tools and cleaners. Select tools and cleaners according to what is identified in the master cleaning schedule. Ask suppliers to suggest which tools and supplies are correct for your operation.

Worn tools. Replace worn tools. Dirty or worn tools or equipment may not clean or sanitize surfaces correctly.

Protective gear. Provide staff with the correct protective gear, such as aprons, goggles, and rubber gloves.



To ensure the success of a cleaning program, managers need to take time to train staff.

Implementing the Cleaning Program

Training is critical to the success of a cleaning program. Staff members need to understand the tasks you want them to perform and the quality that you expect. Follow these guidelines for a successful cleaning program.

Kickoff meeting. Schedule a kickoff meeting to introduce your program to the staff. Explain the reason behind it. Stress how important cleanliness is to food safety. If staff members understand why they are supposed to do something, they will be more likely to do it.

Training. Schedule enough time for training. Work with small groups or conduct training by area. Show staff members how to clean equipment and surfaces in each area.

Motivation. Provide plenty of motivation. Reward staff for any job well done. Create small incentives for staff members or teams, such as an award for Clean Team of the Month. Tie performance to specific goals or measurements, such as achieving high marks during regulatory inspections.

Monitoring. Once you have implemented the cleaning program, monitor it to make sure it is working.

This included the following:

- Supervise daily cleaning routines.
- Check all cleaning tasks against the master cleaning schedule every day.
- Change the master schedule as needed for any changes in menu, procedures or equipment.
- Ask for staff input on the program.

Knowledge Check

1. What is the first step in developing a cleaning program?
2. What are four components that should be included in a master cleaning schedule?

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

STUDY QUESTIONS

1. What must operations have to effectively clean up vomit and diarrhea?
 - a. Written procedures
 - b. Monthly health inspections
 - c. Specialized cleaning permits
 - d. Designated employees
2. A food handler needs to clean a range hood. Which cleaner should they use?
 - a. Detergent
 - b. Degreaser
 - c. Delimer
 - d. Abrasive cleaner
3. Which cleaner should be used for removing the water scale in a steam table?
 - a. Detergent
 - b. Degreaser
 - c. Delimer
 - d. Abrasive cleaner
4. A dish washer needs to remove baked-on food from a pan. Which cleaner should they use?
 - a. Detergent
 - b. Degreaser
 - c. Delimer
 - d. Abrasive cleaner
5. A food handler needs to remove a fresh layer of dirt from the wall. What cleaner should they use?
 - a. Detergent
 - b. Degreaser
 - c. Delimer
 - d. Abrasive cleaner

6. What is the definition of sanitizing?
 - a. Washing a surface to a clean level
 - b. Using a cloth on a surface until it is clean
 - c. Lowering the amount of dirt on a surface to safe levels
 - d. Reducing the pathogens on a surface to safe levels
7. What should be done to ensure that a chemical sanitizer being used on a food-prep surface is at the correct strength?
 - a. Rinse it from the surface, and then apply it a second time.
 - b. Test the surface to confirm that there are no pathogens.
 - c. Heat it to the temperature recommended by the manufacturer.
 - d. Use a test kit to check the sanitizer's concentration when mixing it.
8. Which factor impacts the effectiveness of chemical sanitizers?
 - a. Color
 - b. Concentration
 - c. Air temperature
 - d. Storage container
9. Surfaces can be sanitized using chemicals or
 - a. heat.
 - b. alcohol.
 - c. acids.
 - d. disinfectants.
10. What is the minimum temperature that water must be to sanitize surfaces?
 - a. 140°F (60°C)
 - b. 165°F (74°C)
 - c. 171°F (77°C)
 - d. 180°F (82°C)
11. The three most common types of chemical sanitizers are chlorine, iodine, and
 - a. quats.
 - b. disinfectant.
 - c. alcohol.
 - d. steam.

12. What can reduce the effectiveness of a chemical sanitizer?
 - a. Leftover detergent
 - b. Air temperature
 - c. Density of equipment
 - d. The water's oxygen level
13. What is the contact time for chlorine sanitizer at 50-99 ppm?
 - a. At least 5 seconds
 - b. At least 7 seconds
 - c. At least 10 seconds
 - d. At least 30 seconds
14. What is the contact time for iodine sanitizer at 12.5-25 ppm?
 - a. At least 5 seconds
 - b. At least 7 seconds
 - c. At least 10 seconds
 - d. At least 30 seconds
15. Which item requires sanitizing?
 - a. Flooring
 - b. Knives
 - c. Walls
 - d. Ovens
16. Which surfaces must be both cleaned and sanitized?
 - a. Walls
 - b. Cutting boards
 - c. Storage shelves
 - d. Garbage containers
17. When should a food-contact surface be cleaned and sanitized?
 - a. Every 6 hours
 - b. Before working with a different type of food
 - c. After the food handler changes gloves
 - d. At the end of the food handler's shift

18. What can reduce the effectiveness of a chemical sanitizer?
 - a. Leftover detergent
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 - c. At least 10 seconds
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 - b. Before working with a different type of food
 - c. After the food handler changes gloves
 - d. At the end of the food handler's shift

24. What is the first task when preparing to wash dishes in a three-compartment sink?
 - a. Remove leftover food from the dishes.
 - b. Fill the first sink with detergent and water.
 - c. Clean and sanitize the sinks and drain boards.
 - d. Make sure there is a working clock with a second hand.
25. The first step in cleaning and sanitizing items in a three-compartment sink is
 - a. air-drying items.
 - b. washing items in detergent.
 - c. immersing items in sanitizer.
 - d. rinsing, scraping, or soaking items.
26. What should the water temperature be in the detergent compartment of a three-compartment sink?
 - a. 70°F (21°C)
 - b. 90°F (32°C)
 - c. 110°F (43°C)
 - d. 165°F (74°C)
27. When should the sanitizer solution be changed in a three-compartment sink?
 - a. After 10-15 minutes
 - b. When the concentration drops
 - c. When the water appears different
 - d. When dishes don't appear to be as clean
28. Why is it important to clean nonfood contact surfaces regularly?
 - a. It prevents pests.
 - b. It is required by the FDA.
 - c. It reduces pathogens to safe levels.
 - d. It eliminates the need to sanitize them.
29. What is the minimum distance that clean utensils, tableware, and equipment must be stored from the floor?
 - a. 1 inch (3 centimeters)
 - b. 2 inches (5 centimeters)
 - c. 4 inches (10 centimeters)
 - d. 6 inches (15 centimeters)

30. How should glassware be stored after it has been cleaned and sanitized?
 - a. Right side up
 - b. Upside down
 - c. Stacked but upside down
 - d. Unstacked but right side up
31. When pouring sanitizer from its original container into a spray bottle, the spray bottle must be labeled with the
 - a. common name of the chemical.
 - b. expiration date of the chemical.
 - c. date the chemical was transferred.
 - d. name of the person who transferred the chemical.
32. How should chemicals be stored?
 - a. Above food
 - b. Away from prep areas
 - c. In food storage areas
 - d. With kitchenware
33. Which feature is most important for a chemical storage area?
 - a. Good lighting
 - b. Wall hooks
 - c. Nonskid floor mats
 - d. Emergency shower system
34. What is the correct way to store mops in between uses?
 - a. Propped in a corner
 - b. In a clean bucket
 - c. In a utility sink
 - d. Hanging on a hook
35. A buser poured some cleaner from its original container into a smaller working container. What else does the buser need to do?
 - a. Label the working container with its contents.
 - b. Read the safety data sheet (SDS) for the cleaner.
 - c. Use a new wiping cloth when first using the working container.
 - d. Note on the original container that some cleaner was put into a working container.

36. What step must managers take after creating a master cleaning schedule and training staff on how to use it?
 - a. Monitor the cleaning program.
 - b. Determine what should be cleaned.
 - c. Determine who should do each task.
 - d. Time staff on how long they take to clean.
37. What is the first step to developing an effective cleaning program?
 - a. Hire cleaning personnel.
 - b. Create a master cleaning schedule.
 - c. Identify cleaning needs in the operation.
 - d. Purchase cleaning supplies and protective gear.
38. When must chemical sanitizers be available?
 - a. When the operation is open to the public
 - b. During all hours of operation
 - c. At the beginning of each shift
 - d. Before a shift ends

SECTION 13

Integrated Pest Management

Integrated Pest Management (IPM) Programs

Running a restaurant or foodservices operation comes with aplenty of challenges and expenses. Dealing with pests might be one issue that many foodservice professionals haven't really considered. With so much to think about – such as ensuring that food is prepared and cooked correctly or cleaning and sanitizing – recognizing the right way to act upon spotting a pest may require some thought. An untrained staff member's first instinct could be to grab the nearest can of pesticide spray, but a number of things can go wrong with this approach. Food can become contaminated and unsafe if pesticides are not applied correctly by qualified professionals. Plus, spraying doesn't get at the root of the problem. Pests will keep coming if you don't control the factors that attract them in the first place.

Pests, such as insects and rodents, can pose serious problems for restaurants and foodservice operations. Beyond being unsightly to customers, they damage food, supplies, and facilities. The greatest danger from pests is that they can spread diseases, including foodborne-illnesses.

Once pests have entered the operation in large numbers an – **Infestation** – they can be difficult to eliminate. Developing an and implementing an **integrated pest management (IPM)** program is the key. An IPM program uses prevention measures to keep pests from entering the operation and control measures to eliminate those that do get inside.

The best way to ensure your IPM program succeeds is to work closely with a licensed **pest control operator (PCO)**. These professionals use safe, current ways of preventing and controlling pests.

Prevention is critical in pest control. If you wait until there is evidence of pests in your operation, they may already be there in large numbers.

An IPM program has three basic rules to keep your operation pest-free:

1. Deny pests access to the operation.
2. Deny pests food, water, and shelter.
3. Work with a licensed pest control operator.



A pest control operator (PCO) and manager review a kitchen for pest activity.

Deny Pests Access to the Operation

Pests can enter an operation by traveling inside with deliveries or by entering through openings in the building itself.

Deliveries

Here is how to prevent pests from entering with deliveries:

- Use approved, reputable suppliers.
- Check all deliveries before they enter your operation.
- Refuse shipments that have pests or signs of pests. This included egg cases and body parts, (legs, wings, etc.).



This bag of flour has been damaged by rodents. Deliveries with signs of pests should be rejected.

Welcoming Guests, Not Pests

When you prepare delicious food and open the doors to your operation, you are providing an invitation to guests. Unfortunately, this can also provide an entrance to unwelcome visitors. Grasshoppers, flies, spiders, and flying insects can find their way in through open windows and doors. And bees and wasps may be attracted to uncovered waste containers. One convenient way for pests to gain access to your operation is by hitching a ride in with deliveries. Rodents may arrive in a package of baked goods, and cockroaches are happy to live in all sorts of food items, linens, and paper goods. Of course, checking all deliveries as they arrive is important. But it's possible to reduce the likelihood that unwelcome guests will arrive in the first place by only purchasing from approved, reputable suppliers. These suppliers have inspection reports to support the safety of their food.

Receiving food from an unapproved supplier can be both dangerous and costly. Contaminated food may have to be thrown away and recorded. And accepting food with pests in it could lead to an infestation in the operation. That would be bad for business and bad for food safety.

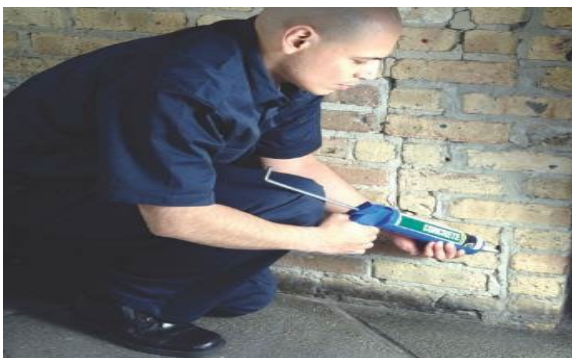




This gap in the doorframe could become an entry point for pests.



The opening around this pipe has been sealed with concrete to keep pests out.



A maintenance worker is sealing cracks in a brick wall to prevent pests from entering.

Doors, Windows, and Vents

Address the following to prevent pests from entering through doors, windows, and vents.

Screens. Screen all windows and vents with screening of at least 16 mesh per square inch. Anything larger might let in mosquitoes or flies. Check screens often. Clean, patch, or replace them as needed.

Self-closing devices and door sweeps.

Install self-closing devices and door sweeps on all doors. Repair gaps and cracks in door frames and thresholds. Use weather stripping on the bottoms of doors with no threshold.

Air curtains. Install **air curtains** (also called air doors or fly fans) above or alongside doors. These devices blow a steady stream of air across the entryway. This creates an air shield around doors left open.

Exterior openings. Keep all exterior openings tightly closed. Close drive-through windows when not in use.

Pipes

Rodents and insects use pipes a highways through an operation. Consider the following methods of prevention.

Concrete. Use concrete to fill holes or sheet metal to cover openings around pipes.

Screens. Install screens over ventilation pipes and ducts on the roof.

Grates. Cover floor drains with hinged grates to keep rodents out. Rats are good swimmers. They can enter Buildings through drainpipes.

Floors and Walls

Rodents often burrow into buildings through decaying masonry or cracks in foundations. They move through floors and walls the same way. Seal all cracks in floors and walls. Use a permanent sealant recommended by your PCO or regulatory authority. Seal spaces or cracks where stationary equipment is fisted to the floor. Use an approved sealant or concrete, depending on the size of the space.

Deny Food and Shelter

Pests are attracted to damp, dark, dirty places. A clean operation offers them no food or shelter. The stray pest that might get in cannot thrive or multiply in a clean kitchen. Stick to your master cleaning schedule and follow these additional guidelines.

Garbage. Throw out garbage quickly and correctly. Garbage attracts pests and provides them with a breeding ground. Keep garbage containers clean and in good condition. Make sure outdoor containers are tightly covered. Clean spills around garbage containers right away. Wash and rinse containers regularly.

Recyclables. Store recyclables in clean, pest-proof containers. Keep them as far from your building as regulatory requirements allow. Bottles, cans, paper, and packaging material provide shelter and food for pests.

Storage. Store all food and supplies correctly and as quickly as possible. Keep food and supplies away from walls and at least six inches off the floor. Use the FIFO (first-in, first-out) method to rotate products, so pests do not have time to settle into them and breed.

Cleaning. Careful cleaning eliminates pests' food supply and destroys insect eggs. It also reduces the places where pests can safely take shelter. Here are some guidelines:

- Clean food and beverage spills right away, including crumbs and scraps.
- Clean toilets and restrooms as often as needed.
- Train staff to keep lockers and break areas clean.
- Keep cleaning tools and supplies clean and dry. Store wet mops on hooks rather than on the floor; otherwise, roaches and other insects can hide in them.
- Empty water from buckets to keep from attracting rodents.

Grounds and Outdoor Dining Areas

Birds, flies, bees, and wasps can be both annoying and dangerous to your customers.

As with indoor pests, the key to controlling them is to deny them food and shelter.

Here are some guidelines:

- Mow the grass, pull weeds, get rid of standing water, and pick up litter.
- Cover all outdoor garbage containers.
- Remove uneaten food and dirty dishes from tables.
Clean dishes as quickly as possible.
- Clean spills as quickly as possible.



This food handler is cleaning underneath equipment, eliminating potential food and shelter for pests.

- Do not allow staff or customers to feed birds or wildlife on the grounds.
- Install electronic insect eliminators, or zappers, away from food, customers, staff and serving areas.
- Call your PCO to remove hives and nests.

Pests in the Great Outdoors.

When people think of outdoor pests, they tend to think of the usual ones such as insects and birds. But there are other pests to consider when our operation serves food outdoors. Outdoor dining areas have additional places where pests can hide or cause damage. Bats are pests that people frequently overlook. But a bat can easily hide in a closed table umbrella if left out overnight. One way to avoid this is by storing umbrellas at night. Rodents, such as chipmunks and squirrels, may be attracted to food waste in outdoor dining areas. And if the operation is near a beach or ocean, seagulls can be an issue. They can leave feces on table and chairs. This is not only unattractive to guests; it also can contaminate any food it may come in contact with.

Again, some operations choose to cover or store these items when possible. If not, be prepared to clean these items first thing before opening and throughout the day. No matter where your outdoor service takes place, be sure to clear food right away, clean up spills, and ensure all garbage is properly covered.



KNOWLEDGE CHECK

1. What are the three basic rules to keep an operation pest-free?
2. How does following a master cleaning schedule help reduce pests?

Identifying Pests

Pests are a real concern for every restaurant or foodservice operation. And flies, cockroaches, and rodents pose a genuine risk to both food safety and to the success of the operation. No guest ever wants to see pests in a restaurant! Keeping the operation pest-free requires effort. One aspect of this is recognizing the signs that pests may be present and then understanding how to keep them out. It's important because pests will try to get into an operation that offers them food, water, and a place to live. In fact, mice can fit through a hole as small as the size of a nickel to gain access.

Pests may still get into your operation even if you try to prevent them. They hide in delivery boxes and even fide in on staff's clothing or personal belongings.

It is important to spot signs of pests and determine which type you are dealing with. When you detect pests, record the date, time, and location. Then inform your PCO. Early detection allows the PCO to start treatment as soon a possible.

Flies

Flies are a threat to human health because they feed on garbage and animal waste. For this reason, flies can spread pathogens such as *Shigella* spp.

Cockroaches

Roches often carry disease-causing pathogens such as *Salmonella Typhi*, fungi, parasite eggs, and viruses. They reproduce quickly and can adapt to certain pesticides. This makes them difficult to control. Many people are also allergic to residue that roaches leave on food and surfaces. There are several types of roaches. Most live and breed in dark, warm, moist and hard-to-clean places.

You will often find them in the following areas:

- Behind coolers, freezers, and stoves.
- In sink and floor drains.
- In spaces around hot water pipes.
- Inside equipment, often near motors and other electrical devices.
- Under shelf liners and wallpaper.
- Underneath rubber mats.
- In delivery bags and boxes.
- Behind unsealed coving (especially rubber-based).

Roaches generally feed in the dark. If you see a cockroach in daylight, you may have a major infestation, because only the weakest roaches come out during the day. If you suspect you have a roach problem, check for the following signs:

- Strong oily odor.
- Droppings (feces) that look like grains of black pepper.
- Capsule-shaped egg cases that are brown, dark red, or black and possible leathery, smooth or shiny in appearance.



A mouse can fit through an opening the size of a Nickle and a rat can fit through an opening the size of a quarter.

Rodents

Rodents are a serious health hazard. They eat and ruin food, damage property, and can spread disease. Most rodent have a simple digestive system They urinate and defecate as they move around a facility. Their waste can both fall into food and contaminate surfaces. Rats and mice are the most common types of rodents. Rodents hide during the day and search for food at night. Like other pests they reproduce often.



Fresh rodent droppings inside a package of baked goods.



A rodent has built a nest made from scraps of building insulation inside a box on a storage shelf.

Typically, they do not move far from their nests. Rats travel only 100 to 150 feet away. Mice travel only 10 to 30 feet. Mice can squeeze through a nickel-sized hole to enter a facility. Rats can also stretch to reach an item as high as 18 inches, jump three feet in the air, and even climb straight up brick walls.

Rats and mice have keen senses of hearing, touch and smell. Plus, they are smart enough to avoid poison bait and poorly laid traps. Effective control of these rodents requires professional knowledge and experience.

A building can be infested with both rats and mice at the same time. Look for the following signs:

Gnawing. Rats and mice gnaw to reach food and to wear down their teeth, which are always growing. Rats' teeth can gnaw through pipes, concrete, and wood.

Droppings and urine stains. Fresh droppings are shiny and black. Older droppings are gray. Rodent urine will glow under (ultraviolet) light.

Tracks. Rodents tend to use the same pathways through your operation. If rodents are a problem, you may see dirt tracks along light-colored walls.

Nesting materials. Rats and mice build their nests with soft materials, such as cloth, hair, feathers, glass, and scraps of paper.

Holes. Rats usually nest in holes in quiet places, often near food and water. Their nests may also be found next to buildings.

Working with a Pest Control Operator (PCO)

After finding signs of pests in the operation, some managers may be tempted to apply pesticides immediately, on their own. Unfortunately, this is unlikely to solve the problem completely. And when done incorrectly, it introduces a real risk of chemical contamination. A better solution is to work with a pest control operator (PCO). A good PCO is familiar with safe, effective methods of pest control. And their activities include much more than simply killing visible pests. Of course, it’s preferable to work with a PCO on prevention, before a problem occurs.

Few pest problems are solved simply by spraying **pesticides**-chemical agents used to destroy pests. While you can help reduce the risk of infestation, most pest control should be carried out by professionals. Employ a licensed PCO. Together, you and PCO can prevent or eliminate pests and keep them from coming back.

You can rely on your PCO to do the following:

- Develop an integrated approach to pest management. This may include a combination of chemical and nonchemical treatments to solve and prevent problems.
- Stay current on new equipment and products.
- Provide prompt service to address problems as they occur. Contracts should include regular visits as well as immediate service when pests are spotted.
- Keep records of all steps taken to prevent and control pests.

How to Choose a PCO

Check references when hiring a PCO and make sure the PCO is licensed. (if required by your state). Always require a written service contract that outlines the work to be performed. It clarifies what is expected from both you and the PCO.

Here are some things included in a service contract:

- Description of services to be provided, including an initial inspection, regular monitoring visits, follow-up visits, and emergency service.
- Period of service.
- Your duties, including preventive measures and facility preparation before and after treatment
- Records to be kept by the PCO, including:
 - Pests sighted and trapped, species, location(s), and actions taken.
 - Building and maintenance problems noted and fixed.
 - Facility maps or photos showing locations of traps, bait and problem spots.
 - Schedule for checking and cleaning traps, replacing bait and reapplying chemicals
 - Regular written summary reports from the PCO.

KNOWLEDGE CHECK

1. What are pesticides?
2. What are some services a PCO should provide?

KNOWLEDGE CHECK

1. What are some signs there could be a roach problem in an operation?
 2. What are some common areas where cockroaches may be found in an operation?
-
-
-

Treatment

Agreeing on the type of treatment is an important step in working with a PCO. You need a treatment that not only effectively rids your operation of pests, but also ensures the safety for the food, the guests, and the employees. Before starting any treatment, talk with the PCO about the best plan of action and how all employees can do their part to keep the operation clean and safe. Be sure to maintain ongoing communication on the effectiveness of the treatment and any new pest issues.

Effective treatment starts with a thorough inspection of your facility and grounds. Give the PCO complete access to the building. The PCO will get a clearer picture of the situation if you help in the following ways:

- Prepare staff to answer the PCO's questions.
- Provide building plans and equipment layouts.
- Point out possible trouble spots.



A PCO has determined that a trap is good for controlling rodents in an operation.

After the initial inspection, your PCO should provide a treatment plan in writing. In addition to the price, the plan should address the following:

- Exactly what treatment(s) will be used for each area or problem and the potential risks involved.
- Dates and times of each treatment (the federal government requires a PCO to provide enough notice to prepare the facility correctly; staff should not be on-site during the treatment).
- Steps you can take to control pests.
- Any building defects that may be a barrier to prevention and control measures.
- Timing of follow-up visits, including plans for the PCO to assess the treatment and suggest alternate treatments if pests reappear.

Control Measures

PCOs use pest control methods that are environmentally sound and safe for operations. They also know which techniques will work best to control the types of pests in your area. New technologies are always being developed. Work with your PCO to determine which pest control methods are best for your operation.

KNOWLEDGE CHECK

1. What is the first step in developing an effective treatment program?
2. What information should be included in a written treatment plan provided by a PCO?

Using and Storing Pesticides

In their private homes, many people choose to purchase and apply their own pesticide rather than hiring a professional. These individuals are assessing prices and risks with only their own needs in mind. The situation in a restaurant or foodservice operation is quite different. The risks to food safety, guests, staff members, and environmental concerns must all be taken into consideration. There are also regulatory requirements related to chemical use in foodservice operation. When accounting for all of this, there are many reasons for managers or staff to avoid purchasing and applying their own pesticides:

- Applied incorrectly, they may be ineffective or harmful.
- Pests can develop resistance to pest control problems.
- Each region has its own pest control problems. Control measures may vary.
- Pesticides are regulated by federal, state, and local laws. Some are not approved for use in restaurants or foodservice operations.

Poisonous or toxic pest control materials should only be applied by a certified applicator.

STUDY QUESTIONS

1. A food handler who is receiving a food delivery observes signs of pests in the food. What should be done?
 - a. The head chef should be warned of the pests.
 - b. The food handler should remove all evidence of the pests.
 - c. The shipment should be refused and prevented from entering the operation.
 - d. The shipment should be stored outside the kitchen until a manager inspects it.
2. What is one way to keep an operation pest-free?
 - a. Seal all cracks in floors and walls.
 - b. Keep outdoor garbage containers open.
 - c. Clean up food spills at the end of each shift.
 - d. Store food and supplies one inch off the floor in storage.
3. What is a basic rule of an Integrated Pest Management program?
 - a. Work with a pest control operator.
 - b. Destroy pests on sight.
 - c. Use pesticides.
 - d. Set traps.
4. What is an important way to deny pests access to any operation?
 - a. Use pesticides.
 - b. Use approved, reputable suppliers.
 - c. Set rodent traps.
 - d. Spray regularly for flies.
5. What size should the mesh in window screening be to effectively keep out pests?
 - a. At least 2 mesh per square inch
 - b. At least 6 mesh per square inch
 - c. At least 10 mesh per square inch
 - d. At least 16 mesh per square inch

6. What scenario can lead to pest infestation?
 - a. Storing recyclables in paper bags
 - b. Installing air curtains above doors
 - c. Rotating products using the FIFO method
 - d. Storing food at least 6 inches (15 centimeters) off the floor
7. How should garbage be handled to deny pests food and shelter?
 - a. Leave outdoor containers uncovered to remove moisture.
 - b. Store garbage inside the kitchen to deny access to pests outside.
 - c. Remove garbage frequently so pests won't be attracted to it.
 - d. Keep recyclables close to the building to encourage removal.
8. What should be done when storing food and supplies to discourage pests?
 - a. Store them against walls.
 - b. Store them at least 2 inches (5 centimeters) off the floor.
 - c. Rotate them in storage.
 - d. Store them on the floor.
9. What information should be recorded and shared with the pest control operator if pests are spotted at the operation?
 - a. Color, weight, gender
 - b. Date, time, location
 - c. Size, type, number
 - d. Species, frequency, temperature
10. Dirt tracks are spotted along light-colored walls. What type of pest may be present?
 - a. Roaches
 - b. Centipedes
 - c. Bees or wasps
 - d. Mice or rats
11. Pepper-like black specks are found near the electrical motor in a refrigeration unit. What type of pest may be present?
 - a. Roaches
 - b. Rats
 - c. Mice
 - d. Flies

12. Holes are found in the ground around some quiet places along the building. What type of pest may be present?
 - a. Roaches
 - b. Rats
 - c. Mice
 - d. Flies
13. Nesting materials are found in a drawer under a prep table. What type of pest may be present?
 - a. Wasps
 - b. Roaches
 - c. Rats
 - d. Mice
14. Why should an operation avoid purchasing and applying pesticides?
 - a. They can accelerate an infestation.
 - b. They are illegal in most states.
 - c. It is not cost effective.
 - d. They can be harmful if applied incorrectly.
15. When should pesticides be applied?
 - a. At the end of the shift
 - b. At the beginning of the shift
 - c. When staff is not there
 - d. During slow periods in the week
16. What should be done after pesticides have been applied?
 - a. Wash, rinse, and sanitize food-contact surfaces.
 - b. Stay out of the establishment for 48 hours.
 - c. Have staff wear respirators if near sprayed areas.
 - d. Cover all equipment for 12 hours.
17. Who should store pesticides used in a facility?
 - a. Pest control operators
 - b. General managers
 - c. Shift managers
 - d. Owner/Operators

18. Where should pesticides be kept if they are stored at the location?
 - a. With equipment
 - b. In dry storage areas only
 - c. In their original containers
 - d. In new, clearly marked containers
19. Who should apply toxic pest control materials in a foodservice operation?
 - a. A certified applicator
 - b. A shift manager
 - c. The general manager
 - d. The owner
20. What is the most effective way to eliminate pests that have entered the operation?
 - a. Raise the heat in the operation after-hours.
 - b. Lower the heat in the operation after-hours.
 - c. Work with a licensed pest control operator (PCO).
 - d. Apply over-the-counter pesticides around the operation.
21. What should be considered when selecting a pest control operator (PCO)?
 - a. The PCO's pricing
 - b. The PCO's insurance provider
 - c. Whether the PCO can provide service when the operation is closed
 - d. Whether the PCO has references
22. A restaurant manager notices bees frequently flying around the outdoor patio. What should be done to keep them away from customers who are dining on the patio?
 - a. Stop the service of sugar-laden foods on the patio.
 - b. Install electronic insect eliminators at each patio table.
 - c. Hire a PCO to remove any hives in the area.
 - d. Have the manager spray insecticide around the perimeter.
23. What should be included in the PCO's treatment plan?
 - a. Original blueprints of the facility
 - b. Any building defects that may be a barrier to treatment
 - c. Names of employees who will be in the building during treatment
 - d. Types of food processed in the operation

24. What is the greatest danger that pests pose to a foodservice operation?
 - a. Damaged electrical wiring
 - b. Damaged supplies
 - c. Loss of customers
 - d. Spread of diseases
25. What is a sign that rats or mice may be present in the operation?
 - a. Signs of gnawing in storage areas
 - b. A strong oily odor
 - c. Scurrying sounds when the operation is quiet
 - d. Glass breaking overnight
26. How should an operation prevent pests from entering through its pipes?
 - a. Install air curtains at doorways.
 - b. Communicate regularly with utility providers.
 - c. Apply pesticides around any exposed pipes.
 - d. Cover floor drains with hinged grates.
27. What is a responsibility of a licensed pest control operator?
 - a. Seal any holes in the building.
 - b. Check deliveries for signs of pests.
 - c. Be present for health inspections.
 - d. Keep records of pest control measures.
28. What should managers do to support the PCO's initial inspection?
 - a. Give them partial access to the building.
 - b. Require all staff to be on-site.
 - c. Provide building plans and equipment layouts.
 - d. Deep clean the premises before the inspection.
29. Employees at a restaurant are trained to store mops on hooks and empty water from the mop buckets before closing each night. What basic rule of an integrated pest management system does this demonstrate?
 - a. Deny pests access to the operation.
 - b. Deny pests food, water, and shelter.
 - c. Follow documented processes.
 - d. Provide staff with training.

30. How should operations prevent pests from entering an establishment with a delivery?
 - a. Only accept deliveries during the day when pests are visible.
 - b. Use the first-in-first-out method after adding new products to storage.
 - c. Check deliveries before they enter your operation.
 - d. Isolate newly delivered products for 24 hours before adding to storage.

SECTION 14

Food Safety Regulation and Standards

Government Agencies Responsible for Preventing foodborne-illness

People who choose to work in our industry have a special relationship with food and hospitality. These things are important to us, and we work hard to provide the very best for our guests. One thing no one ever wants to do is put a guest at risk. Fortunately, there is an established body of scientific knowledge that we can turn to. We don't need to guess at how to keep food safe-others have already done the hard work to determine that already. This knowledge is available to us through the contents of the FDA *Food Code* and local regulations

Some individuals may feel that learning and following food safety requirements are an imposition on their creativity or business. But most recognize that the regulations are there to help. Ensuring that requirements are met is one way restaurant and foodservice professionals can keep their guests and their businesses healthy. Failing to do so can be catastrophic for both.

Several governmental agencies take leading roles in prevention of foodborne-illness in the United States. **The Food and Drug Administration (FDA)** and the **U.S. Department of Agriculture (USDA)** inspect food and perform other critical duties. State and local regulatory authorities create regulations and inspect operations

Agencies such as the **Centers for Disease Control and Prevention (CDC)** and the **U.S. Public Health Service (PHS)** help with food safety as well.

The Role of the FDA

The FDA inspects all food except meat, poultry, and eggs. The agency also regulated food transported across state lines. In addition, the agency issues the **FDA Food Code**. This science-based code provides recommendations for food safety regulations. The *Food Code* was created for city, county, state and tribal agencies. These agencies regulate foodservice for the following Groups:

- Restaurants and retail food stores.
- Vending operations.
- Schools and daycare centers.
- Hospitals and nursing homes.

Although the FDA recommends that states adopt its published *Food Code*, it cannot require it. The FDA also provided technical support and training. This is available for industry and regulatory agencies.

Other Agencies

Several other agencies have an important role in food safety and the prevention of foodborne-illness.

USDA. The U.S. Department of Agriculture regulates and inspects meat, poultry, and eggs. The USDA also regulates food that crosses state boundaries or involves more than one state.

CDC. The **Centers for Disease Control and Prevention (CDC)** is an agency of the U.S. Department of Health and Human Services. It assists the FDA, USDA, and state and local regulatory authorities by providing the following services:

- Investigating outbreaks of foodborne-illness.
- Studying the causes and control of disease.
- Publishing statistical data and case studies in the *Morbidity and Mortality Weekly Report (MMWR)*.
- Providing educational services in the field of sanitation.
- Conducting the Vessel Sanitation Program – an inspection program for cruise ships.

PHS. Like the CDC, the Public Health Service (PHS) also assists the FDA, USDA, and state and local regulatory authorities. The PHS conducts research into the causes of foodborne-illness outbreaks, the PHS also assists in investigating outbreaks.

State and local regulatory authorities. Regulatory authorities have many responsibilities. Here are some of the responsibilities related to food safety:

- Inspecting operations.
- Enforcing regulations.
- Investigating complaints and illnesses.
- Issuing licenses and permits.
- Approving construction
- Reviewing and approving HACCP plans.

Regulatory authorities write or adopt **food codes**, which are food safety provisions that regulate retail and foodservice operations. Food codes may differ from the FDA Food Code because these agencies are not required to adopt it. In fact, food codes differ widely from one state or locality to another. For example; some regulatory authorities require hot-holding food temperatures to be 140° or higher, while others require 135° or higher. This can challenge industry efforts to establish uniform food safety standards. Foodservice managers therefore need to consult with their regulatory authorities to find out which regulations apply to their operations.



In most states, restaurant and foodservice inspections are conducted by state and local health inspectors..

In a large city, the local regulatory authority will probably be responsible for enforcing regulatory requirements. In smaller cities or in rural areas, a county or state regulatory authority may be responsible for enforcement. In any case, the manager needs to be familiar with the authorities and their enforcement system. State and local **health inspectors** (also called sanitarians, health officials or environmental health specialists) conduct restaurant and foodservice inspections in most states. Most are trained in food safety, sanitation, and public health principles.

Knowledge Check

1. Are regulatory agencies required to adopt the FDA *Food Code*?
2. Who is responsible for inspecting and enforcing food safety regulations for a local business, such as a restaurant or grocery store?

The Inspection Process

Having a foodservice inspection program is important for several reasons. The most important reasons, however, are that failing to ensure food safety can risk guests' health and cost you your business. Is not uncommon for a manager to feel a bit of concern when someone arrives to inspect the operation. After all, any issues that are revealed could reflect negatively on them. But managers who take the time to keep food safe every day should feel confident on inspection day. If an inspector does find an error, they will let you know. They will also let you know what must be done to correct that error. Viewing inspectors as partners who can help the operation improve its performance is one way that managers can be more successful.

All operations that serve food to the public are subject to inspection. An inspection measures whether an operation is meeting minimum food safety standards. It also produces a written report that notes deficiencies. This report helps an operation comply with safe food practices. Keep in mind that you are ultimately responsible for food safety in your operation.

Regulatory requirements guide the inspection, so keep a current copy of your local or state regulations. Be familiar with them. Compare them often into your operation's procedures.

Regulatory authorities have begun using a more risk-based approach when conducting inspections. They often use the five risk factors for foodborne-illness and the FDA's public health interventions as guides.

The FDA recommends that regulatory authorities use the following three risk designations when evaluating operations:

- Priority items.
- Priority foundation items.
- Core items.

Priority items are the most critical. These are actions and procedures that prevent, eliminate, or reduce hazards associated with foodborne-illness to an acceptable level. Correct handwashing would be considered a priority item.

Priority foundation items are those that support a priority item. Having soap at a handwashing sink is an example.

Core items relate to general sanitation, the facility, equipment design, and general maintenance. Keeping equipment in good repair is an example.

Inspection Frequency

The FDA Food Code recommends that state and local regulatory authorities inspect food establishments at least once every six months. The time between inspections may be increased if the food establishment:

- Is operating under an approved and validated HACCP Plan,
- Is operating based on a written risk-based inspection schedule, or
- Provides only coffee service or serves only unpackaged or pre-packaged non TCS food.

Size and complexity. Larger operations offering many TCS food items might be inspected more frequently.

Inspection history. Operations with a history of low sanitation scores or consecutive violations might be inspected more often.

At-risk populations. Nursing homes, schools, daycare centers, and hospitals might receive more inspections.

Resources. The regulatory authority's workload and number of available inspectors may determine how often it inspects operations.



Always request identifies themselves as an inspector or representative of a regulatory agency.

Steps in the Inspection Process

In most cases, inspectors will arrive without warning. They will usually ask for the person in charge.

Make sure your staff knows who is in charge of food safety in your absence. Also be aware of your company's policies for handling an inspection

The following guidelines can help you get the most out of food safety inspections.

Identification. Always ask for it. Also prohibit entry through the back of the operation without the correct ID. Inspectors will volunteer their credentials. Make sure you know the reason for the inspection, as well. It could be a routine visit or the result of a guest complaint.

Do not refuse entry to an inspector. Inspectors have the authority to gain access to the operation. They also have the authority to revoke the operation's permit for refusing entry.

Cooperation. Answer all of the inspector's questions as well as you can. Tell your staff to do the same. You should go with the inspector during the inspection. You will be able to answer any questions and possibly correct problems right away. Tell the inspector when something can be fixed, if it cannot be fixed immediately. Open communication helps build a good working relationship with the inspector. You will also learn from the inspector's comments and get good food safety advice.

Notes. As you walk with the inspector, make note of any problems pointed out. This will help you remember exactly what was said. Make it clear that you are willing to fix any problems. If you believe the inspector is incorrect about something, ask for clarification and note what was mentioned. Then contact the regulatory authority if you are still unsure about something.

Professionalism. Be polite and friendly and treat inspectors with respect. Be careful about offering food, drink, or anything else that could be perceived as trying to influence the report.

Records. Be prepared to provide the following records an inspector might request:

- Purchasing records to make sure that food has been received from an approved source.
- Pest control operator (PCO) treatment plan or service report.
- Proof of food safety knowledge, such as a food protection manager certificate.
- HACCP records (if applicable).
- Temperature logs.

You can ask the inspector why these records are needed. If a request seems inappropriate, check with the inspector's supervisor. You can also check with your lawyer about limits on confidential information. Remember that any records you provide will become part of the public record.

Correction. After the inspection, the inspector will explain the results and the score, if one is given. Study the inspection report. Discuss any violations and time frames for correction with the inspector. You need to understand the exact nature of a violation. You should also know how a violation affects food safety, how to correct it, and whether the inspector will follow up.

You will be asked to sign the inspection report. Signing it acknowledges you have received it. Follow your company's policy regarding this issue.

A copy of the report will then be given to you or the person in charge at the time of the inspection. Keep copies of all reports on file in the operation. You can refer to them when planning improvements and assessing operation goals. Copies of reports are also kept on file at the regulatory authority. They are public documents that may be available to anyone upon request.



Action. Act on any deficiencies noted in the inspection report. You will need to act on deficiencies within the time given by the inspector. Violations of priority items usually must be corrected within 72 hours. Violations of priority foundation items typically must be corrected within 10 calendar days.

Determine the cause of any deficiencies by reviewing standard operation procedures. Also review the master cleaning schedule, staff training, and food handling practices. Revise current procedures or set up new ones to resolve any problems. Inform staff of the deficiencies and retrain them if needed.



Any deficiencies found during an inspection should be reviewed and acted upon.

Self-Inspections and Voluntary Controls

You know that food safety is critical to the success of all restaurant and foodservice operations. So, it's no surprise to learn that our industry takes steps to make sure we stop problems before they begin. At the level of individual operations, this includes self-inspections. It is always better to find – and correct – any issues before they can cause harm to a guest. Self-inspections will also help you ensure that you are meeting all regulatory requirements, and that can make the arrival of the local health inspector a more positive experience. At the national level industry organizations engage in voluntary efforts to keep food safe.

Self-Inspections

Well-managed operations perform frequent self-inspections to keep food safe. These are done in addition to – and more often than – regulatory inspections. They can be conducted in-house or by a third-party organization.

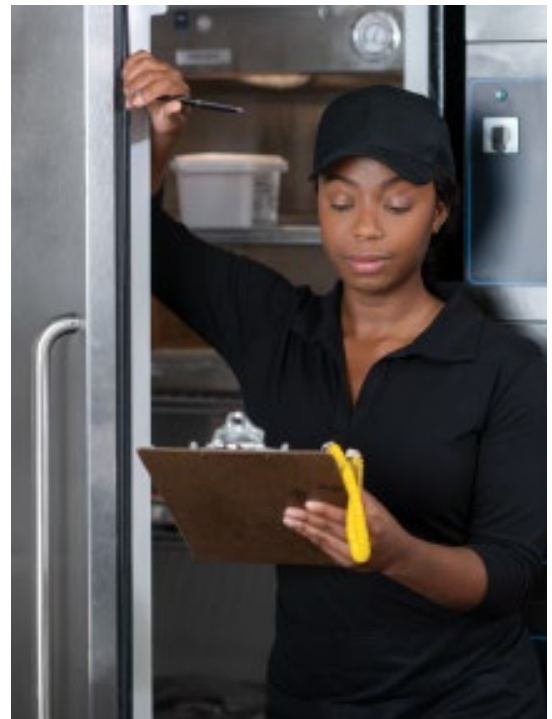
A good self-inspection program provides the following benefits:

- Safer food.
- Better food quality.
- Cleaner environment for staff and guests.
- Higher inspection scores.

Strive to exceed the standards of your regulatory authority. This will help you do well on inspections. Your guests will also recognize your commitment to food safety.

Consider these guidelines when conducting a self-inspection:

- Use the same type of checklist that the regulatory authority uses.
- Identify all risks to food safety.
- After the inspection, meet with staff to review any problems.



Performing frequent self-inspections can help the operation keep food safe and achieve higher inspection scores.

Getting Started with Self-Inspections

Reviewing your operation’s food safety performance through a self-inspection is a fantastic way to find and correct any problems before they become an issue. But where to begin? Larger operations may already have a self-inspection program in place. Some operations hire third parties to inspect their facilities. People who want to create their own self-inspection program will need to do a bit of research. Where possible, use a report or checklist that follows a process similar to your local regulatory authorities. In fact, they may be able to provide you with one. Another option is to review the sample inspection report found in the FDA *Food Code*. Many local authorities base their inspections on it.

The sample inspection report includes checks on

the same content you have covered in this text, including the five common risk factors.

As a reminder, these are unsafe food sources, incorrect cooking, incorrect holding temperatures, contaminated equipment, and poor personal hygiene. Of course, specific requirements can vary from one jurisdiction to the next. Always make sure that your operation meets or exceeds local requirements.

Voluntary Controls within the Industry

Few professions have devoted as much effort to self-regulation as the restaurant and foodservice and food-processing industries. Scientific and trade associations, manufacturing firms, and foodservice corporations have made voluntary efforts to raise industry standards through research, education, and government cooperation.

These organizations have recommended legislative policy, sponsored uniform enforcement procedures, and provided educational opportunities. The results for food safety have included the following:

- Increased understanding of foodborne-illness and its prevention.
- Improvements in the safe design of equipment and facilities.
- Industry-wide initiatives to maintain safe food during processing, shipment, storage, and service.
- Efforts to make foodservice laws more practical, uniform, and science-based.

KNOWLEDGE CHECK

1. Who is responsible for conducting self-inspections?
2. What are the benefits of a self-inspection program?

STUDY QUESTIONS

1. Which government agency is responsible for issuing the Food Code?
 - a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies
2. Which government agency is responsible for inspecting all food except meat, poultry, and eggs?
 - a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies
3. Which government agency regulates food transported across state lines?
 - a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies
4. Which government agency inspects meat, poultry, and eggs?
 - a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies
5. Which government agency investigates foodborne-illness outbreaks for other agencies?
 - a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies

6. Which government agency conducts an inspection program for cruise ships?
 - a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies
7. Which government agency inspects foodservice operations?
 - a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies
8. Which government agency is responsible for enforcing requirements in foodservice establishments?
 - a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies
9. Which government agency reviews an operation's HACCP plan?
 - a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies
10. Which government agency investigates complaints and illnesses against a foodservice operation?
 - a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies
11. What is the purpose of a regulatory inspection?
 - a. To correct deficiencies
 - b. To ensure the quality of the food served
 - c. To ensure that an operation is meeting minimum standards
 - d. To produce a grade so the public can rate the establishment

12. What type of foodservice operation is subject to a regulatory inspection?
 - a. Full-service operations
 - b. Quick-service operations
 - c. All operations that serve food
 - d. All operations that serve high-risk customers
13. What is the most critical risk designation used by a regulatory authority during an inspection?
 - a. Priority item
 - b. Priority foundation item
 - c. Core item
 - d. Basis item
14. Which risk designation used by a regulatory authority during an inspection relates to general sanitation?
 - a. Priority item
 - b. Priority foundation item
 - c. Core item
 - d. Basis item
15. Having soap at a handwashing sink has which risk designation when inspecting an establishment?
 - a. Priority item
 - b. Priority foundation item
 - c. Core item
 - d. Basis item
16. What is the minimum interval for the inspection of a foodservice establishment by a regulatory agency?
 - a. At least once every six months
 - b. At least once per year
 - c. At least once every two years
 - d. At least once every five years
17. What is a benefit of a self-inspection?
 - a. Improved food quality
 - b. Reduction in the frequency of formal health inspections
 - c. Decrease in need for liability insurance
 - d. Shorter formal inspections by regulatory agencies

18. When will health inspectors typically arrive?
 - a. During service
 - b. In the morning
 - c. Without warning
 - d. After notifying the operation
19. What can be a consequence of refusing entry to a health inspector?
 - a. Revocation of the operation's permit
 - b. An increase in inspection frequency
 - c. Jail time
 - d. Lawsuits
20. What records might a health inspector reasonably request?
 - a. OSHA violations
 - b. Purchasing records
 - c. Employee records
 - d. Financial records
21. What does a manager's signature on a health inspection form indicate?
 - a. Acknowledgment that they received it
 - b. Agreement to violations documented
 - c. Agreement to outcomes agreed upon
 - d. Admittance to violation of the law
22. When must violations of priority items typically need to be acted upon?
 - a. Within 12 hours
 - b. Within 24 hours
 - c. Within 48 hours
 - d. Within 72 hours
23. What is an example of a hazard that could result in closure of the operation?
 - a. Significant lack of refrigeration
 - b. Evidence that pests are in the establishment
 - c. Interruption of electrical service for two hours or less
 - d. A foodborne-illness complaint against the establishment

24. A manager receives an inspection report. What should they do first?
 - a. Make a copy of the report.
 - b. Study the report.
 - c. Discuss a follow up visit.
 - d. Contact a legal representative to help review the report.
25. What organization conducts research into the causes of foodborne-illnesses and assists with investigating outbreaks?
 - a. CDC
 - b. FDA
 - c. PHS
 - d. USDA
26. A regulatory inspector arrives during lunch service. What should the manager do first?
 - a. Present any food safety certifications.
 - b. Notify the kitchen staff.
 - c. Ask the inspector for identification.
 - d. Grant the inspector access to the building.
27. A large cockroach infestation and extensive lack of refrigeration can result in
 - a. increased licensing fees.
 - b. decreased inspection requirements.
 - c. closure of the operation by the regulatory authority.
 - d. a delay of an inspection until the situation is corrected.
28. A restaurant manager wants to conduct a self-inspection. Which guideline should they follow?
 - a. Identify the top three risks to food safety.
 - b. Use the same checklist that the regulatory authority uses.
 - c. Conduct it when the operation is closed.
 - d. Repeat the self-inspection once each year.
29. An operation receives an inspection report that notes a sanitation deficiency related to the employee restroom. What action should the manager take?
 - a. Review the master cleaning schedule.
 - b. File an appeal with the regulatory authority.
 - c. Conduct a self-inspection and compare the results.
 - d. Fix the deficiency within 45 days.

30. What would the regulatory authority consider a core item violation?
- a. Food being held at incorrect temperatures
 - b. Dirty floors
 - c. Improper handwashing
 - d. Lack of dish detergent

SECTION 15

Staff Food Safety Training

Food safety training provides employees with the knowledge and skills needed to handle food safely in your establishment. It is the manager's responsibility to provide food safety training to all employees as it relates to their assigned job duties.

Learning Objectives

After completing this chapter, you should be able to:

- Discuss the importance of initial and ongoing food safety training.
- List critical food safety knowledge needed by food handlers.
- Explain the requirement to maintain food safety training records.
- Discuss the importance of monitoring staff members after training them in food safety.
- Identify the need to retrain staff in food safety.
- Summarize different ways to train staff when teaching food safety.

What Do You Know?

Katherine was selected by her company to replace a general manager who had been promoted. The operation Katherine was taking over had only been open for a few months. The crew included a lot of young people from the area who have little experience. Katherine's regional manager advised her that her top priority should be to assess her crew and decide what the food safety training needs were. The operation seemed to be running very well; but a recent health department inspection revealed that the staff lacked general food safety knowledge. This greatly concerned the company.

This problem had to be immediately addressed. Katherine set out to evaluate the training needs to determine the gap between what her staff needed to know to perform their jobs versus that they actually knew.

1. How do you think Katherine should identify her staff's food safety training needs?

Training Staff

As a manager, our job is more than just understanding food safety practices and creating the necessary procedure. You also must train your staff to follow those procedures. Staff should be training when they are first hired and then on an ongoing basis.

The good news is that you don't need to do this alone. There are many professional training providers that can help.

To ensure staff can handle food correctly, first identify each training need within your operation. A **training need** is a gap between what staff *should* know to do their jobs and what they *actually* know. For new hires, the need might be obvious. For experienced staff, the need is not always as clear.

Identifying food safety needs will require some effort. You can achieve this by:

- Observing performance on the job.
- Testing food safety knowledge.

Critical Food Safety Knowledge

Many health departments require operations to provide food safety training to employees who will be handling food, utensils and equipment.

The entire staff needs general food safety knowledge. Other knowledge will be specific to tasks. For example; everyone should know how to wash their hands correctly. However, only receiving staff needs to know how to inspect produce during receiving.

You cannot assume new hires will understand your operation's food safety procedures without training. They should begin learning about the importance of food safety on their first day. They should also receive training in the critical areas listed in Table on the next page.

The ServSafe Food handler course is a good place to start when training your staff in food safety. It was designed to provide the critical food safety knowledge needed for people in employee-level positions. It can be delivered as an instructor-led or online course.



Some food safety training will be specific to certain tasks, such as receiving food.

Critical Food Safety Knowledge for Staff**Good Personal Hygiene**

- How and when to wash hands.
- Where to wash hands.
- Other hand-care guidelines, including fingernail length, nail polish and covering wounds.
- Proper work attire.
- Reporting illness.

Controlling Time and Temperature

- TCS food.
- How to measure the temperature of food.
- Holding and storing TCS food.
- How to label food for storage.
- Temperature requirements when thawing, cooking, cooling, and reheating food.

Preventing Cross-Contamination

- Preventing cross-contamination of food during storage, preparation, and service.
- Preventing cross-contamination when storing utensils and equipment.
- What to do if cross-contamination happens.
- What to do for people who have food allergies.

Cleaning and Sanitizing

- How and when to clean and sanitize.
- The correct way to wash dishes in a three-compartment sink and in a dishwasher.
- How to handle cleaning tools and supplies.
- Handling garbage.
- Spotting pests

Once staff is trained, monitor them to make sure they are following procedures. Why is this monitoring important? Some tasks, like handwashing, seem intuitive so people may not pay as much attention to the training that addresses them. There can also be a tendency for employees to take shortcuts given the fast-paced environment in which they work. And some people just develop bad habits over time that can affect the safety of food. That’s why monitoring is so important. Watch your employees and make sure they are doing thing correctly.

Retraining

Staff needs to be periodically retrained in food safety. As time passes, we tent to forget a lot of what we have learned. In brain science, this is called the “forgetting curve’. The more time passes without reinforcing information a person has learned, the greater the likelihood that person will forget it.

How to Fight the “Forgetting Curve”

According to experts, the steepest drop in a person’s memory occurs shortly after initial learning has occurred. Fortunately, there are tools that can be used to fight this “Forgetting curve” and move information into long term memory.

Use repetition. Revisit information frequently after presenting it so learners will see the content as important.

Show the same content in different formats each time the content is presented.

Space learning out over time. Conducting regular reviews of the content, but space them out at longer and longer intervals.

Give learners opportunities to interact with the content repeatedly over time. If learners don’t use information, they will lose it.

Make information personally meaningful. Learners need to know why the information being presented is useful. They are also more likely to remember information they feel will benefit them.

Use the “flipped classroom” model.

Let learners study new material in their own time and then use face-to-face sessions to engage with the content by asking questions and participating in discussions.

Tie learning to personal experiences or emotions. Use stories that are relatable to your learners. This allows them to create an emotional connection to the material, which aids in retention.

DECEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
26	27	28	29	30	1	2
3	4	5	6	7 Training	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26 Training	27	28	29	30
31	1	2	3	4	5	6

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Fortunately, there are tools you can use when training employees to fight that memory loss. One of the most important tools is repetition.

You can prevent the “forgetting curve” by scheduling several short training sessions spaced out over time, scheduling planning meetings to update staff on new food safety procedures, or by holding quick review sessions that reinforce food safety practices.

Record Keeping

Keep records of all food safety training at your operation. For legal reasons, be sure to document this training when a staff member completes it. Health inspectors might ask for these records as proof that your employees have received the proper training.

Upon successful completion of the ServSafe Food Handler course, students receive a Certificate of Achievement from the National Restaurant Association. This can be printed and used as verifiable proof that staff has received the proper training in food safety.

Knowledge Check

1. Why must staff members be monitored after they are trained:
2. What is the “forgetting curve” and what can trainers do to fight it?

Ways of Training.

There are a number of ways to deliver training. When trying to determine which method is best, one of the most important considerations is what tis most effective for the content. For example; if you are teaching employees how to wash their hands correctly, a demonstration of the actual process would be much more effective than a discussion of the steps involved. However, there are always practical considerations that must be accounted for. If you are in a classroom without a hand washing sink, then the next best thing might be showing a video of the actual handwashing process. Research on learning motivation also suggests that it’s important to use a variety of media when delivering training to capture and hold learners’ attention. In some instances, staff members may speak a different language than managers. In these situations, training materials in the staff member’s preferred language may be more suitable. Learner preference should also be considered.

Motivating Learners to Learn

Learner motivation is often overlooked when training. John Keller, an educational psychologist, created a coddle containing four key elements necessary for capturing and maintaining learner motivation during training. It's called the ARCS model, which stands for; Attention, Relevance, Confidence, and Satisfaction.

Attention: Instructors must find ways to gain learner's attention. They can do this by:

- Using elements of surprise or doubt that challenge existing understanding.
- Using humor and novelty.
- Using a variety of media.
- Posing questions and presenting problems to solve.

Relevance: Instructors must find ways to prove that the training is relevant to learners. Learners must see how the training will:

- Solve a current problem.
- Meet their needs now and in the future.
- Enhance skills they already have.
- Link new knowledge to old.

Confidence: Instructors must find ways to make learners feel confident that they will be able to apply their new skills or knowledge.

They can do this by:

- Establishing clear achievable goals.
- Providing guidance and feedback.
- Showing learner progress.

Satisfaction: Learners will gain satisfaction from learning if instructors find ways to allow them to successfully:

- Apply new skills in real world settings.
- Solve real problems.
- Earn praise.
- Earn rewards (i.e., badges, certificates).



Personal Hygiene

TIP
1

Wash Hands Correctly To wash hands or prosthetic devices correctly, follow these steps:

WET HANDS
AND ARMS



APPLY SOAP



SCRUB HANDS
AND ARMS
VIGOROUSLY



RINSE HANDS
AND ARMS
THOROUGHLY



DRY HANDS
AND ARMS



TIP
2

Avoid Bare-Hand Contact Prevent bare-hand contact with ready-to-eat food. When handling ready-to-eat food, single-use gloves should be worn.

TIP
3

Wear Correct Work Attire Dirty clothing may carry pathogens that can cause foodborne illness. Therefore it is important that food handlers follow a set dress code. That code should include the following:

HAIR RESTRAINTS
Wear a clean hat or other hair restraint when in a food prep area.

CLEAN CLOTHING
Wear clean clothing daily.

APRONS
Remove aprons when leaving prep areas.

JEWELRY
Remove jewelry from hands and arms before prepping food or when working around prep areas.

TIP
4

Report Illness and Cover Cuts and Wounds All staff members must report illness to management before coming to work. Infected wounds, cuts, or boils must be covered to prevent pathogens from contaminating food and food-contact surfaces. Cover wounds on the hand or wrist with an impermeable cover, and then place a single-use glove over the cover. Cover wounds on the arm with an impermeable cover, and cover wounds on other parts of the body with a dry, durable, tight-fitting bandage.

Information Search

Some people are curious and like to explore things on their own. Make use of their interest by having them discover food safety information for themselves. Here is how:

1. Put staff in small groups.
2. Give them questions to answer within a set time.
3. Give them the following types of tools to answer the questions.
 - Operations manuals.
 - Job aids.
 - Posters
 - Staff guides.
4. Bring the groups together and have them share what they learned.

Guided Discussion

Ask staff members questions that draw on their knowledge and experience. Encourage them to think and then discuss their thoughts. Each time learners answer a question, follow with another question.

Through this approach, a training session on calibrating thermometers might look something like this;

Instructor: How can you find out if a cooked chicken breast has reached the correct temperature?

Learner: Use a thermometer.

Instructor: How can you make sure a thermometer's reading is correct?

Learner: Calibrate it.

Instructor: How do you calibrate a thermometer?

Learner: By using the ice-point method or the boiling-point method.

Games

A game can help make difficult or boring information seem more exciting. You can also use games to practice information that has already been taught. To be effective, games should be the following:

- Easy to play.
- Suitable for all time frames.
- Easy to bring to the training site.
- Easy to change for the audience and content.
- Aligned with the learning objectives.

Role-Play

Many trainers use role-playing to teach concepts. They can be especially effective when training learners on how to handle the following situations:

- Foodborne-illness complaints.
- Guests with food allergies.
- Working with health inspectors during a health inspection.
- Crisis communication.

Role-playing can work well if you handle it the correct way. Here is how:

1. Prepare a script in advance that shows the correct or incorrect way to perform a skill.
2. Find two volunteers and give them time to rehearse the script. Do this early in the training session.
As an alternative, you can play one of the parts in the role-playing exercise.
3. Have the volunteers act out the script.
4. Ask the rest of the group to decide what the role-players did correctly and incorrectly.

Demonstrations

You will often teach specific food safety by showing them to a person or group. Demonstrations are most effective when you follow the Tell/Show/Practice model, as shown below.

Tell

Tell the learner how to do the task.
Explain what you are doing and why.

**Show**

Show the learner how to do the task.

**Practice**

Let the learner do the task. As extra practice, have the learner explain how to do the task before showing how he or she is doing throughout the practice.

**Jigsaw Design**

There is an old saying that goes;

“You have learned something when you can teach someone else how to do it”.

The jigsaw method follows this principle. Here is how to use it:

1. Put learners in small groups.
2. Assign a specific food safety topic to each group.
3. Tell each group to read about their topic, discuss it, and decide how to teach it to the other groups.
4. Take one person from each group and form new groups.
5. Have each member in the new group teach his or her topic to the other group members.
6. Bring the groups back together for review and questions.

Training Videos

There is no doubt that video is a popular training tool that is embraced by both instructors and students alike. It is well suited for modeling behaviors and teaching skills that require demonstration, such as calibrating a thermometer.

Videos can be an effective tool for training employees, but only if used correctly. To ensure videos promote learning, follow these guidelines:

- **Focus learners on key areas.** Before playing a video, identify the key points you want learners to focus on and ask them to watch for them in the video.
- **Play video in short segments.** While experts don't agree on an exact length, many suggest that to be effective, videos should not be longer than 3-5 minutes. Longer videos should be played in short segments.
- **Use videos targeted to learning goals.** Content that is not focused on learning goals can overload learners' working memory and hinder their ability to process and recall information.
- **Provide "guiding questions".** Give learners questions to consider as they watch the video. This can help focus attention on important elements.
- **Pause the video at specific points.** Ask students to discuss what they saw, provide feedback, debate the content, and answer questions.
- **Reinforce video content.** Once the video has ended, provide a quick summary, answer questions, and test for understanding.

Technology-Based Training

Many operations use technology-based training, such as eLearning, to teach food safety. e-Learning is short for electronic learning. It is a structure course or learning experience delivered electronically and taken on a laptop, tablet, or smartphone. eLearning generally falls into two categories: synchronous and asynchronous.

Synchronous courses are live instructor-led courses taken with other learners at the same time, but in different locations.

They are often delivered through online learning platforms such as Blackboard or Moodle or on video communication platforms like Zoom or Webex. They are usually referred to as "virtual classrooms".

Asynchronous courses differ in that they are self-paced and allow learners to take the training at different times. The ServSafe Manager Online Course is an example.

There are many advantages to technology-based training. The biggest is that it lets you deliver training when and where staff needs it.

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It is most appropriate in the following situations:

- Staff works in different locations and/or needs the same training at different times.
- When it is too costly to bring staff to the same place.
- Staff needs retraining.
- Staff has different levels of knowledge about topic.
- Staff has different learning skills.
- Staff needs to learn at their own pace.
- You want to collect specific information, such as test scores, time spent on different topics, and/of problem areas.

Knowledge Check

1. What can instructors do to ensure that videos promote learning?
2. What is the difference between synchronous and asynchronous eLearning?

STUDY QUESTIONS

1. When should staff be trained on food safety?
 - a. After the first year
 - b. After their first six months
 - c. After a few weeks on the job
 - d. Immediately after being hired
2. How can training needs be identified in a new hire?
 - a. By asking them
 - b. By talking to their coworkers
 - c. By observing job performance
 - d. By talking to their previous employer
3. Which staff members need general food safety knowledge?
 - a. All staff members
 - b. Part-time staff
 - c. Front-of-house staff
 - d. Back-of-house staff
4. Which food safety topic is it critical for staff to receive training on?
 - a. How to conduct a self-inspection
 - b. How to identify an approved supplier
 - c. How to identify specific foodborne-illnesses
 - d. How to label food for storage
5. When should staff be retrained in food safety?
 - a. Periodically
 - b. Weekly
 - c. Monthly
 - d. Annually

6. What does the success of on-the-job training depend on?
 - a. The skill of the trainer
 - b. The learning style of the learner
 - c. The skill level of the learner
 - d. The humor of the trainer
7. What can make classroom training more effective?
 - a. Using a lecture style format
 - b. Using an activity-based approach
 - c. Relying on telling rather than doing
 - d. Penalizing mistakes made in class
8. What can make the use of games in classroom training more effective?
 - a. If they are fun and easy to play
 - b. If they are overly challenging
 - c. If they are creating excessive competition
 - d. If they favor people who are more social
9. What can make demonstrations in classroom training more effective?
 - a. Modeling a task before providing instructions
 - b. Following a Tell, Show, and Do approach
 - c. Letting the learner identify the task steps before starting
 - d. Letting the learner practice a task without feedback
10. When is technology-based training most appropriate?
 - a. When budget does not matter
 - b. When teaching millennials
 - c. When staff members need to learn at their own pace
 - d. When instructors are not available to teach the information
11. What should a manager do after a staff member completes food safety training?
 - a. Document it.
 - b. Consider their training complete.
 - c. Cross-train them on other job functions.
 - d. Provide them with a certificate.

12. How can training needs be identified for an employee who has worked at an operation for over a year?
 - a. Ask the employee to self-assess their food safety knowledge.
 - b. Ask the regulatory authority to conduct an inspection while the employee is working.
 - c. Observe the employee's performance on the job.
 - d. Observe how other staff members interact with the employee.
13. What is the purpose of documenting employee food safety training?
 - a. A health inspector might ask for it.
 - b. The CDC requires it.
 - c. It demonstrates the employee's commitment.
 - d. It is good for public relations.
14. What critical knowledge should staff have about cleaning and sanitizing?
 - a. How to handle garbage
 - b. How to order chemicals from a supplier
 - c. When to conduct a self-inspection
 - d. When to refuse a delivery
15. What critical knowledge should staff have about controlling time and temperature?
 - a. How to identify and prevent food allergens
 - b. How to hold and store TCS food
 - c. How to wash and dry produce
 - d. How to accept and store invoices
16. What should a manager do after an employee has been fully trained?
 - a. Shift their focus to new or untrained staff.
 - b. Ask the employee to mentor untrained staff.
 - c. Require the employee to repeat the training every year.
 - d. Monitor the employee to make sure they continue to follow procedures.
17. What does a food handler certification represent?
 - a. Permission to operate a foodservice operation
 - b. Proof that an operation has passed their regulatory authority's inspections
 - c. Proof that an employee has received proper food safety training
 - d. Immunity from a foodborne-illness outbreak

18. After watching employees incorrectly wash their hands during dinner service, a manager decides to retrain staff on proper handwashing procedures. What is this an example of?
 - a. Monitoring on the job performance
 - b. Documenting training opportunities
 - c. Selecting appropriate training methods
 - d. Disciplining employees
19. What critical knowledge should staff have about controlling cross-contamination?
 - a. What is appropriate work attire
 - b. What to do for people who have food allergies
 - c. How to properly cool and reheat food
 - d. How to calculate a product's use-by date
20. What is general food safety knowledge that all employees of a foodservice operation should know?
 - a. How to inspect deliveries
 - b. How to order cleaning supplies
 - c. How to store food in a cooler
 - d. How to properly wash hands
21. What is the recommended length for an instructional video segment?
 - a. 3-5 minutes
 - b. 7-10 minutes
 - c. 15-30 minutes
 - d. 45-90 minutes
22. Research on learning motivation recommends which strategy to capture and hold a learner's attention?
 - a. Using a variety of media
 - b. Randomly selecting learners to answer questions
 - c. Presenting information in a lecture format
 - d. Administering frequent exams
23. A manager wants to demonstrate the process of sanitizing a prep table for a new hire. What should the trainer do first?
 - a. Show the new hire how to sanitize the table.
 - b. Create a record of the training session.
 - c. Tell the new hire how to sanitize the table.
 - d. Allow the new hire to practice sanitizing.

24. What can instructors do to make videos an effective training tool?
 - a. Show videos that are at least 30 minutes in length.
 - b. Assign videos only as homework.
 - c. Provide questions for the learners to consider as they watch.
 - d. Reprimand learners who aren't paying attention.
25. Why is it important to monitor employees after initial training?
 - a. People might pay less attention to actions that seem intuitive.
 - b. People will do the wrong thing if they think no one is watching.
 - c. Monitoring allows a manager to gauge an employee's work ethic.
 - d. Most employees won't retain what they learned in initial training.
26. What is a potential disadvantage of on-the-job (OTJ) training?
 - a. It works best for large groups.
 - b. It has a low success rate.
 - c. It requires hiring an outside contractor.
 - d. It takes experienced staff members away from their jobs.
27. For whom is asynchronous training most appropriate?
 - a. Learners who want on-the-job training opportunities
 - b. Learners who want to get together in a classroom
 - c. Learners who do not speak English as a first language
 - d. Learners who need to complete the training at different times
28. What is the biggest advantage of technology-based training?
 - a. It is effective for all learners.
 - b. It can be delivered when and where the staff needs it.
 - c. It is one of the least expensive training methods.
 - d. It does not require an experienced trainer.
29. What is an important tool in preventing employees from experiencing the "forgetting curve"?
 - a. Passion for food safety
 - b. Repetition of key information
 - c. Memorization of the food safety facts
 - d. Persuasion of the dangers of foodborne-illness

30. A trainer divides learners into small groups and assigns a food safety topic to each group. After learners read about the topic with their group members, they rotate into new groups. Then they teach their new group members about the topic they researched with their previous group. What activity-based teaching strategy is the trainer using?
- a. Role-playing
 - b. Guided discussion
 - c. Jigsaw design
 - d. Demonstrations

Glossary

Note: The number in bold at the end of each entry refers to the chapter in which the term is discussed in detail.

A

Abrasive cleaners: Cleaners containing a scouring agent for scrubbing off hard-to-remove dirt. **12**

Active managerial control: Food safety management system designed to prevent foodborne-illness by addressing the five most common risk factors identified by the Centers for Disease Control and Prevention (CDC) **10**

Air curtains: Devices installed above or alongside doors that blow a steady stream of air across an entryway, creating an air shield around open doors -also called air doors or fly fans. **13**

Air gap: Air space used to separate a water supply outlet from any potentially contaminated source; For example; the air space between a floor drain and the drainpipe of a sink. **11**

ALERT: Acronym developed by the FDA to help operations develop a food defense program. ALERT stands for assure, look, employees, reports and threat. **3**

Anaphylaxis: A severe allergic reaction that can lead to death. **B3**

Approved suppliers: Suppliers who have been inspected, are able to provide an inspection report, and who meet applicable local, state, and federal laws. **6**

B

Backflow: Unwanted reverse flow of contaminants through a cross-connection into a drinkable-water system. **11**

Backsiphonage: A backflow that occurs when high water use in one area of an operation creates a vacuum that sucks contaminants into the drinkable water supply. **11**

Bacteria: Single-celled, living microorganisms that can spoil food and cause foodborne-illness. **2**

Best-by date: Date by which a product should be eaten for best flavor or quality. **6**

Bimetallic stemmed thermometer: The most common and versatile type of thermometer, which measures temperature through a metal stem with a sensor in the end. **5**

Boiling-point method: Method of calibrating a thermometer based on the boiling point of water. **5**

Booster heater: A special type of water heater typically used with dishwashers to heat rinse water to proper sanitizing temperatures. **11**

C

Calibration: Process of adjusting a thermometer to a known standard, such as the freezing point or boiling point of water, to ensure that the thermometer gives accurate readings. **5**

Carriers: People who carry pathogens and infect others, yet never get sick themselves. **4**

Centers for Disease and Prevention (CDC): Agencies of the U.S. Department of Health and Human Services that investigate foodborne-illness outbreaks, study the causes and control of disease, publish statistical data, provide educational services in the field of sanitation, and conduct the Vessel Sanitation Program. **14**

Cleaning: Removing food and other types of dirt from a surface, such as a countertop or plate. **12**

Concentration: The amount of sanitizer for a given amount of water measured in parts per million (ppm). **12**

Contamination: Presence of harmful substances in food. Some food safety hazards occur naturally, while others are induced by humans or the environment. **1**

Coving: Curved, sealed edge placed between the floor and wall to eliminate sharp corners or gaps that would be impossible to clean. Coving also eliminates hiding places for pests and prevents moisture, from deteriorating walls. **11**

Critical control points (CCPs): In a HACCP system, the points in the process where you can intervene to prevent, eliminate, or reduce identified hazards to safe levels. **10**

Cross-connection: Physical link through which contaminants from drains, sewers, or other wastewater sources can enter a drinkable water supply. A hose connected to a faucet and submerged in a mop bucket is an example. **11**

Cross-contact: The transfer of an allergen from a food or food-contact surface containing an allergen to a food that does not contain an allergen. **3**

Cross-contamination: The transfer of pathogens from one surface of food to another. **1**

D

Date marking: A date placed on ready-to-eat TCS food held for more than 245 hours indicating the date by when the food must be sold, eaten or thrown out. **7**

Degreasers: Detergents that contain a grease-dissolving agent. **12**

Delimers: Cleaning agents used on mineral deposits and other soils that other cleaners cannot remove, such as scale, rust, and tarnish. **12**

Detergents: Cleaners designed to penetrate and soften dirt to help remove it from a surface. **12**

E

Expiration date: Last date recommended for a product to be at peak quality. **6**

F

FAT TOM: Acronym for the conditions needed by foodborne bacteria to grow—food, acidity, temperature, time, oxygen and moisture. **2**

FDA Food Code: Science-based recommendations on food safety regulations for city, county, state and tribal agencies that regulate foodservice for retail food operations, vending operations, schools and day-care centers, and hospitals and nursing homes. **14**

Fecal-oral route: The transfer of pathogens from a person's feces to his or her hands, and then from that person's unwashed or improperly washed hands to food that is eaten by someone else. A foodborne-illness may result. **2**

First-in, first-out (FIFO) method: Method of stock rotation in which products are used first. **7**

Flow of food: Path that food takes through an operation, from purchasing and receiving through storing, preparing, cooking, holding, cooling, reheating and serving. **5**

Food Allergen: A naturally-occurring protein in food or in an ingredient that some people are sensitive to. When enough of the allergen is eaten, the immune system mistakenly considers it harmful and attacks the food protein. This can result in an allergic reaction. **3**

Food and Drug Administration (FDA): Federal agency that inspects all food except meat, poultry, and eggs; regulates food transported across state lines; and issues the FDA Food Code. **14**

Food codes: State or local food safety regulations for retail and foodservice operations. **14**

Food defense program: Program developed and implemented by an operation to prevent deliberate contamination of its food. **3**

Food safety management system: Group of programs, procedures, and measures designed to prevent foodborne-illness by actively controlling risks and hazards throughout the flow of food. **10**

foodborne-illness: Illness carried or transmitted to people by food. **1**

Foodborne-illness outbreak: An incident in which two or more people experience the same illness symptoms after eating the same food. An investigation is conducted by the state and regulatory authorities, and the outbreak is confirmed by laboratory analysis. **1**

Fungi: Pathogens that can spoil food and sometimes make people sick. Molds and yeasts are examples. **2**

H

HACCP: Food Safety management system based on the idea that if significant biological, chemical, or physical hazards are identified at specific points within a product's flow through the operation, they can be prevented, eliminated, or reduced to safe levels. **10**

Hair restraint: Device used to keep a food handler's hair away from food and to keep the individual from touching their hair. **4**

Hand antiseptics: Liquids or gels used to lower the number of pathogens on the skin's surface. Hand antiseptics should only be used after correct handwashing, not in place of it. **4**

Health inspectors: City, county, or state staff members who conduct foodservice inspections. Health inspectors are also known as sanitarians, health officials, and environmental health specialists. **14**

High-risk populations: People susceptible to foodborne-illness due to the effects of age or health on their immune systems, including preschool-age children, older adults, and people with compromised immune systems. **1**

I

Ice-point method: Method of calibrating thermometers based on the freezing point of water. **5**

Imminent health hazard: A significant threat or danger to health that requires immediate correction or closure to prevent injury. **10**

Impermeable: A material that does not allow liquid to pass through it-For example; a bandage or finger cot. **4**

Infestation: Situation that exists when pests overrun or inhabit an operation in large numbers. **13**

Inspection stamp: A stamp indicating that a carcass or package of meat has been inspected by the USDA or a state department of agriculture. **6**

Integrated pest management (IPM): Program using prevention measures to keep pests from entering an operation and control measures to eliminate any pests that do get inside. **13**

J

Jaundice: A yellowing of the skin and eyes, which can be a symptom of a foodborne-illness. **2**

K

Key drop delivery: The receipt of food by a foodservice operation while it is closed for business. **6**

M

Microorganisms: Small, living organisms that can be seen only through a microscope. There are four types of microorganisms that can contaminate food and cause foodborne-illness: bacteria, viruses, parasites and fungi. **2**

Minimum internal temperature: The required minimum temperature the internal portion of food must reach to sufficiently reduce the number of pathogens that might be present. This temperature is specific to the type of food being cooked. Food must reach and hold its required internal temperature for a specified amount of time. **8**

Mobile units: Portable foodservice operations, ranging from concession vans to full field kitchen. **9**

Mold: Types of fungus that causes food spoilage. Some molds produce toxins that can cause foodborne-illness. **2**

N

Nonfood-contact surfaces: Surfaces in an operation that do not normally come in contact with food, such as floors, walls, ceilings, and equipment exteriors. **12**

NSF International: Organization that develops and publishes standards for the design of sanitary equipment. It also assesses and certifies that equipment has met these standards. **11**

O

Off-site service: Service of food to someplace other than where it is prepared or cooked, including catering and vending. **9**

Onset time: Time it takes for the symptoms of a foodborne-illness to appear after exposure to the pathogen, toxin, or parasite that caused the illness. This time varies depending on the type of foodborne-illness and other factors. **2**

P

Parasite: Organism that needs to live in a host organism to survive. Parasites can be found in water and inside many animals such as cows, chickens, pigs and fish. **2**

Partial cooking (parcooking): Intentionally stopping the cooking process to cool a food item, so cooking can be finished just before service or sale. **8**

Pathogens: Illness-causing microorganisms. **2**

Pest control operator (PCO): Licensed professional who uses safe, current methods to prevent and control pests. **13**

Pesticides: Chemicals used to destroy pests, usually insects. **13**

pH: A measure of acidity on a scale of 0 to 14.0, with 0 being highly acidic, 7.0 being neutral, and 14.0 being highly alkaline. **2**

Pooled eggs: Eggs that are cracked open and combined in a common container. **8**

Porosity: Extent to which liquids are absorbed by a material. The term is usually used in relation to flooring material. **11**

Potable: Drinkable-For example; potable water is water that is safe to drink. **11**

Public Health Service (PHS): A federal agency that conducts research into the causes of foodborne-illness outbreaks and assists with the investigation of outbreaks. **14**

R

Ready-to-eat food: Any food that can be eaten without further preparation, washing, or cooking: For example; cooked food, washed fruits and vegetables (whole and cut), and deli meats. Bakery items, sugars, spices, and seasonings are also considered ready-to-eat. **1**

Reduced-oxygen packaged (ROP) food: Food packaged in a way that reduces the amount of oxygen available in order to slow microbial growth. ROP methods include sous vide, modified atmosphere packaged (MAP), and vacuum packaging. **7**

Resiliency: Ability of a surface to react to a shock without breaking or cracking; usually used in relation to flooring material. **11**

S

Sanitizing: Reducing the number of pathogens on a surface to safe levels. **12**

Sell-by-date: Date that tells a store how long to display a product for sale. **6**

Shellstock identification tag: A tag that identifies when and where shellfish were harvested and the supplier. **6**

Slacking: Process of gradually thawing frozen food in preparation for deep-frying. **8**

Spore: Form that some bacteria can take to protect themselves when nutrients are not available. Spores can revert back to a form capable of growth. **2**

T

TCS food: Food that requires time and temperature control to limit the growth of pathogens. TCS stands for time and temperature control for safety. **1**

Temperature danger zone: The temperature range between 41°F and 135°F (5°C and 57°C), within which most foodborne microorganism rapidly grow. **2**

Temporary units: Operations that function in a location for typically no more than 14 days; For example; foodservice tents or kiosks set up for food fairs, special celebrations, of sporting events. **9**

Thermistors: Thermometers that check food temperatures through a sensor on the tip of a metal probe. **5**

Thermocouples: Thermometers that check food temperatures through a sensor on the tip of a metal probe. **5**

Time-temperature abuse: When food has stayed too long at temperatures that are good for growth of pathogens; For example; when food is not held or stored correctly, not cooked or reheated correctly, or not cooled correctly. **1**

Time-temperature indicator (TTI): Time and temperature monitoring device attached to a food shipment to determine if the product's temperature has exceeded safe limits during shipment or storage. **5**

Toxins: Poisons produced by pathogens, plants, or animals. Some toxins occur in animals as a result of their diet. **2**

Training need: Gap between what staff should know to do their jobs and what they actually know. **15**

U

U.S. Department of Agriculture (USDA): Federal agency responsible for regulating and inspecting meat, poultry, and eggs, and food that crosses state boundaries or involves more than one state. **14**

Use-by date: Last date recommended for a product to be at peak quality. **6**

V

Variance: Document issued by a regulatory agency that allows a regulatory requirement to be waived or changed. **8**

Virus: Smallest of the microbial food contaminants. Viruses rely on a living host to reproduce. **2**

Vacuum breaker: A mechanical device that prevents backsiphonage by closing a check valve and sealing the water supply line shut when water flow is stopped. **11**

W

Water activity (a_w): Amount of moisture available in food for bacteria to grow. It is measured on a scale from 0.0 to 1.0, with 1.0 having the most moisture available. **2**

Water hardness: The amount of minerals in water. **12**

Y

Yeast: Type of fungus that can cause food spoilage. **2**

Section 1: Keeping Food Safe

1. To be considered an outbreak, a foodborne-illness must
 - a. include at least six people.
 - b. involve more than one food.
 - c. be confirmed by laboratory analysis.
 - d. occur over multiple days.

Answer: c

Learning Objective: 1 Explain what a foodborne-illness is and how to determine when one has occurred.

2. Two guests became ill after eating at a restaurant. They each ate different food items and suffered different symptoms. Would the incident be considered a foodborne-illness outbreak?
 - a. No, because they ate different foods.
 - b. No, because they ate different foods and had different symptoms.
 - c. Yes, because they ate different foods.
 - d. Yes, because they ate different foods and had different symptoms.

Answer: b

Learning Objective: 1 Explain what a foodborne-illness is and how to determine when one has occurred.

3. What is a foodborne-illness outbreak?
 - a. When two or more food handlers contaminate multiple food items
 - b. When an operation serves contaminated food to two or more people
 - c. When two or more people report the same illness from eating the same food
 - d. When the CDC receives information on two or more people with the same illness

Answer: c

Learning Objective: 1 Explain what a foodborne-illness is and how to determine when one has occurred.

4. In a situation that meets all other criteria, how many people must have the same symptoms for a foodborne-illness to be considered an “outbreak”?
 - a. 1
 - b. 2
 - c. 3
 - d. 4

Answer: b

Section: 1

Learning Objective: 1 Summarize the challenges to food safety and the five common risk factors that can cause foodborne-illness.

5. Why do pathogens pose an increasing challenge to food safety in an operation?
- a. Strains of pathogens are stronger than ever before.
 - b. Pathogens can no longer be eliminated from food products.
 - c. Pathogens are being found on food items once considered safe.
 - d. It is harder to prevent pathogens from causing foodborne-illness.

Answer: c

Section: 1

Learning Objective: 1 Summarize the challenges to food safety and the five common risk factors that can cause foodborne-illness.

6. Which organization makes recommendations for food safety regulation of the foodservice industry?
- a. State regulatory authority
 - b. Food and Drug Administration (FDA)
 - c. U.S. Department of Agriculture (USDA)
 - d. Centers for Disease Control and Prevention (CDC)

Answer: b

Section: 1

Learning Objective: 1 Summarize the food safety responsibilities of the person in charge of a foodservice operation.

7. Which is a challenge to food safety in an operation?
- a. The lack of certified training programs
 - b. The growing elderly population in the U.S.
 - c. The infrequency of health inspections in an operation
 - d. The increased focus on personal hygiene in the operation

Answer: b

Section: 1

Learning Objective: 1 Summarize the challenges to food safety and the five common risk factors that can cause foodborne-illness.

8. What is a human cost to victims of foodborne-illness?
- a. Negative publicity
 - b. Long-term disability
 - c. Changes to the immune system
 - d. Decreased resistance to pathogens

Answer: b

Section: 1

Learning Objective: 1 Summarize the challenges to food safety and the five common risk factors that can cause foodborne-illness.

9. Which contaminants pose the greatest threat to food safety?
- a. Toxins
 - b. Allergens
 - c. Pathogens
 - d. Chemicals

Answer: c

Section: 1

Learning Objective: 1 Identify types of contaminants and state the methods of prevention.

10. Which of the following is a physical contaminant?
- a. Bone in a filet
 - b. Virus on a salad
 - c. Cleaning solution in a spray bottle
 - d. Toxin in seafood

Answer: a

Section: 1

Learning Objective: 1 Identify types of contaminants and state the methods of prevention.

11. How are chemicals most likely to get into food?
- a. When they are used incorrectly
 - b. When they are stored in original containers
 - c. When they are purchased from unsafe sources
 - d. When they are kept past their expiration date

Answer: a

Section: 1

Learning Objective: 1 Identify types of contaminants and state the methods of prevention.

12. The three potential hazards to food are biological, physical, and
- a. situational.
 - b. chemical.
 - c. terminal.
 - d. procedural.

Answer: b

Section: 1

Learning Objective: 1 Identify types of contaminants and state the methods of prevention.

13. Which of the following is a physical contaminant?
- a. Bone in a filet
 - b. Virus on a salad
 - c. Cleaning solution in a spray bottle
 - d. Toxin in seafood

Answer: a

Section: 1

Learning Objective: 1 Identify types of contaminants and state the methods of prevention.

14. How are chemicals most likely to get into food?
- a. When they are used incorrectly
 - b. When they are stored in original containers
 - c. When they are purchased from unsafe sources
 - d. When they are kept past their expiration date

Answer: a

Section: 1

Learning Objective: 1 Identify types of contaminants and state the methods of prevention.

15. The three potential hazards to food are biological, physical, and
- a. situational.
 - b. chemical.
 - c. terminal.
 - d. procedural.

Answer: b

Section: 1

Learning Objective: 1 Identify types of contaminants and state the methods of prevention.

16. Cooked rice was left out on a prep table to cool for several hours. This is an example of
- cross-contamination.
 - time-temperature abuse.
 - improper personal hygiene.
 - poor cleaning and sanitizing.

Answer: b

Section: 1

Learning Objective: 1 Summarize the challenges to food safety and the five common risk factors that can cause foodborne-illness.

17. The same cutting board is used to prep raw meat, then lettuce. This is an example of
- cross-contamination.
 - time-temperature abuse.
 - poor personal hygiene.
 - poor cleaning and sanitizing.

Answer: a

Section: 1

Learning Objective: 1 Identify types of contaminants and state the methods of prevention.

18. Which is a common risk factor for foodborne-illness?
- Reheating leftover food
 - Serving ready-to-eat food
 - Using single-use, disposable gloves
 - Purchasing food from unsafe sources

Answer: d

Section: 1

Learning Objective: 1 Summarize the challenges to food safety and the five common risk factors that can cause foodborne-illness.

19. Raw chicken breasts are left out at room temperature on a prep table. What is the risk that could cause a foodborne-illness?
- a. Cross-contamination
 - b. Poor personal hygiene
 - c. Time-temperature abuse
 - d. Poor cleaning and sanitizing

Answer: c

Section: 1

Learning Objective: 1 Summarize the challenges to food safety and the five common risk factors that can cause foodborne-illness.

20. Which food requires time and temperature control to keep it safe?
- a. Whole strawberries
 - b. Uncut melons
 - c. Washed carrots
 - d. Baked potatoes

Answer: d

Section: 1

Learning Objective: 1 Define TCS food and ready-to-eat food.

21. What is an example of TCS food?
- a. Dried parsley
 - b. Chopped walnuts
 - c. Diced celery
 - d. Sliced cantaloupe

Answer: d

Section: 1

Learning Objective: 1 Define TCS food and ready-to-eat food.

22. What is an example of a TCS food?
- a. Bread
 - b. Bananas
 - c. Sprouts
 - d. Rosemary

Answer: c

Section: 1

Learning Objective: 1 Define TCS food and ready-to-eat food.

23. Which is considered a ready-to-eat food?
- a. Raw cookie dough
 - b. Mozzarella cheese
 - c. Unwashed kale
 - d. Dried beans

Answer: b

Section: 1

Learning Objective: 1 Define TCS food and ready-to-eat food.

24. What is TCS food?
- a. Food requiring thermometer checks for security
 - b. Food requiring trustworthy conditions for service
 - c. Food requiring training commitments for standards
 - d. Food requiring time and temperature control for safety

Answer: d

Section: 1

Learning Objective: 1 Define TCS food and ready-to-eat food.

25. A cook preps a beef tenderloin on a cutting board and then immediately cuts pies for dessert on the same cutting board. This is an example of which risk factor?
- Using contaminated equipment
 - Practicing poor personal hygiene
 - Purchasing food from unsafe sources
 - Holding food at incorrect temperatures

Answer: a

Section: 1

Learning Objective: 1 Summarize the challenges to food safety and the five common risk factors that can cause foodborne-illness.

26. Which of the following people are at high risk for getting a foodborne-illness?
- Preschool-age children
 - Women in their twenties and thirties
 - Middle-aged men
 - Teenagers who have reached puberty

Answer: a

Section: 1

Learning Objective: 1 Identify high-risk populations.

27. A group is dining out and includes a man and woman in their forties, their teenage son, and grandparents in their early seventies. Who is at high risk for foodborne-illness?
- The man in his forties
 - The woman in her forties
 - The teenage son
 - The grandparents in their seventies

Answer: d

Section: 1

Learning Objective: 1 Identify high-risk populations.

28. Why are young children at a higher risk for foodborne-illness?
- a. They are more likely to spend time in a hospital.
 - b. Their immune systems are not yet fully developed.
 - c. They are more likely to suffer allergic reactions.
 - d. Their appetites are suppressed.

Answer: b

Section: 1

Learning Objective: 1 Identify high-risk populations.

29. Which of the following is a food safety responsibility of a manager?
- a. Ensuring that chemicals are stored in a way that meets OSHA requirements
 - b. Ensuring that food prepared in a private home for a restaurant is prepared safely
 - c. Ensuring that delivery drivers are following food safety practices while in the operation
 - d. Ensuring that separate fryers are available for preparing food for customers with allergies

Answer: c

Section: 1

Learning Objective: 1 Summarize the food safety responsibilities of the person in charge of a foodservice operation.

30. The regulatory authority will hold the person in charge responsible for ensuring that
- a. guests use clean tableware when returning to self-service areas.
 - b. guests are escorted when touring kitchen facilities.
 - c. meat is checked for doneness by touch.
 - d. staff members are applying pesticides to eliminate pests.

Answer: a

Section: 1

Learning Objective: 1 Summarize the food safety responsibilities of the person in charge of a foodservice operation.

Section 2: Understanding the Microworld

1. Which type of food best supports the growth of bacteria?
 - a. Fats
 - b. Sugars
 - c. Starches
 - d. Proteins

Answer: d

Section: 2

Learning Objective: 2 Identify the conditions that affect the growth of foodborne bacteria. (FAT TOM)

2. Which food best supports the growth of bacteria?
 - a. Butter
 - b. Cooked rice
 - c. Loaf of bread
 - d. Chocolate cake

Answer: b

Section: 2

Learning Objective: 2 Identify the conditions that affect the growth of foodborne bacteria. (FAT TOM)

3. Bacteria grows best at which pH level?
 - a. 0
 - b. 2
 - c. 7
 - d. 12

Answer: c

Section: 2

Learning Objective: 2 Identify the conditions that affect the growth of foodborne bacteria. (FAT TOM)

4. Which food has the most available moisture for bacteria to grow?
- a. Food with an a_w of 0.0
 - b. Food with an a_w of 0.2
 - c. Food with an a_w of 0.5
 - d. Food with an a_w of 1.0

Answer: d

Section: 2

Learning Objective: 2 Identity the conditions that affect the growth of foodborne bacteria. (FAT TOM)

5. Is vacuum-packed food safe from the growth of bacteria?
- a. Yes, because the vacuum always destroys bacteria.
 - b. Yes, because all bacteria need oxygen to grow.
 - c. No, because bacteria can grow without oxygen.
 - d. No, because the vacuum increases the food's water activity.

Answer: c

Section: 2

Learning Objective: 2 Identity the conditions that affect the growth of foodborne bacteria. (FAT TOM)

6. What are the two conditions for bacterial growth that you can control?
- a. Oxygen and acidity
 - b. Acidity and moisture
 - c. Temperature and moisture
 - d. Time and temperature

Answer: d

Section: 2

Learning Objective: 2-Identity the conditions that affect the growth of foodborne bacteria. (FAT TOM)

7. What is the temperature range of the temperature danger zone?
- a. 0°F to 41°F (-18°C to 5°C)
 - b. 31°F to 60°F (-1°C to 16°C)
 - c. 41°F to 135°F (5°C to 57°C)
 - d. 60°F to 165°F (16°C to 74°C)

Answer: c

Section: 2

Learning Objective: 2 Identify the conditions that affect the growth of foodborne bacteria. (FAT TOM)

8. In what temperature range does bacteria grow most rapidly?
- a. 0°F to 38°F (-18°C to 3°C)
 - b. 41° to 65°F (5°C to 18°C)
 - c. 70° to 125°F (21°C to 52°C)
 - d. 126°F to 165°F (54°C to 74°C)

Answer: c

Section: 2

Learning Objective: 2 Identify the conditions that affect the growth of foodborne bacteria. (FAT TOM)

9. Which food is in the temperature danger zone?
- a. Meat received at 40°F (4°C)
 - b. Chicken stored at 45°F (7°C)
 - c. Soup held at 140°F (60°C)
 - d. Chili cooked to 165°F (74°C)

Answer: b

Section: 2

Learning Objective: 2 Identify the conditions that affect the growth of foodborne bacteria. (FAT TOM)

10. Jaundice is a symptom of which foodborne-illness?
- a. Shigellosis
 - b. Hepatitis A
 - c. Hemorrhagic colitis
 - d. Norovirus

Answer: b

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

11. Which is a “Big Six” pathogen?
- a. *Salmonella* Typhi
 - b. *Campylobacter jejuni*
 - c. *Staphylococcus aureus*
 - d. *Clostridium Botulinum*

Answer: a

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

12. Where is Shiga toxin-producing *Escherichia coli* found?
- a. Cattle
 - b. Water
 - c. Poultry
 - d. Dirt

Answer: a

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

13. Bloody diarrhea is a common symptom associated with which pathogen?
- a. *Shigella* spp.
 - b. *Listeria monocytogenes*
 - c. *Clostridium botulinum*
 - d. *Staphylococcus aureus*

Answer: a

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

14. A guest became ill with nausea and vomiting after eating shrimp, chicken, rice, and vegetables. Which food was the likely cause of the illness?
- a. Shrimp
 - b. Chicken
 - c. Rice
 - d. Vegetables

Answer: c

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

15. A guest became ill with a high fever and a rash after eating at a salad bar. Which pathogen is the likely cause of the illness?
- a. *Vibrio vulnificus*
 - b. *Anisakis simplex*
 - c. *Salmonella* Typhi
 - d. *Clostridium perfringens*

Answer: c

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

16. A guest became ill with vomiting and diarrhea a few hours after eating a lobster dinner. Which pathogen is the likely cause of the illness?
- a. *Vibrio vulnificus*
 - b. *Giardia duodenalis*
 - c. Hepatitis A
 - d. Norovirus

Answer: d

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

17. Which bacteria is commonly linked to cooked rice dishes?
- a. *Shigella* spp.
 - b. *Salmonella*
 - c. *Bacillus cereus*
 - d. *Vibrio vulnificus*

Answer: c

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

18. Which is a basic characteristic of a virus?
- a. Is destroyed by freezing
 - b. Grows in food
 - c. Requires a living host to grow
 - d. Originates in cattle

Answer: c

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

19. What types of food are commonly associated with yeast?
- a. Fatty
 - b. Acidic
 - c. Alkaline
 - d. Proteins

Answer: b

Section: 2

Learning Objective: 2 Identify the conditions that affect the growth of food-borne bacteria. (FAT TOM)

20. Which pathogen is one of the leading causes of foodborne-illness?
- a. Norovirus
 - b. *Clostridium botulinum*
 - c. *Listeria monocytogenes*
 - d. *Campylobacter jejuni*

Answer: a

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

21. Which parasite is linked to berries and lettuce?
- a. *Anisakis simplex*
 - b. *Giardia duodenalis*
 - c. *Cryptosporidium parvum*
 - d. *Cyclospora cayetanensis*

Answer: b

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

22. People with this illness may cough up worms.
- a. Anisakiasis
 - b. Giardiasis
 - c. Cyclosporiasis
 - d. Cryptosporidiosis

Answer: a

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

23. What are the most common symptoms of a foodborne-illness?
- a. Diarrhea, vomiting, fever, nausea, abdominal cramps, and dizziness
 - b. Diarrhea, vomiting, fever, nausea, abdominal cramps, and headache
 - c. Diarrhea, vomiting, fever, nausea, abdominal cramps, and jaundice
 - d. Diarrhea, vomiting, fever, nausea, abdominal cramps, and tiredness

Answer: c

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

24. Parasites are commonly linked with
- a. rice.
 - b. poultry.
 - c. seafood.
 - d. canned food.

Answer: c

Section: 2

Learning Objective: 2 Describe the characteristics of major foodborne pathogens, their sources, resulting illnesses, and symptoms.

25. What is the most important measure to take for preventing *shigella* spp. from causing a foodborne-illness?
- a. Practicing good personal hygiene
 - b. Preventing cross-contamination
 - c. Preventing time-temperature abuse
 - d. Purchasing from approved, reputable suppliers

Answer: a

Section: 2

Learning Objective: 2 Describe ways to prevent viral, bacterial, parasitic, and fungal contamination.

26. What is the most important measure to take for preventing Hepatitis A from causing a foodborne-illness?
- a. Practicing good personal hygiene
 - b. Preventing cross-contamination
 - c. Preventing time-temperature abuse
 - d. Purchasing from approved, reputable suppliers

Answer: a

Section: 2

Learning Objective: 2 Describe ways to prevent viral, bacterial, parasitic, and fungal contamination.

27. What is the most important measure to take for preventing *Nontyphoidal Salmonella* from causing a foodborne-illness?
- a. Practicing good personal hygiene
 - b. Preventing cross-contamination
 - c. Preventing time-temperature abuse
 - d. Purchasing from approved, reputable suppliers

Answer: b

Section: 2

Learning Objective: 2 Describe ways to prevent viral, bacterial, parasitic, and fungal contamination.

28. Handwashing is an important measure for preventing which pathogen from causing a foodborne-illness?
- a. *Campylobacter jejuni*
 - b. *Listeria monocytogenes*
 - c. *Clostridium botulinum*
 - d. *Staphylococcus aureus*

Answer: d

Section: 2

Learning Objective: 2 Describe ways to prevent viral, bacterial, parasitic, and fungal contamination.

29. When cutting away mold from hard cheese, how much does the FDA recommend removing around the affected area?
- a. ½ inch
 - b. 1 inch
 - c. 2 inches
 - d. 3 inches

Answer: b

Section: 2

Learning Objective: 2 Describe ways to prevent viral, bacterial, parasitic, and fungal contamination.

30. Which pathogens are linked to Aflatoxins?
- a. Bacteria
 - b. Viruses
 - c. Parasites
 - d. Mold

Answer: b

Section: 2

Learning Objective: 2 Characterize naturally occurring toxins and ways to prevent illnesses caused by them.

31. Which toxin causes an illness with neurological symptoms such as the reversal of hot and cold sensations?
- a. Histamine
 - b. Ciguatoxin
 - c. Domoic acid
 - d. Brevetoxin

Answer: b

Section: 2

Learning Objective: 2 Characterize naturally occurring toxins and ways to prevent illnesses caused by them.

32. A guest experienced a tingling in the mouth and face after eating oysters. What is the likely illness?
- a. Ciguatera fish poisoning
 - b. Amnesic shellfish poisoning
 - c. Paralytic shellfish poisoning
 - d. Neurotoxic shellfish poisoning

Answer: c

Section: 2

Learning Objective: 2 Characterize naturally occurring toxins and ways to prevent illnesses caused by them.

33. Which fish are associated with ciguatoxin?
- a. Tuna
 - b. Grouper
 - c. Mackerel
 - d. Mahi Mahi

Answer: b

Section: 2

Learning Objective: 2 Characterize naturally occurring toxins and ways to prevent illnesses caused by them.

34. What causes most foodborne-illnesses associated with wild mushrooms?
- a. Being stored for too long after being harvested
 - b. Being mistaken for edible ones when harvested
 - c. Not being stored at the correct temperature
 - d. Not being cooked at the correct temperature

Answer: b

Section: 2

Learning Objective: 2 Characterize naturally occurring toxins and ways to prevent illnesses caused by them.

35. Which plant food is toxic when undercooked?
- a. Raw kidney beans
 - b. Fresh asparagus
 - c. Raw edamame
 - d. Raw sweetcorn

Answer: a

Section: 2

Learning Objective: 2 Characterize naturally occurring toxins and ways to prevent illnesses caused by them.

36. Scombroid poisoning can be prevented by
- a. purchasing fish from approved, reputable suppliers.
 - b. cooking fish to the right internal temperature.
 - c. making sure food handlers wash their hands.
 - d. preventing cross-contamination.

Answer: a

Section: 2

Learning Objective: 2 Characterize naturally occurring toxins and ways to prevent illnesses caused by them.

Section 3: Contamination, Food Allergens, and foodborne-illness

1. How should chemicals be stored to prevent chemical contamination?
 - a. Away from prep areas
 - b. On the floor between uses
 - c. On the work surface of prep tables
 - d. With food supplies below prep tables

Answer: a

Section: 3

Learning Objective: 3 Identify ways to prevent physical and chemical contamination.

2. Which is a chemical contaminant?
 - a. Bones in a chicken filet
 - b. Norovirus in shellfish
 - c. Metal shavings in a can of peaches
 - d. Tomato juice served in a pewter pitcher

Answer: d

Section: 3

Learning Objective: 3 Identify ways to prevent physical and chemical contamination.

3. Which is an example of physical contamination?
 - a. Bones in fish
 - b. Sneezing on food
 - c. Touching dirty food-contact surfaces
 - d. Mixing vinegar and salt

Answer: a

Section: 3

Learning Objective: 3 Identify ways to prevent physical and chemical contamination.

4. Which is a chemical contaminant?
- a. Tomato sauce in a copper pan
 - b. Bones in a chicken filet
 - c. Ciguatera toxin in a red snapper
 - d. Metal shavings in a can of peaches

Answer: a

Section: 3

Learning Objective: 3 Identify ways to prevent physical and chemical contamination.

5. What is the best method for preventing a physical hazard in food from causing an injury?
- a. Practicing proper food defense
 - b. Preventing cross-contamination
 - c. Proper cleaning and sanitizing
 - d. Purchasing from approved suppliers

Answer: d

Section: 3

Learning Objective: 3 Identify ways to prevent physical and chemical contamination.

6. A guest became ill with vomiting and diarrhea within minutes of eating. What type of contamination was the likely cause?
- a. Viral
 - b. Allergen
 - c. Chemical
 - d. Biological

Answer: c

Section: 3

Learning Objective: 3 Identify ways to prevent physical and chemical contamination.

7. Chemicals must be stored
- over food.
 - separate from food.
 - in their original containers.
 - above food-contact surfaces.

Answer: b

Section: 3

Learning Objective: 3 Identify ways to prevent physical and chemical contamination.

8. A restaurant stores windshield washer fluid for their delivery vehicles with other chemicals used in the operation. Why can't it be stored there?
- It is highly toxic and corrosive to metals.
 - It is more likely to leak.
 - It is not necessary for the maintenance of the facility.
 - It can react with the other chemicals that are stored there.

Answer: c

Section: 3

Learning Objective: 3 Identify ways to prevent physical and chemical contamination.

9. A dishwasher runs out of sanitizer for the three-compartment sink and uses sanitizer from the dish machine instead. Why is this a mistake?
- The sanitizer is too expensive to use this way.
 - The sanitizer is not used in the way it is intended.
 - It is too difficult to measure the sanitizer correctly.
 - The sanitizer does not sanitize equipment when used this way

Answer: b

Section: 3

Learning Objective: 3 Identify ways to prevent physical and chemical contamination.

10. A chef uses paint brushes purchased at the local hardware store to baste food. Why is this a mistake?
- a. The brushes will not last due to heavy use.
 - b. These types of brushes are not as easy to clean.
 - c. The brushes are not approved for use with food.
 - d. These brushes are not long enough to prevent burns.

Answer: c

Section: 3.1

Learning Objective: 3 Identify ways to prevent physical and chemical contamination.

11. To prevent the deliberate contamination of food, a manager should know
- a. when to register with the EPA.
 - b. how to fill out an incident report.
 - c. where to find Safety Data Sheets in the operation.
 - d. whom to contact about suspicious activity.

Answer: d

Section: 3.2

Learning Objective: 3 Summarize how deliberate contamination of food can be prevented.

12. What is the best way to protect food from deliberate tampering?
- a. Make it as difficult as possible for someone to tamper with it.
 - b. Allow former employees into the operation.
 - c. Perform spot inspections on new vendors.
 - d. Use the USDA A.L.A.R.M. system.

Answer: a

Section: 3.2

Learning Objective: 3 Summarize how deliberate contamination of food can be prevented.

13. When implementing a food defense program, what is the best way to protect food storage areas?
- a. Lock them.
 - b. Always leave the lights on.
 - c. Install cameras in these areas.
 - d. Supervise traffic going in and out of them.

Answer: a

Section: 3

Learning Objective: 3 Summarize how deliberate contamination of food can be prevented.

14. When implementing a food defense program, what is the best way to make sure food has been received from a safe source?
- a. Purchase food only from a large distributor.
 - b. Use food suppliers who are local.
 - c. Purchase products directly from the source.
 - d. Request delivery vehicles be locked and sealed.

Answer: d

Section: 3

Learning Objective: 3 Summarize how deliberate contamination of food can be prevented.

15. Which symptom could mean a customer is having an allergic reaction to food?
- a. Coughing
 - b. Dehydration
 - c. Swollen lips
 - d. Sneezing

Answer: c

Section: 3

Learning Objective: 3 Identify the most common food allergens and their associated symptoms.

16. Which is a “Big Nine” food allergen?
- a. Broccoli
 - b. Wheat
 - c. Grapes
 - d. Pork

Answer: b

Section: 3

Learning Objective: 3 Identify the most common food allergens and their associated symptoms.

17. Peanuts and soy products are two possible food items that can be dangerous for people with
- a. food allergies.
 - b. FAT TOM.
 - c. weak immune systems.
 - d. chemical sensitivity.

Answer: a

Section: 3

Learning Objective: 3 Identify the most common food allergens and their associated symptoms.

17. Wheezing and hives are a symptom of
- a. Food allergies
 - b. Norovirus
 - c. Botulism
 - d. Hepatitis A

Answer: a

Section: 3

Learning Objective: 3 Identify the most common food allergens and their associated symptoms.

19. A customer having an allergic reaction may show which symptom?
- a. Itchy throat
 - b. Cold sweats
 - c. Dizzy spells
 - d. Dehydration

Answer: a

Section: 3

Learning Objective: 3 Identify the most common food allergens and their associated symptoms.

20. Which item contains a common allergen?
- a. Peanut butter
 - b. Garlic powder
 - c. Chicken wings
 - d. Orange juice

Answer: a

Section: 3

Learning Objective: 3 Identify the most common food allergens and their associated symptoms.

21. What should food handlers do to prevent food allergens from being transferred to food?
- a. Use clean and sanitized utensils when prepping the order.
 - b. Cook food to the appropriate minimum internal temperature.
 - c. Store cold food at 41°F (5°C) or lower.
 - d. Label chemical containers correctly.

Answer: a

Section: 3

Learning Objective: 3 Describe methods of preventing allergic reactions.

22. To prevent food allergens from being transferred to food,
- buy food from trusted suppliers.
 - store cold food at 41°F (5°C) or lower.
 - avoid using pewter tableware and copper cookware.
 - check ingredient labels to confirm that an allergen is not present.

Answer: d

Section: 3

Learning Objective: 3 Describe methods of preventing allergic reactions.

23. What can servers do to prevent guests from having an allergic reaction?
- Identify all ingredients except secret ingredients.
 - Let guests know when you think they are reasonably safe.
 - Deliver all food to a table at the same time.
 - Clearly mark the order for a guest with an allergy.

Answer: d

Section: 3

Learning Objective: 3 Describe methods of preventing allergic reactions.

24. The transfer of allergens from food or food-contact surfaces to the food served to an allergic guest is called
- biological contamination.
 - cross-contact.
 - cross-contamination.
 - allergenic transfer.

Answer: b

Section: 3

Learning Objective: 3 Describe methods of preventing allergic reactions.

25. What can kitchen staff do to prevent guests from having an allergic reaction?
- Cook all fried foods in the same fryers.
 - Check recipes and ingredient labels for allergens.
 - Use the same cooking utensils to handle all food.
 - Wash hands after preparing food for guests with allergies.

Answer: b

Section: 3

Learning Objective: 3 Describe methods of preventing allergic reactions.

26. What should a manager do with a product they suspect has been deliberately contaminated?
- Dispose of the product.
 - Hold on to the product.
 - Return the product to its vendor.
 - Bring the product to the police station.

Answer: b

Section: 3

Learning Objective: 3 Summarize how deliberate contamination of food can be prevented.

27. Which guideline should be included in an effective food defense program?
- Purchase products from a range of suppliers.
 - Provide employees with easy access to cleaning chemicals.
 - Keep receiving logs for all deliveries to the operations.
 - Hire an on-site food safety expert to supervise service.

Answer: c

Section: 3

Learning Objective: 3 Summarize how deliberate contamination of food can be prevented.

28. How should food be served to a guest who has allergens?
- a. With other allergen special orders
 - b. With two sets of eating utensils
 - c. Hand-delivered by an employee
 - d. In a separate area of the dining room

Answer: c

Section: 3

Learning Objective: 3 Describe methods of preventing allergic reactions.

29. Which situation describes cross-contact?
- a. A cook bakes the pecan pies before the blueberry pies
 - b. A cook uses the deep fryer to fry chicken and a pan to fry shrimp
 - c. A cook slices cheese and then replaces the knife before chopping carrots
 - d. A cook preps raw chicken and then uses the same cutting board to chop lettuce

Answer: c

Section: 3

Learning Objective: 3 Describe methods of preventing allergic reactions.

30. A guest chipped their tooth while eating at a restaurant. What type of contamination was the likely cause?
- a. Viral
 - b. Physical
 - c. Chemical
 - d. Biological

Answer: b

Section: 3

Learning Objective: 3 Identify ways to prevent physical and chemical contamination.

Section 4: The Safe Food Handler

1. What is the main reason for food handlers to avoid scratching their scalps?
 - a. Transferring a food allergen
 - b. Spreading pathogens to the food
 - c. Getting food in their hair
 - d. Causing toxic-metal poisoning

Answer: b

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

2. A food handler has a wound on their finger. Can the wound cause a foodborne-illness?
 - a. No, because the immune system will stop any infection.
 - b. No, because the finger is less prone to infection than other areas.
 - c. Yes, because all wounds can contaminate food and cause illness.
 - d. Yes, because a wound that contains pathogens can contaminate food.

Answer: d

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

3. What is a carrier?
 - a. Bacteria that carry dangerous pathogens
 - b. A seafood parasite that attaches itself to fish
 - c. Someone with a compromised immune system
 - d. Someone who carries pathogens without getting sick

Answer: d

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

4. What is jaundice?
- a. Reddening of the face
 - b. Swelling of the lips
 - c. Tingling in the face
 - d. Yellowing of the skin

Answer: d

Section: 4

Learning Objectives: 4 Identify criteria for excluding staff from the operation or restricting them from working with or around food.

5. When washing hands, what is the minimum time that food handlers should scrub hands and arms with soap?
- a. 5 seconds
 - b. 8 seconds
 - c. 10 seconds
 - d. 18 seconds

Answer: c

Section: 4

Learning Objective: 4 Identify proper handwashing techniques and procedures and hand care requirements.

6. What should the temperature of the water be when washing hands?
- a. Hot
 - b. Cold
 - c. Warm
 - d. Lukewarm

Answer: c

Section: 4

Learning Objective: 4 Identify proper handwashing techniques and procedures and hand care requirements.

7. A food handler wet his hands with warm water, applied soap, and scrubbed them for 15 seconds. Then he rinsed them in warm water and dried them on a cloth side towel. What did he do wrong?
- Wet hands with warm water
 - Dried hands on a side towel
 - Rinsed hands with warm water
 - Scrubbed hands for only 15 seconds

Answer: b

Section: 4

Learning Objective: 4 Identify proper handwashing techniques and procedures and hand care requirements.

8. Approximately how long should the whole handwashing process take?
- 5 seconds
 - 10 seconds
 - 5 seconds
 - 20 seconds

Answer: d

Section: 4

Learning Objective: 4 Identify proper handwashing techniques and procedures and hand care requirements.

9. After handling dirty dishes, a server washes their hands in the three-compartment sink. Is this acceptable?
- Yes, hands can be washed in any sink.
 - Yes, those sinks are designated for handwashing.
 - No, those sinks don't always have handwashing soap
 - No, hands should only be washed in a designated handwashing sink.

Answer: d

Section: 4

Learning Objective: 4 Identify proper handwashing techniques and procedures and hand care requirements.

10. When should food handlers wash their hands?
- a. Before starting a new task
 - b. After applying hand antiseptics
 - c. After putting on single-use gloves
 - d. After handling ready-to-eat food

Answer: a

Section: 4

Learning Objective: 4 Identify proper handwashing techniques and procedures and hand care requirements.

11. After which activity must food handlers wash their hands?
- a. Clearing tables
 - b. Putting on gloves
 - c. Serving customers
 - d. Applying hand antiseptic

Answer: a

Section: 4

Learning Objective: 4 Identify proper handwashing techniques and procedures and hand care requirements.

12. What must food handlers do after touching their body or clothing?
- a. Wash their hands.
 - b. Rinse their gloves.
 - c. Change their aprons.
 - d. Use a hand antiseptic.

Answer: a

Section: 4

Learning Objective: 4 Identify proper handwashing techniques and procedures and hand care requirements.

13. What is the purpose of a hand antiseptic?
- a. To sterilize skin surfaces
 - b. To kill all pathogens on the hands
 - c. To reduce pathogens to safe levels
 - d. To reduce the conditions for pathogen growth

Answer: c

Section: 4

Learning Objective: 4 Identify proper handwashing techniques and procedures and hand care requirements.

14. Hand antiseptics should be used
- a. before handwashing.
 - b. after handwashing.
 - c. in place of handwashing.
 - d. during handwashing.

Answer: b

Section: 4

Learning Objective: 4 Identify proper handwashing techniques and procedures and hand care requirements.

15. After washing her hands, a food handler applied a hand sanitizer, rubbed the sanitizer in, and immediately continued chopping vegetables on a cutting board. What did she do wrong?
- a. She did not let the sanitizer dry.
 - b. She failed to rinse off the sanitizer.
 - c. She should not have washed her hands first.
 - d. She should not have rubbed the sanitizer into her hands.

Answer: a

Section: 4

Learning Objective: 4 Identify proper handwashing techniques and procedures and hand care requirements.

16. How should food handlers keep their fingernails?
- a. Short and unpolished
 - b. Long and unpolished
 - c. Long and painted with nail polish
 - d. Short and painted with nail polish

Answer: a

Section: 4

Learning Objective: 4 Describe the requirements for personal hygiene and cleanliness.

17. Why should food handlers not wear false fingernails?
- a. They are hard to keep clean.
 - b. They transfer chemicals to food.
 - c. They hold more pathogens than natural nails.
 - d. They become toxic when in contact with sanitizer.

Answer: a

Section: 4

Learning Objective: 4 Describe the requirements for personal hygiene and cleanliness.

18. What should a food handler do when working with an infected cut on their finger?
- a. Stay away from food and prep areas.
 - b. Wash hands and cover the cut with a bandage.
 - c. Apply ointment and bandage the cut with an impermeable cover.
 - d. Cover the cut with an impermeable cover and wear a single-use glove.

Answer: d

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

19. If a food handler has a wound on their arm, they cannot prepare food until they
- a. apply antibacterial ointment.
 - b. cover the wound with any type of bandage.
 - c. cover the wound with an impermeable cover.
 - d. cover the wound with a dry, durable, tight-fitting bandage.

Answer: c

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

20. Which food item may be handled with bare hands?
- a. Sliced cheese for sandwiches
 - b. Boiled egg slices for salad
 - c. Chopped carrots for stew
 - d. Parsley for garnish

Answer: c

Section: 4

Learning Objective: 4 Explain the importance of avoiding bare hand contact with ready-to-eat food.

21. Which food can be handled with bare hands?
- a. Baked potatoes
 - b. Cheese for a pizza
 - c. Croutons for a salad
 - d. Salt to season an already cooked dish

Answer: b

Section: 4

Learning Objective: 4 Explain the importance of avoiding bare hand contact with ready-to-eat food.

22. A cook wore single-use gloves while forming raw ground beef into patties. The cook continued to wear them while slicing hamburger buns. What mistake was made?
- The cook did not wear reusable gloves while handling the raw ground beef and hamburger buns.
 - The cook did not clean and sanitize the gloves before handling the hamburger buns.
 - The cook did not wash hands before putting on the same gloves to slice the hamburger buns.
 - The cook did not wash hands and put on new gloves before slicing the hamburger buns.

Answer: d

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

23. A food handler who spends an entire shift forming hamburger patties should change gloves
- after 1 hour, because the gloves may quickly build up pathogens.
 - every 4 hours during continual use, and more often if needed.
 - at the end of the shift.
 - every 6 hours, to avoid wasting gloves.

Answer: b

Section: 4.

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

24. Single-use gloves do not need to be worn when
- washing produce.
 - applying a garnish to a dish.
 - adding spices to already cooked food.
 - arranging food on the plate.

Answer: a

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

25. When using single-use gloves in an operation, a food handler should
- a. wash and reuse them.
 - b. purchase only latex gloves.
 - c. provide a one-size-fits-all glove.
 - d. provide gloves made from non-latex materials.

Answer: d

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

26. What should food handlers do after prepping food and before using the restroom?
- a. Wash their hands.
 - b. Take off their hats.
 - c. Change their gloves.
 - d. Take off their aprons.

Answer: d

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

27. Where should personal items, like a coat, be stored in the operation?
- a. On a shelf, above food
 - b. On a shelf, below food
 - c. Away from food
 - d. In the kitchen, away from guests

Answer: c

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

28. What must always be worn when in a food prep area?
- a. Apron
 - b. Chef coat
 - c. Side towel
 - d. Hair restraint

Answer: d

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

29. What is the only jewelry that may be worn on the hands or arms while handling food?
- a. Plain-band ring
 - b. Medical ID bracelet
 - c. Leather-band watch
 - d. Diamond ring

Answer: a

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

30. Food handlers must remove jewelry from the
- a. Hands
 - b. Ears
 - c. Face
 - d. Mouth

Answer: a

Section: 4

Learning Objective: 4 Describe the requirements for personal hygiene and cleanliness.

31. Where should staff members eat, drink, smoke, or chew gum?
- a. Designated areas
 - b. Dishwashing areas
 - c. Outside the kitchen door
 - d. Where customers cannot see them

Answer: a

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

32. Is it acceptable for a server to eat a bowl of soup in the server station?
- a. No, never when serving food.
 - b. No, because they are in full view of the public.
 - c. Yes, if they will not contaminate food.
 - d. Yes, if they will not contaminate equipment.

Answer: a

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

33. Is it acceptable for a cook to drink coffee from a mug while preparing food?
- a. Yes, if they are not touching food with bare hands.
 - b. Yes, if the coffee cup is placed where it will not spill.
 - c. No, because the coffee cup is an uncovered container.
 - d. No, because there is always a chance the coffee will spill.

Answer: c

Section: 4

Learning Objective: 4 Describe how food handlers contaminate food and how to prevent contamination.

34. If food handlers are sick, they must
- a. stay home.
 - b. tell you about their symptoms.
 - c. call the health department.
 - d. only work for short periods of time.

Answer: a

Section: 4

Learning Objective: 4 Identify criteria for excluding staff from the operation or restricting them from working with or around food.

35. A food handler with a sore throat and a fever should be excluded from working in a day-care center because the children
- a. will not receive the same level of service.
 - b. could make the food handler sicker.
 - c. are a high-risk population.
 - d. will refuse to eat.

Answer: c

Section: 4

Learning Objective: 4 Identify criteria for excluding staff from the operation or restricting them from working with or around food.

36. What should a manager do with a food handler who has been vomiting?
- Inform the health department.
 - Exclude them from the operation.
 - Restrict them from working with or around food.
 - Allow them to work for short periods of time.

Answer: b

Section: 4

Learning Objective: 4 Identify criteria for excluding staff from the operation or restricting them from working with or around food.

37. What action should a manager take when a food handler reports having diarrhea and being diagnosed with a foodborne-illness caused by *Shigella* spp.?
- Exclude the food handler from the operation.
 - Make sure the food handler washes hands often.
 - Make sure the food handler is supplied with disposable gloves.
 - Keep the food handler away from duties that involve food.

Answer: a

Section: 4

Learning Objective: 4 Identify criteria for excluding staff from the operation or restricting them from working with or around food.

38. When can a food handler who has had diarrhea return to work?
- When they have been symptom-free for 24 hours
 - When they feel strong enough to work
 - When no one else in their household has diarrhea
 - When the regulatory authority clears them

Answer: a

Section: 4

Learning Objective: 4 Identify criteria for excluding staff from the operation or restricting them from working with or around food.

39. What should a manager do with a food handler who is sneezing and has a persistent runny nose?
- a. Exclude the food handler from the operation.
 - b. Restrict them from working with exposed food.
 - c. Provide the food handler with a means to blow their nose.
 - d. Remind them to turn away from food when sneezing.

Answer: b

Section: 4

Learning Objective: 4 Identify criteria for excluding staff from the operation or restricting them from working with or around food.

40. Which illness needs to be reported to the regulatory authority?
- a. Hepatitis A
 - b. Influenza
 - c. Scombroid poisoning
 - d. Botulism

Answer: a

Section: 4

Learning Objective: 4 Identify criteria for excluding staff from the operation or restricting them from working with or around food.

Section 5: The Flow of Food: An Introduction

1. Using one set of cutting boards for raw poultry and another set of cutting boards for ready-to-eat food reduces the risk of
 - a. cross-contamination.
 - b. time-temperature abuse.
 - c. physical contamination.
 - d. toxic-metal poisoning.

Answer: a

Section: 5

Learning Objective: 5 Identify types of contaminants and methods of prevention.

2. What is the purpose of color-coded equipment?
 - a. It indicates the level of risk for each product.
 - b. It helps keep equipment separate.
 - c. It indicates the cooking temperature of each product.
 - d. It provides a visual cue for the preparation order of products.

Answer: b

Section: 5

Learning Objective: 5 Identify types of contaminants and methods of prevention.

3. How can the risk of cross-contamination be reduced when prepping different types of food on the same prep table?
 - a. Prep raw and ready-to-eat food at the same time.
 - b. Prep raw and ready-to-eat food at different times.
 - c. Prep ready-to-eat food after raw food.
 - d. Clean and sanitize the table after you are done using it.

Answer: b

Section: 5

Learning Objective: 5 Identify types of contaminants and methods of prevention.

4. An operation has decided to purchase cut lettuce for salads rather than cutting the lettuce themselves. What is the benefit of doing this?
- a. To prevent temperature abuse
 - b. To prevent cross-contamination
 - c. To reduce the cost of a salad
 - d. To reduce the focus on proper personal hygiene

Answer: b

Section: 5

Learning Objective: 5 Identify types of contaminants and methods of prevention.

5. What must be done after completing each prep task to reduce the risk of cross-contamination?
- a. Food must be put away as quickly as possible.
 - b. Aprons must be replaced with clean ones.
 - c. Surfaces must be cleaned and sanitized.
 - d. Food temperatures must be checked with a clean thermometer.

Answer: c

Section: 5

Learning Objective: 5 Identify types of contaminants and methods of prevention.

6. What is the temperature range of the Temperature Danger Zone?
- a. 0°F to 32°F (-18°C to 0°C)
 - b. 32°F to 120°F (0°C to 49°C)
 - c. 41°F to 135°F (5°C to 57°C)
 - d. 60°F to 150°F (16°C to 66°C)

Answer: c

Section: 5

Learning Objective: 5 Explain ways to prevent time-temperature abuse.

7. Pathogens grow most rapidly at temperatures between
- a. 41°F and 45°F (5°C to 7°C).
 - b. 45°F and 60°F (7°C to 16°C).
 - c. 70°F and 125°F (21°C to 52°C).
 - d. 120°F and 135°F (49°C to 57°C).

Answer: c

Section: 5

Learning Objective: 5 Explain ways to prevent time-temperature abuse.

8. Pathogens are likely to grow well in a meat stew that is
- a. below freezing temperature.
 - b. at refrigeration temperatures.
 - c. between 41°F and 135°F (5°C and 57°C).
 - d. cooked to the correct internal temperature.

Answer: c

Section: 5

Learning Objective: 5 Explain ways to prevent time-temperature abuse.

9. Food is being temperature abused when it is
- a. held at the wrong temperature.
 - b. taken out of the cooler.
 - c. reheated rapidly.
 - d. cooked to a higher temperature than required.

Answer: a

Section: 5

Learning Objective: 5 Explain ways to prevent time-temperature abuse.

10. Food must be thrown out after remaining in the temperature danger zone for
- 1 hour.
 - 2 hours.
 - 3 hours.
 - 4 hours.

Answer: d

Section: 5

Learning Objective: 5 Explain ways to prevent time-temperature abuse.

11. Which action can help prevent time-temperature abuse?
- Regularly recording temperatures
 - Performing self-inspections
 - Proper cleaning and sanitizing
 - Purchasing from approved suppliers

Answer: a

Section: 5

Learning Objective: 5 Explain ways to prevent time-temperature abuse.

12. Limiting the amount of food that can be removed from a cooler when prepping it can help prevent
- cross-contamination.
 - cross-contact.
 - time-temperature abuse.
 - thermal energy transfer.

Answer: c

Section: 5

Learning Objective: 5 Explain ways to prevent time-temperature abuse.

13. Which thermocouple probe should be used to check the temperature of a pork roast?
- a. Air
 - b. Surface
 - c. Immersion
 - d. Penetration

Answer: d

Section: 5

Learning Objective: 5 Describe how to use and maintain thermometers.

14. What do time-temperature indicators do?
- a. Measure temperature through a probe with a sensor at the end
 - b. Measure the length of time that food should be cooked
 - c. Show if food has been cross-contaminated during preparation
 - d. Show if food has been time-temperature abused during shipment

Answer: d

Section: 5

Learning Objective: 5 Describe how to use and maintain thermometers.

15. Which temperature measuring device is designed for measuring surface temperatures?
- a. Infrared Thermometer
 - b. Time-Temperature Indicator
 - c. Thermistor
 - d. Bimetallic Stemmed Thermometer

Answer: a

Section: 5

Learning Objective: 5 Describe how to use and maintain thermometers.

16. An infrared thermometer must
- be held close to the food.
 - touch the surface of the food.
 - be used to take readings through metal.
 - be used when taking air temperatures.

Answer: a

Section: 5

Learning Objective: 5 Describe how to use and maintain thermometers.

17. Which thermocouple probe would be used to check the temperature of a grill?
- Air
 - Surface
 - Immersion
 - Penetration

Answer: b

Section: 5

Learning Objective: 5 Describe how to use and maintain thermometers.

18. Which thermocouple probe would be used to check the temperature of a pot of soup?
- Air
 - Surface
 - Immersion
 - Penetration

Answer: c

Section: 5

Learning Objective: 5 Describe how to use and maintain thermometers.

19. When using the ice-point technique to calibrate a thermometer, to what temperature should the thermometer be adjusted?
- a. 0°F (-18°C)
 - b. 32°F (0°C)
 - c. 41°F (5°C)
 - d. 212°F (100°C)

Answer: b

Section: 5

Learning Objective: 5 Describe how to calibrate a thermometer.

20. What is the calibration nut on a bimetallic stemmed thermometer used for?
- a. Keeping it accurate
 - b. Marking its sensing area
 - c. Measuring air temperature
 - d. Measuring temperatures through glass

Answer: a

Section: 5

Learning Objective: 5 Describe how to calibrate a thermometer.

21. When calibrating a thermometer by placing it in boiling water, what temperature should it be adjusted to if the location is at sea level?
- a. 110°F (43°C)
 - b. 165°F (74°C)
 - c. 180°F (82°C)
 - d. 212°F (100°C)

Answer: d

Section: 5

Learning Objective: 5 Describe how to calibrate a thermometer.

22. When checking the internal temperature of food, where should the thermometer be inserted?
- a. In the thinnest part of the food
 - b. In the thickest part of the food
 - c. On the bottom of the food
 - d. On the top of the food

Answer: b

Section: 5

Learning Objective: 5 Describe how to use and maintain thermometers.

23. Thermometers that measure the temperature of food must be accurate to
- a. $\pm 1^{\circ}\text{F}$ or $\pm 0^{\circ}\text{C}$.
 - b. $\pm 2^{\circ}\text{F}$ or $\pm 1^{\circ}\text{C}$.
 - c. $\pm 3^{\circ}\text{F}$ or $\pm 2^{\circ}\text{C}$.
 - d. $\pm 4^{\circ}\text{F}$ or $\pm 3^{\circ}\text{C}$.

Answer: b

Section: 5

Learning Objective: 5 Describe how to use and maintain thermometers.

24. When should thermometers be calibrated?
- a. before use
 - b. after use
 - c. during use
 - d. before and after use

Answer: d

Section: 5

Learning Objective: 5 Describe how to calibrate a thermometer.

25. How long does it take a bimetallic stemmed thermometer's reading to steady after it is inserted into food?
- a. 5 seconds
 - b. 10 seconds
 - c. 15 seconds
 - d. 30 seconds

Answer: c

Section: 5

Learning Objective: 5 Describe how to use and maintain thermometers.

26. Which action can help prevent time-temperature abuse?
- a. Hold hot items on a steam table whenever possible.
 - b. Give each food handler their own thermometer.
 - c. Avoid opening the walk-in coolers to keep a stable temperature.
 - d. Reheat food that has spent more than an hour in the temperature danger zone

Answer: b

Section: 5

Learning Objective: 5 Explain ways to prevent time-temperature abuse.

27. How far into the food should you insert the stem of a bimetallic stemmed thermometer to get an accurate reading?
- a. Up to the dimple
 - b. Up to the tip of the probe
 - c. Up to the calibration nut
 - d. Up to the indicator head

Answer: a

Section: 5

Learning Objective: 5 Describe how to use and maintain thermometers.

28. Which is an example of corrective action for time-temperature abuse?
- a. A food handler checks and records the temperature of hot-held food every hour.
 - b. A manager trains food handlers to calibrate different thermometers.
 - c. A stockpot of soup has been left on a prep table overnight, so a food handler throws it away.
 - d. A restaurant requires suppliers to place temperature-recording devices in their delivery trucks.

Answer: c

Section: 5

Learning Objective: 5 Explain ways to prevent time-temperature abuse.

29. What's the most basic way a food handler can prevent cross-contamination?
- a. Monitor and log all food deliveries.
 - b. Clean and sanitize every piece of equipment at the start of each shift.
 - c. Keep raw and ready-to-eat food away from each other.
 - d. Designate separate prep tables for specific types of food.

Answer: c

Section: 5

Learning Objective: 5 Identify types of contaminants and methods of prevention.

30. A food handler has been tasked with marinating raw chicken and chopping kale for a salad. If the food handler has access to only one prep table, what should they do to prevent cross-contamination?
- a. Prep the chicken before prepping the kale.
 - b. Prep the chicken and kale at the same time but hold separately until service.
 - c. Wash and dry equipment in between prepping each item.
 - d. Use separate equipment for each item.

Answer: d

Section: 5

Learning Objective: 5 Identify types of contaminants and methods of prevention.

Section 6: The Flow of Food: Purchasing and Receiving

1. What is the most important factor in choosing an approved food supplier?
 - a. It has a HACCP program or other food safety system.
 - b. It has documented manufacturing and packing practices.
 - c. It has a warehouse that is close to the operation, reducing shipping time.
 - d. It has been inspected and complies with local, state, and federal laws.

Answer: d

Section: 6

Learning Objective: 6 Describe criteria for an approved supplier.

2. An approved supplier
 - a. does not require inspection.
 - b. will not have food safety violations.
 - c. can show you their inspection report.
 - d. has an active managerial control program in place.

Answer: c

Section: 6

Learning Objective: 6 Describe criteria for an approved supplier.

3. Which agency subjects suppliers to food safety inspections?
 - a. Public Health Service (PHS)
 - b. Centers for Disease Control and Prevention (CDC)
 - c. U.S. Department of Agriculture (USDA)
 - d. Environmental Protection Agency (EPA)

Answer: c

Section: 6

Learning Objective: 6 Describe criteria for an approved supplier.

4. A chef purchases fresh fish from a local fisherman. Is this an approved supplier?
- a. Yes, if the fish is fresh caught.
 - b. Yes, if the town has licensed the fisherman.
 - c. No, not if the fisherman is local.
 - d. No, the fisherman is not inspected.

Answer: d

Section: 6

Learning Objective: 6 Describe criteria for an approved supplier.

5. What are Good Manufacturing Practices (GMP) as defined by the FDA?
- a. Rules for receiving food
 - b. Requirements for producing safe food
 - c. Parameters for the safe storage of food
 - d. Guidelines for creating a HACCP plan

Answer: b

Section: 6

Learning Objective: 6 Describe criteria for an approved supplier.

6. When receiving a delivery of food for an operation, it is important to
- a. inspect only the TCS food.
 - b. inspect all food immediately before storing it.
 - c. stack the delivery neatly and inspect it within 12 hours.
 - d. store it immediately and inspect it later.

Answer: b

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

7. What is the first thing that should be done when a food delivery arrives?
- Inspect and store the delivery.
 - Check temperatures of all TCS food items.
 - Inspect the vehicle for signs of contamination.
 - Inspect packaging for signs of damage or pests.

Answer: c

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

8. Should employees be cross-trained so more people have the skills to receive deliveries?
- Yes, this ensures that deliveries will be received quicker.
 - Yes, the more people who can receive products the better.
 - No, specific staff should be responsible for receiving.
 - No, cross-training is expensive and time-consuming.

Answer: c

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

9. What should be done if pests are spotted in a delivery vehicle?
- Reject the entire delivery.
 - Reject any products close to where the pests were found.
 - Accept the delivery, depending on the type of pest found.
 - Accept the delivery if the products look safe.

Answer: a

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

10. What should an employee do if two food deliveries arrive at the same time?
- Accept them both.
 - Alternate the inspection between each delivery.
 - Inspect both deliveries and store them afterwards.
 - Inspect and store one delivery before accepting another.

Answer: d

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

11. What must be done after receiving a key drop delivery?
- The delivery must be inspected.
 - The delivery must be stored correctly.
 - Temperatures must be checked immediately.
 - Products must be removed from original packaging.

Answer: a

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

12. A recall has been issued for a specific brand of orange juice. The store manager has matched the information from the recall notice to the item, removed the item from inventory, and stored it in a secure location. What should the manager do next?
- Refer to the vendor notification for next steps.
 - Contact the supplier and arrange for product pick up.
 - Label the item to prevent it from accidentally being placed back in inventory.
 - Inform the local media, customers, and employees of the reason for the recall.

Answer: c

Section: 6

Learning Objective: 6 Explain procedures for unacceptable merchandise and product recalls.

13. What must a manager do with a recalled food item in the operation?
- a. Combine the item with non-recalled items during preparation.
 - b. Record the names of customers who purchase the item.
 - c. Store the recalled item separately from other food.
 - d. Sell all recalled items within 24 hours.

Answer: c

Section: 6

Learning Objective: 6 Explain procedures for unacceptable merchandise and product recalls.

14. Where should a manager check to find recall notices?
- a. Public Health Service (PHS)
 - b. Food and Drug Administration (FDA)
 - c. Centers for Disease Control and Prevention (CDC)
 - d. Environmental Protection Agency (EPA)

Answer: b

Section: 6

Learning Objective: 6 Explain procedures for unacceptable merchandise and product recalls.

15. How should the temperature of a shipment of sour cream be taken when it arrives at an operation?
- a. Place a hand on a container to see if it is cool to the touch.
 - b. Hold an infrared thermometer as close as possible to a case.
 - c. Place the thermometer stem between shipping boxes for a reading.
 - d. Remove the lid of a container and put the thermometer stem into the sour cream.

Answer: d

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

16. How should the temperature of a shipment of bulk vacuum packages of raw ground beef be taken when it arrives at an operation?
- Place a hand on a package to see if it is cool to the touch.
 - Hold an infrared thermometer as close as possible to a case.
 - Place the thermometer stem between two packages for a reading.
 - Open a package and put the thermometer stem into the ground beef.

Answer: c

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

17. Where should the thermometer stem be placed when checking the temperature of a chicken breast?
- In the thinnest part
 - In the thickest part
 - Between two chicken breasts
 - Underneath a chicken breast

Answer: b

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

18. At what internal temperature should cold TCS food be received?
- 41°F (5°C) or lower
 - 45°F (7°C) or lower
 - 51°F (10°C) or lower
 - 55°F (13°C) or lower

Answer: a

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

19. What must be done with live oysters received at an air temperature of 45°F (7°C)?
- a. They must be rejected.
 - b. They must be discarded.
 - c. They must be heated to 155°F (68°C).
 - d. They must be cooled to 41°F (5°C) or lower.

Answer: d

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

20. At what maximum temperature can milk be received?
- a. 55°F (13°C)
 - b. 50°F (10°C)
 - c. 45°F (7°C)
 - d. 41°F (5°C)

Answer: c

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

21. At what maximum temperature can shell eggs be received?
- a. 55°F (13°C)
 - b. 50°F (10°C)
 - c. 45°F (7°C)
 - d. 41°F (5°C)

Answer: c

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

22. At what minimum temperature must hot TCS food be received?
- a. 140°F (60°C)
 - b. 135°F (57°C)
 - c. 125°F (52°C)
 - d. 110°F (43°C)

Answer: b

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

23. What is the meaning of large ice crystals on frozen food?
- a. The product has been frozen properly.
 - b. The product is still in the process of reaching the correct temperature.
 - c. The product has thawed and been refrozen.
 - d. The product should be cooked rapidly after thawing.

Answer: c

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

24. What are the packaging criteria for accepting nonfood items?
- a. Soiled but intact
 - b. Soiled but with fewer than two punctures or tears
 - c. Clean with no more than two punctures or tears
 - d. Clean, intact, and protected from contamination

Answer: d

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

25. A food item that is received with an expired use-by date should be
- a. rejected.
 - b. used immediately.
 - c. accepted but labeled differently.
 - d. accepted but kept separate from other items.

Answer: a

Section: 6

Learning Objective: 6 Explain procedures for unacceptable merchandise and product recalls.

26. A can has a deep dent, but no product is leaking from it. What should be done with the can?
- a. It can be accepted.
 - b. It should be rejected.
 - c. It should be recalled.
 - d. It should be used immediately.

Answer: b

Section: 6

Learning Objective: 6 Explain procedures for unacceptable merchandise and product recalls.

27. A product's "best by" date states when it should be
- a. thrown away.
 - b. sold at a discount.
 - c. eaten for peak quality.
 - d. rotated in storage.

Answer: c

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

28. How long must shell stock tags be kept on file?
- a. 30 days after the day the shellfish were received
 - b. 90 days after the day the shellfish were received
 - c. 30 days after the last shellfish was sold or served from the container
 - d. 90 days after the last shellfish was sold or served from the container

Answer: d

Section: 6

Learning Objective: 6 Identify government inspection stamps and documentation required when receiving food.

29. Documentation received with fish that will be eaten raw must state
- a. how the fish were caught.
 - b. where the fish were harvested.
 - c. that the fish were correctly frozen.
 - d. the credentials of the fisherman who caught the fish.

Answer: c

Section: 6

Learning Objective: 6 Identify government inspection stamps and documentation required when receiving food.

30. Fish that will be farm-raised must meet the standards of what agency?
- a. USDA
 - b. FDA
 - c. CDC
 - d. Homeland Security

Answer: b

Section: 6

Learning Objective: 6 Identify government inspection stamps and documentation required when receiving food.

31. Meat must be purchased from plants inspected by what government agency?
- a. USDA
 - b. FDA
 - c. PHS
 - d. CDC

Answer: a

Section: 6

Learning Objective: 6 Identify government inspection stamps and documentation required when receiving food.

32. An inspection stamp on meat indicates that
- a. it is free of pathogens.
 - b. it is a “choice” cut of meat.
 - c. the product has met standards.
 - d. the food is safe to eat even if undercooked.

Answer: c

Section: 6

Learning Objective: 6 Identify government inspection stamps and documentation required when receiving food.

33. Poor food quality can be a sign of
- a. cross-contact.
 - b. cross-contamination.
 - c. time-temperature abuse.
 - d. improper personal hygiene

Answer: c

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

34. When checking a shipment of fresh salmon filets, a food handler notices that the flesh is soft and leaves an imprint when touched. What should be done with the fish?
- a. Accept the fish.
 - b. Reject the fish.
 - c. Recall the fish.
 - d. Accept any filets that do not have an imprint.

Answer: b

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

35. A food handler notices that a shipment of fresh meat appears to be dry. What should be done with the meat?
- a. Accept the meat.
 - b. Reject the meat.
 - c. Recall the meat.
 - d. Cook the meat within 24 hours.

Answer: b

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

36. What should be done with a shipment of fresh clams that have a slight seaweed smell?
- a. Accept the clams.
 - b. Reject the clams.
 - c. Recall the clams.
 - d. Cook the clams within 24 hours.

Answer: a

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

37. Which item should be rejected?
- a. Bags of organic cookies in torn packaging
 - b. Bottled milk at 41°F (5°C)
 - c. Single-use cups in original packing
 - d. Live oysters with an internal temperature of 50°F (10°C)

Answer: a

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

38. A food item that is received with an expired use-by date should be
- a. rejected.
 - b. used immediately.
 - c. accepted but labeled differently.
 - d. accepted but kept separate from other items.

Answer: a

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

39. Beef that has been received is bright cherry red and has flesh that springs back when touched. What should be done with the beef?
- a. Accept the beef.
 - b. Reject the beef.
 - c. Recall the beef.
 - d. Cook the beef within 24 hours.

Answer: a

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

40. A shipment of whole chickens has been received with dark wing tips and a purple color around the neck. What should be done with the chickens?
- a. Accept the chickens.
 - b. Recall the chickens.
 - c. Reject the chickens.
 - d. Reject any chickens with these traits and keep the rest.

Answer: c

Section: 6

Learning Objective: 6 Identify the requirements for receiving food and nonfood items.

Section 7: The Flow of Food: Storage

1. Ready-to-eat TCS food must be date marked if it will be stored for longer than
 - a. 12 hours.
 - b. 24 hours.
 - c. 36 hours.
 - d. 48 hours.

Answer: b

Section: 7

Learning Objective: 7 Describe how to properly label and date mark food.

2. What is the maximum amount of time that ready-to-eat TCS food can be stored in a cooler at 41°F (5°C) before it must be sold, served, or thrown out?
 - a. 2 days
 - b. 5 days
 - c. 7 days
 - d. 9 days

Answer: c

Section: 7

Learning Objective: 7 Explain time and temperature requirements for food in storage.

3. What items are stored correctly in a cooler?
 - a. Salmon stored below ground turkey
 - b. Kale stored below raw hamburger patties
 - c. Raw chicken thighs stored above pork chops
 - d. Raw shrimp stored above raw steak

Answer: d

Section: 7

Learning Objective: 7 Describe how to prevent cross-contamination during storage.

4. Any item not stored in its original container must be
- labeled.
 - thrown out.
 - used immediately.
 - served as quickly as possible.

Answer: a

Section: 7

Learning Objective: 7 Describe how to properly label and date mark food.

5. What must be included on the label of food that has not been stored in its original container?
- The food's common name
 - A list of ingredients
 - Major allergens
 - Preservatives in the food

Answer: a

Section: 7

Learning Objective: 7 Describe how to properly label and date mark food.

6. What is the discard date for tuna salad that was prepared and stored on October 1?
- October 6
 - October 7
 - October 8
 - October 9

Answer: b

Section: 7

Learning Objective: 7 Describe how to properly label and date mark food.

7. A chef is preparing a dish that includes beef and pork. If the beef has a use-by date of September 4 and the pork has a use-by date of September 6, what is the discard date of the dish?
- September 3
 - September 4
 - September 5
 - September 9

Answer: b

Section: 7

Learning Objective: 7 Describe how to properly label and date mark food.

8. How should food be rotated in storage?
- Items with the earliest use-by dates are discarded before items with later dates.
 - Items with the latest use-by dates are used before items with earlier dates.
 - Items with the latest use-by dates are discarded before items with earlier dates.
 - Items with the earliest use-by dates are used before items with later dates.

Answer: d

Section: 7

Learning Objective: 7 Explain how to rotate food using the first-in, first-out (FIFO) method.

9. What should be done with food that has passed its use-by date?
- It should be discarded.
 - It should be used immediately.
 - It should only be reheated once.
 - It should be cooked to a higher internal temperature.

Answer: a

Section: 7

Learning Objective: 7 Explain time and temperature requirements for food in storage.

10. At what temperature must cold TCS food be stored to keep it safe?
- a. 41°F (5°C) or lower
 - b. 45°F (7°C) or lower
 - c. 50°F (10°C) or lower
 - d. 65°F (18°C) or lower

Answer: a

Section: 7

Learning Objective: 7 Explain time and temperature requirements for food in storage.

11. At what temperature must hot TCS food be stored to keep it safe?
- a. 110°F (43°C) or higher
 - b. 120°F (49°C) or higher
 - c. 125°F (52°C) or higher
 - d. 135°F (57°C) or higher

Answer: d

Section: 7

Learning Objective: 7 Explain time and temperature requirements for food in storage.

12. Where should the air-temperature measuring device be placed in a cooler?
- a. Near the door
 - b. On a back wall
 - c. On the ceiling
 - d. Near the floor

Answer: a

Section: 7

Learning Objective: 7 Describe how to prevent temperature abuse during storage.

13. Why should overloading coolers be avoided?
- a. It reduces airflow.
 - b. It lets warm air inside.
 - c. It may lead to freezing the food.
 - d. It can lead to a moisture build-up.

Answer: a

Section: 7

Learning Objective: 7 Describe how to prevent temperature abuse during storage.

14. What should be done to help keep food safe in a walk-in cooler?
- a. Store meat and poultry near the cooler's door.
 - b. Line open shelves with aluminum foil.
 - c. Randomly sample food temperature daily.
 - d. Pack food tightly in coolers to ensure proper cooling.

Answer: c

Section: 7

Learning Objective: 7 Describe how to prevent temperature abuse during storage.

15. What should be done to help keep frozen food safe in a freezer?
- a. Open it frequently to check the temperature.
 - b. Defrost the freezer on a regular basis.
 - c. Install a thermometer in the coldest part of the freezer.
 - d. Ensure the temperature stays at 41°F (5°C).

Answer: b

Section: 7

Learning Objective: 7 Describe how to prevent temperature abuse during storage.

16. Which items are stored correctly in a cooler?
- a. Macaroni salad stored above raw salmon
 - b. Raw ground pork stored below raw poultry
 - c. Raw poultry stored above raw pork roast
 - d. Sliced pineapple stored below raw steaks

Answer: a

Section: 7

Learning Objective: 7 Describe how to prevent cross-contamination during storage.

17. How far off the floor should food be stored?
- a. 1 inch (3 centimeters)
 - b. 2 inches (5 centimeters)
 - c. 4 inches (10 centimeters)
 - d. 6 inches (15 centimeters)

Answer: d

Section: 7

Learning Objective: 7 Describe how to prevent cross-contamination during storage.

18. Where should food that doesn't require refrigeration be stored?
- a. In a dry location
 - b. In a moist location
 - c. In a high humidity location
 - d. In a high temperature location

Answer: a

Section: 7

Learning Objective: 7 Identify guidelines for storing specific types of food including meat, poultry, fish, shellfish, eggs, produce, and dry food.

19. A chef wants to package and sell their signature barbeque sauce on-site. What information must they include on their labels to make the sauce acceptable for retail sale?
- a. Chemical preservatives
 - b. Nutritional value
 - c. Calorie count
 - d. Recommended serving size

Answer: a

Section: 7

Learning Objective: 7 Describe how to properly label and date mark food.

20. What should be done to keep single-use items safe in storage?
- a. Place them in new packaging.
 - b. Remove them from their packaging.
 - c. Keep them in original packaging.
 - d. Open the packaging to increase airflow.

Answer: c

Section: 7

Learning Objective: 7 Describe how to prevent cross-contamination during storage.

21. What must be done with food before storing it?
- a. It must be frozen properly.
 - b. It must be wrapped or covered.
 - c. It must be marked with a storage date.
 - d. It must be placed in containers that allow airflow.

Answer: b

Section: 7

Learning Objective: 7 Describe how to prevent cross-contamination during storage.

22. Where should dirty linens be stored?
- a. Near the receiving doors
 - b. In nonabsorbent containers
 - c. Separately in dry storage areas
 - d. Near the dishwashers

Answer: b

Section: 7

Learning Objective: 7 Describe how to prevent cross-contamination during storage.

23. What is the storage order in a cooler based on?
- a. First In First Out (FIFO)
 - b. The use-by dates of each food
 - c. The risk of cross-contact in the cooler
 - d. The internal cooking temperature for each food

Answer: d

Section: 7

Learning Objective: 7 Describe how to prevent cross-contamination during storage.

24. What should be done to keep shell eggs safe when storing them?
- a. Wash them before storage.
 - b. Use them within 8 weeks of the packing date.
 - c. Keep them in storage until the time they are used.
 - d. Store them at an air temperature of 45°F (7°C) or lower.

Answer: c

Section: 7

Learning Objective: 7 Identify guidelines for storing specific types of food including meat, poultry, fish, shellfish, eggs, produce, and dry food.

25. What should be done to keep fresh produce safe when storing it?
- a. Wash it before storage.
 - b. Keep the humidity in storage low.
 - c. Store all produce at 41°F (5°C) or lower.
 - d. Store cut produce at 41°F (5°C) or lower.

Answer: d

Section: 7

Learning Objective: 7 Identify guidelines for storing specific types of food including meat, poultry, fish, shellfish, eggs, produce, and dry food.

26. Which is a best practice for handling canned food in storage?
- a. Discard cans with small dents.
 - b. Replace cans that are about to expire with cans that have later expiration dates.
 - c. Wipe the tops of cans with a sanitized cloth before opening.
 - d. Check the surface temperature and discard cans that are too warm.

Answer: c

Section: 7

Learning Objective: 7 Identify guidelines for storing specific types of food including meat, poultry, fish, shellfish, eggs, produce, and dry food.

27. A manager asks a food handler to put away a shipment of whole potatoes. What should the food handler do?
- a. Wash and dry the potatoes.
 - b. Put the potatoes in an airtight container.
 - c. Refrigerate the potatoes.
 - d. Move the potatoes to a cool dry storage area.

Answer: d

Section: 7

Learning Objective: 7 Identify guidelines for storing specific types of food including meat, poultry, fish, shellfish, eggs, produce, and dry food.

28. A food handler needs to combine a new shipment of canned tomatoes with the cans already on the shelf. If the new cans have expiration dates of June 2025 and the old cans have expiration dates of January 2026, how should they rotate the cans?
- The new cans should go behind the old cans.
 - The new cans should go in front of the old cans.
 - The old cans should be discarded and replaced with the new cans.
 - The old cans should be stored below the new cans.

Answer: b

Section: 7

Learning Objective: 7 Explain how to rotate food using the first-in, first-out (FIFO) method.

29. Which is a best practice for storing flour?
- Check packaging for pest damage before using.
 - Store in a room with medium to high humidity.
 - Repackage in breathable containers before storing.
 - Conduct daily temperature checks.

Answer: a

Section: 7

Learning Objective: 7 Explain how to rotate food using the first-in, first-out (FIFO) method.

30. Which is an example of reduced-oxygen packaged (ROP) food?
- Insulated box of whole oysters
 - Sack of flour
 - Bag of whole apples
 - Vacuum-packed deli meat

Answer: d

Section: 7

Learning Objective: 7 Identify guidelines for storing specific types of food including meat, poultry, fish, shellfish, eggs, produce, and dry food.

Section 8: The Flow of Food: Preparation

1. The two biggest hazards when prepping food are cross-contamination and
 - a. cross-contact.
 - b. chemical intoxication.
 - c. physical contamination.
 - d. time-temperature abuse.

Answer: d

Section: 8

Learning Objective: 8 State correct ways for prepping food to prevent cross-contamination and time-temperature abuse.

2. A food handler took out a hotel pan of tuna salad to make two dozen tuna sandwiches. What error was made?
 - a. There was no error.
 - b. Too much tuna salad was taken out at one time.
 - c. Too much time was spent in the temperature danger zone.
 - d. The tuna salad was exposed to the temperature danger zone.

Answer: b

Section: 8

Learning Objective: 8 State correct ways for prepping food to prevent cross-contamination and time-temperature abuse.

3. What guidelines should be followed when using additives during food preparation?
 - a. Additives should only be used to alter the appearance of food.
 - b. Sulfites should only be added to produce that will be eaten raw.
 - c. Additives must be approved by the regulatory authority.
 - d. Colored overwraps should be used to enhance the appearance of food.

Answer: c

Section: 8

Learning Objective: 8 State correct ways for prepping food to prevent cross-contamination and time-temperature abuse.

4. Food that has become unsafe should be thrown out unless
- it can be safely reconditioned.
 - there are no visible signs of spoilage.
 - a foodborne-illness is unlikely.
 - it has been approved by the regulatory authority.

Answer: a

Section: 8

Learning Objective: 8 State correct ways for prepping food to prevent cross-contamination and time-temperature abuse.

5. When preparing protein salads, such as tuna or egg salad, never use leftover TCS ingredients that have been held longer than
- 2 days.
 - 3 days
 - 5 days
 - 7 days.

Answer: d

Section: 8

Learning Objective: 8 State correct ways for prepping food to prevent cross-contamination and time-temperature abuse.

6. How should pooled eggs be handled to keep them safe?
- Cook them right after mixing them.
 - Make additional batches in the same container.
 - Store them at an air temperature of 45°F (7°C) or lower.
 - Leave them at room temperature for 4 hours or less.

Answer: a

Section: 8

Learning Objective: 8 State correct ways for prepping food to prevent cross-contamination and time-temperature abuse.

7. Why are overloading fryer baskets a food safety risk?
- a. It risks burning the food and producing carcinogens.
 - b. It reduces oil temperature resulting in undercooked food.
 - c. It can transfer allergens to the fryer oil more easily.
 - d. It can result in cross-contamination due to splatter.

Answer: b

Section: 8

Learning Objective: 8 State correct ways for prepping food to prevent cross-contamination and time-temperature abuse.

8. What guidelines should be followed when handling ice to keep it safe?
- a. Store ice scoops in the ice machine.
 - b. Only handle ice with bare hands after handwashing.
 - c. Use a glass to scoop ice.
 - d. Never use ice as an ingredient if it was used to cool food.

Answer: d

Section: 8

Learning Objective: 8 State correct ways for prepping food to prevent cross-contamination and time-temperature abuse.

9. Which practice requires a variance?
- a. Packaging food using a reduced oxygen method
 - b. Holding food without temperature control
 - c. Cooling food using the two-stage cooling method
 - d. Reheating food that was previously cooked and cooled

Answer: a

Section: 8

Learning Objective: 8 State correct ways for prepping food to prevent cross-contamination and time-temperature abuse.

10. Which method is a safe way to thaw food?
- a. As part of the cooking process
 - b. Under running water at 125°F (52°C) or higher
 - c. Submerged in a sink of standing water at 70°F (21°C)
 - d. On the counter at room temperature

Answer: a

Section: 8

Learning Objective: 8 Describe safe methods for thawing food.

11. A food handler removes a frozen lasagna from the freezer and leaves it on a prep table to thaw overnight. Why is this method of thawing unsafe?
- a. Dishes that thaw at room temperature need to be cut into smaller pieces first.
 - b. The dish is exposed to the temperature danger zone so pathogens can grow.
 - c. The dish's temperature will decrease too rapidly.
 - d. Most foods need at least 18 hours to thaw at room temperature.

Answer: b

Section: 8

Learning Objective: 8 Describe safe methods for thawing food.

12. What must be immediately done to food after it is thawed in a microwave?
- a. Hold it.
 - b. Cook it.
 - c. Cool it.
 - d. Freeze it.

Answer: b

Section: 8

Learning Objective: 8 Describe safe methods for thawing food.

13. When slacking food during preparation, the food should never go above what temperature?
- a. 32°F (0°C)
 - b. 41°F (5°C)
 - c. 50°F (10°C)
 - d. 70°F (21°C)

Answer: b

Section: 8

Learning Objective: 8 Describe safe methods for thawing food.

14. What is the required minimum internal cooking temperature for seafood?
- a. 135°F (57°C) or higher for 15 seconds
 - b. 145°F (63°C) or higher for 15 seconds
 - c. 155°F (68°C) or higher for 17 seconds
 - d. 165°F (74°C) or higher for <1 second

Answer: b

Section: 8

Learning Objective: 8 State the minimum internal cooking temperatures for TCS food.

15. What is the required minimum internal cooking temperature for poultry?
- a. 135°F (57°C) or higher for 15 seconds
 - b. 145°F (63°C) or higher for 15 seconds
 - c. 155°F (68°C) or higher for 17 seconds
 - d. 165°F (74°C) or higher for <1 second

Answer: d

Section: 8

Learning Objective: 8 State the minimum internal cooking temperatures for TCS food.

16. What is the required minimum internal cooking temperature for ground beef?
- a. 135°F (57°C) or higher for 15 seconds
 - b. 145°F (63°C) or higher for 15 seconds
 - c. 155°F (68°C) or higher for 17 seconds
 - d. 165°F (74°C) or higher for <1 second

Answer: c

Section: 8

Learning Objective: 8 State the minimum internal cooking temperatures for TCS food.

17. What is the required minimum internal cooking temperature for rice that will be hot-held for service?
- a. 135°F (57°C)
 - b. 145°F (63°C)
 - c. 155°F (68°C)
 - d. 165°F (74°C)

Answer: a

Section: 8

Learning Objective: 8 State the minimum internal cooking temperatures for TCS food.

18. What is the required minimum internal cooking temperature for a pork roast?
- a. 135°F (57°C) or higher for 15 seconds
 - b. 145°F (63°C) or higher for 4 minutes
 - c. 155°F (68°C) or higher for 17 seconds
 - d. 165°F (74°C) or higher for <1 second

Answer: b

Section: 8

Learning Objective: 8 State the minimum internal cooking temperatures for TCS food.

19. What temperature must meat be cooked to if it will be cooked in a microwave?
- a. 135°F (57°C)
 - b. 145°F (63°C)
 - c. 155°F (68°C)
 - d. 165°F (74°C)

Answer: d

Section: 8

Learning Objective: 8 Describe the requirements when cooking TCS food in a microwave and when partially cooking TCS food.

20. Eggs were placed in a covered dish and cooked in a microwave oven. Half-way through cooking, the eggs were stirred, and once finished were left to stand for 30 seconds before being checked with a thermometer in two places. What mistake was made?
- a. They were placed in a covered dish.
 - b. They were stirred halfway through cooking.
 - c. They were left to stand for 30 seconds after cooking.
 - d. They were checked with a thermometer in two places.

Answer: c

Section: 8

Learning Objective: 8 Describe the requirements when cooking TCS food in a microwave and when partially cooking TCS food.

21. What should be done if the menu includes TCS items that are raw or undercooked?
- a. It must be noted on the menu.
 - b. Service staff must point it out to guests.
 - c. It must be posted on signs in the establishment.
 - d. It must be listed on the company website.

Answer: a

Section: 8

Learning Objective: 8 Summarize the requirements of informing consumers of risks when serving raw or undercooked food.

22. If an operation uses a reduced oxygen packaging method for fish, the fish must be
- a. frozen before, during, or after packaging.
 - b. thawed before packaging.
 - c. thawed within 30 days after packing.
 - d. frozen no more than 14 days before packaging.

Answer: a

Section: 8

Learning Objective: 8 State correct ways for prepping food to prevent cross-contamination and time-temperature abuse.

23. Which item would be safe to offer on a children's menu?
- a. Sushi
 - b. Grilled cheese
 - c. Eggs over easy
 - d. Medium rare hamburger

Answer: b

Section: 8

Learning Objective: 8 Summarize the requirements of informing consumers of risks when serving raw or undercooked food.

24. What do some regulatory authorities require food service operations to submit when applying for a variance?
- a. A list of their suppliers
 - b. Receiving documents
 - c. A HACCP plan
 - d. A crisis management plan

Answer: c

Section: 8

Learning Objective: 8 State correct ways for prepping food to prevent cross-contamination and time-temperature abuse.

25. When must a consumer advisory be provided for menu items containing TCS food?
- a. When the item is raw or undercooked
 - b. When the item contains a potential allergen
 - c. When the operation provides only counter service
 - d. When the operation primarily serves a high-risk population

Answer: a

Section: 8.

Learning Objective: 8 Summarize the requirements of informing consumers of risks when serving raw or undercooked food.

26. When partially cooking food, the initial cooking phase should not last longer than
- a. 5 minutes.
 - b. 15 minutes.
 - c. 30 minutes.
 - d. 60 minutes.

Answer: d

Section: 8

Learning Objective: 8 Describe the requirements when cooking TCS food in a microwave and when partially cooking TCS food.

27. What temperature must partially cooked food reach when it is reheated?
- a. Between 135°F (57°C) and 70°F (21°C)
 - b. At least 145°F (63°C)
 - c. Up to 165°F (74°C)
 - d. Its required minimum internal temperature

Answer: d

Section: 8.3

Learning Objective: 8 State methods and time-temperature requirements for cooling and reheating TCS food.

28. A food handler is cooling chicken soup for dinner service. After two hours, the soup's temperature has decreased from 135°F (57°C) to 80°F (27°C). What should the food handler do next?
- a. Throw the soup away.
 - b. Continue cooling the soup.
 - c. Reheat the soup and cool it again.
 - d. Put the soup back into the holding unit.

Answer: c

Section: 8

Learning Objective: 8 State methods and time-temperature requirements for cooling and reheating TCS food.

29. Food being cooled must pass quickly through which temperature range to reduce pathogen growth?
- a. 65°F to 20°F (18°C to -6°C)
 - b. 125°F to 70°F (52°C to 21°C)
 - c. 180°F to 130°F (82°C to 54°C)
 - d. 220°F to 195°F (104°C to 90°C)

Answer: b

Section: 8

Learning Objective: 8 State methods and time-temperature requirements for cooling and reheating TCS food.

30. What is the maximum cooling time for TCS food?
- a. 1 hour
 - b. 2 hours
 - c. 4 hours
 - d. 6 hours

Answer: d

Section: 8

Learning Objective: 8 State methods and time-temperature requirements for cooling and reheating TCS food.

31. How does the density of food affect cooling?
- a. The denser the food, the more slowly it will cool.
 - b. The denser the food, the more quickly it will cool.
 - c. Density does not affect cooling.
 - d. Density has only a small effect on cooling.

Answer: a

Section: 8

Learning Objective: 8 State methods and time-temperature requirements for cooling and reheating TCS food.

32. What is the first step in cooling a large pot of hot meat sauce?
- a. Put the pot in the freezer to cool.
 - b. Put the pot in the walk-in cooler to cool.
 - c. Put the pot into a sink full of ice water.
 - d. Pour the meat sauce into several smaller containers.

Answer: d

Section: 8

Learning Objective: 8 State methods and time-temperature requirements for cooling and reheating TCS food.

33. When reheating turkey chili for hot holding, what is the minimum temperature that the chili must reach?
- a. 135°F (57°C) for 15 seconds
 - b. 145°F (63°C) for 15 seconds
 - c. 155°F (68°C) for 15 seconds
 - d. 165°F (74°C) for 15 seconds

Answer: d

Section: 8

Learning Objective: 8 State methods and time-temperature requirements for cooling and reheating TCS food.

34. What temperature must TCS food for immediate service be reheated to?
- a. Any temperature
 - b. 145°F (63°C) for 15 seconds
 - c. 155°F (68°C) for 15 seconds
 - d. 165°F (74°C) for 15 seconds

Answer: a

Section: 8

Learning Objective: 8 State methods and time-temperature requirements for cooling and reheating TCS foods.

35. What temperature must commercially processed and packaged ready-to-eat food be reheated to?
- a. Any temperature
 - b. 135°F (57°C)
 - c. 155°F (68°C) for 15 seconds
 - d. 165°F (74°C) for 15 seconds

Answer: b

Section: 8

Learning Objective: 8 State methods and time-temperature requirements for cooling and reheating TCS food.

Section 9: The Flow of Food: Service

1. What is the correct internal temperature for food being hot-held for service?
 - a. 70°F (21°C) or above
 - b. 125°F (52°C) or above
 - c. 135°F (57°C) or above
 - d. 155°F (68°C) or above

Answer: c

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

2. At 12:00 p.m., a food handler puts soup in hot-holding equipment for lunch service. At 2:00 p.m., the soup's temperature reads 125°F (52°C). What corrective action should the food handler take?
 - a. Throw the soup away.
 - b. Reheat the soup.
 - c. Serve the soup immediately.
 - d. Check the soup again at 3:00 p.m. and reheat if necessary.

Answer: b

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

3. What is the maximum allowable internal temperature when cold-holding TCS food?
 - a. 41°F (5°C)
 - b. 45°F (7°C)
 - c. 51°F (10°C)
 - d. 55°F (13°C)

Answer: a

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

4. A power outage has left hot TCS food out of temperature control for six hours. What must be done with the food?
- a. Throw the food away.
 - b. Cool the food to 41°F (5°C) or lower.
 - c. Serve the food immediately.
 - d. Cook the food to 165°F (74°C).

Answer: a

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

5. Why is it hazardous to reheat food with hot-holding equipment?
- a. The equipment can scorch the food.
 - b. The risk of cross-contact is significantly increased.
 - c. Cross-contamination becomes a greater risk later in the cooking process.
 - d. Most equipment does not pass food through the temperature danger zone quickly enough.

Answer: d

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

6. A food handler has been holding chicken salad for sandwiches in a cold well for seven hours. When they check the temperature of the chicken salad, it is 54°F (12°C). What must the food handler do?
- a. Sell the remaining chicken salad immediately.
 - b. Sell the remaining chicken salad within 2 hours.
 - c. Cool the chicken salad to 41°F (5°C).
 - d. Discard the chicken salad.

Answer: d

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

7. Why should food be covered when it is being held?
- a. Covers help maintain a food's internal temperature.
 - b. Covers primarily protect food from cross-contact.
 - c. Covers help food reach the correct temperature.
 - d. Covers keep hands from contact with food.

Answer: a

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

8. What is the purpose of a sneeze guard?
- a. To keep allergens off food
 - b. To prevent time-temperature abuse
 - c. To protect food from contaminants
 - d. To prevent chemicals from contaminating food

Answer: c

Section: 9

Learning Objective: 9 Explain how to protect ready-to-eat food from contamination during preparation, display, and service.

9. At 11:00 a.m., a caterer removes a tray of lasagna from the oven and places it on a buffet table without temperature control. By what time must the lasagna be thrown away?
- a. 1:00 p.m.
 - b. 2:00 p.m.
 - c. 3:00 p.m.
 - d. 4:00 p.m.

Answer: c

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

10. TCS food should never be held without temperature control at a
- a. catered event.
 - b. nursing home.
 - c. quick-service operation.
 - d. convenience store.

Answer: b

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

11. With approved procedures in place, how long can cold food be held without temperature control if it does not exceed 70°F (21°C)?
- a. 2 hours
 - b. 4 hours
 - c. 6 hours
 - d. 8 hours

Answer: c

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

12. Cold food being held without temperature control for up to six hours cannot exceed which temperature while it is being served?
- a. 41°F (5°C)
 - b. 50°F (10°C)
 - c. 60°F (16°C)
 - d. 70°F (21°C)

Answer: d

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

13. Trays of lasagna were removed from hot-holding at 135°F (57°C) at 4 p.m. and labeled with a discard time of 10 p.m. The lasagna was served to guests without temperature control and discarded at 8 p.m. What mistake was made?
- a. The food was held at the wrong temperature.
 - b. The discard time on the label was wrong.
 - c. The food was thrown away at the wrong time.
 - d. The trays went too long without temperature control.

Answer: b

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

14. What must food handlers do when handling ready-to-eat food?
- a. Wear gloves.
 - b. Use hand sanitizer.
 - c. Cover wounds with bandages.
 - d. Touch the food as little as possible.

Answer: a

Section: 9

Learning Objective: 9 Explain how to protect ready-to-eat food from contamination during preparation, display, and service.

15. Which is a safe practice when serving ready-to-eat food?
- a. Scooping ice with a sanitized glass.
 - b. Plating hamburgers with bare hands.
 - c. Using deli sheets to handle donuts.
 - d. Serving rolls and fried chicken with the same pair of tongs.

Answer: c

Section: 9

Learning Objective: 9 Explain how to protect ready-to-eat food from contamination during preparation, display, and service.

16. Which is a safe practice when handling dishware and utensils?
- a. Holding glasses by their rims.
 - b. Carrying glasses in a stack.
 - c. Storing flatware with the handles down.
 - d. Holding plates by their edges.

Answer: d

Section: 9

Learning Objective: 9 Describe how to handle utensils and equipment to prevent contamination.

17. Which item may be re-served to another customer?
- a. A partially used cup of salsa
 - b. Unopened condiment packets
 - c. Uneaten bread from a breadbasket
 - d. An uneaten pickle used as a plate garnish

Answer: b

Section: 9

Learning Objective: 9 Explain how to protect ready-to-eat food from contamination during preparation, display, and service.

18. An operation has a buffet with 8 different items on it. How many serving utensils are needed to serve the items on the buffet?
- a. 1
 - b. 2
 - c. 4
 - d. 8

Answer: d

Section: 9

Learning Objective: 9 Describe how to handle utensils and equipment to prevent contamination.

19. How should utensils for serving TCS food be stored during service?
- a. Lying flat on top of the food
 - b. Alongside the food on a side towel
 - c. On a clean and sanitized plate next to the food
 - d. In the food with the handle above the container rim

Answer: d

Section: 9

Learning Objective: 9 Describe how to handle utensils and equipment to prevent contamination.

20. Soup that is being hot-held on a buffet should be labeled with the
- name of the food.
 - prep date.
 - soup's ingredients.
 - use-by date.

Answer: a

Section: 9

Learning Objective: 9 Explain how to protect ready-to-eat food from contamination during preparation, display, and service.

21. Which action could contaminate food at a self-service area?
- Keeping hot TCS food at 135°F (57°C)
 - Allowing customers to reuse plates
 - Labeling all containers and handles
 - Taking food temperatures every hour

Answer: b

Section: 9

Learning Objective: 9 Explain how to protect ready-to-eat food from contamination during preparation, display, and service.

22. Which food does not need additional packaging or other protection from contamination when placed on display?
- Pastries
 - Bread
 - Whole raw fruit
 - Open condiments

Answer: c

Section: 9

Learning Objective: 9 Explain how to protect ready-to-eat food from contamination during preparation, display, and service.

23. When delivering food for off-site service, raw poultry must be stored
- a. at a lower temperature than ready-to-eat food.
 - b. separately from ready-to-eat food.
 - c. without temperature control.
 - d. above raw beef.

Answer: b

Section: 9

Learning Objective: 9 Describe the requirements for off-site catering and food transportation to prevent contamination and time-temperature abuse.

24. What type of containers should be used to transport food offsite?
- a. Insulated
 - b. Disposable
 - c. Reusable
 - d. Biodegradable

Answer: a

Section: 9

Learning Objective: 9 Describe the requirements for off-site catering and food transportation to prevent contamination and time-temperature abuse.

25. Food for off-site service should be labeled with reheating and service instructions and
- a. a list of ingredients.
 - b. an inspection stamp.
 - c. the date of preparation.
 - d. the use-by date and time.

Answer: d

Section: 9

Learning Objective: 9 Describe the requirements for off-site catering and food transportation to prevent contamination and time-temperature abuse.

26. How should food in vending machines be dispensed?
- a. In original packaging
 - b. In reusable packaging
 - c. Washed and rewrapped
 - d. In plastic wrap

Answer: a

Section: 9

Learning Objective: 9 Describe the requirements for off-site catering and food transportation to prevent contamination and time-temperature abuse.

27. What must an operation do if it plans to display or hold TCS food without temperature control?
- a. Petition the FDA.
 - b. Receive monthly health inspections.
 - c. Get written approval from the regulatory authority.
 - d. Heat TCS foods to 180°F (82°C) before service.

Answer: c

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

28. What guideline should vending machine operators follow to help protect food from contamination and time-temperature abuse?
- a. Keep TCS food above 41°F (5°C).
 - b. Avoid stocking fruit with edible peels.
 - c. Rotate products bi-weekly.
 - d. Check product shelf life daily.

Answer: d

Section: 9

Learning Objective: 9 Describe the requirements for off-site catering and food transportation to prevent contamination and time-temperature abuse.

29. A tray of sliced watermelon is removed from the cooler at 10:00 a.m. If the watermelon is served without temperature control but never exceeds 70°F (21°C), what discard time should appear on the label?
- a. 12:00 p.m.
 - b. 2:00 p.m.
 - c. 4:00 p.m.
 - d. 6:00 p.m.

Answer: b

Section: 9

Learning Objective: 9 Identify ways to prevent time-temperature abuse when holding and serving food.

30. In some jurisdictions, take-home beverage containers can be refilled if
- a. they are made of a clear material.
 - b. their capacity doesn't exceed 24 ounces.
 - c. they are rinsed with fresh, hot water under pressure.
 - d. guests refill them in a self-service area.

Answer: c

Section: 9

Learning Objective: 9 Explain how to protect ready-to-eat food from contamination during preparation, display, and service.

Fill in the steps of HACCP:

Where can something go wrong in the process:

Step Number: 2 CRITICAL CONTROL POINT

If something is wrong, how do you fix it?

Step Number: 5 CORRECTIVE ACTION

Set the Starting or ending points of an individual operation in the task or process:

Step Number: 3 LIMIT

Do you have your paperwork in place?

Step Number: 7 PAPERWORK

Look at your entire operation or project:

Step Number: 1 ANALYZE

Is your setup working?

Step Number: 6 VERIFY

Who is going to do it?

Step Number: 4 MONITOR

Section 10: Food Safety Management Systems

1. Three components of active managerial control include identifying risks, training, and
 - a. creating specifications.
 - b. corrective action.
 - c. creating purchase orders.
 - d. recordkeeping.

Answer: b

Section: 10

Learning Objective: 10 Define active managerial control, identify how it can be achieved, and list the steps for implementing it.

2. A manager's responsibility to actively control risk factors for foodborne-illnesses is called
 - a. hazard analysis critical control point (HACCP).
 - b. quality control and assurance.
 - c. food safety management.
 - d. active managerial control.

Answer: d

Section: 10

Learning Objective: 10 Define active managerial control, identify how it can be achieved, and list the steps for implementing it.

3. A manager asks a chef to continue cooking chicken breasts after seeing them cooked to an incorrect temperature. This is an example of which step in active managerial control?
 - a. Identifying risks
 - b. Monitoring
 - c. Corrective action
 - d. Re-evaluation

Answer: c

Section: 10

Learning Objective: 10 Define active managerial control, identify how it can be achieved, and list the steps for implementing it.

4. A manager walks around the kitchen every hour to answer questions and to see if staff members are following procedures. This is an example of which step in active managerial control?
- a. Management oversight
 - b. Corrective action
 - c. Re-evaluation
 - d. Identify risks

Answer: a

Section: 10

Learning Objective: 10 Define active managerial control, identify how it can be achieved, and list the steps for implementing it.

5. What is one way that managers can show they know how to keep food safe?
- a. Become certified in food safety.
 - b. Check cooking temperatures.
 - c. Monitor employee behaviors.
 - d. Conduct self-inspections.

Answer: a

Section: 10

Learning Objective: 10 Summarize the FDA's public health interventions for controlling the common risk factors for foodborne-illness.

6. Which is an FDA public health intervention for controlling the risk factors for foodborne-illness?
- a. Noting allergens on menus
 - b. Reviewing of construction plans
 - c. Implementing consumer advisories
 - d. Providing variances for special processes

Answer: c

Section: 10

Learning Objective: 10 Summarize the FDA's public health interventions for controlling the common risk factors for foodborne-illness.

7. A pest-control program is an example of a(n)
- a. HACCP program.
 - b. food safety program.
 - c. workplace safety program.
 - d. active managerial control program.

Answer: b

Section: 10

Learning Objective: 10 Explain what a food safety management system is and list the food safety programs that must be in place for it to be effective.

8. What is the purpose of a HACCP program?
- a. Preventing, eliminating, or reducing hazards to food
 - b. Preventing any hazards to food from occurring
 - c. Eliminating all hazards in food
 - d. Ensuring that all hazards never occur in food

Answer: a

Section: 10

Learning Objective: 10 Identify the basis for an effective HACCP system and summarize the seven HACCP principles.

9. What is a critical control point (CCP)?
- a. A step that must be taken when a critical limit has not been met
 - b. An evaluation that determines whether the HACCP plan is working as intended
 - c. A minimum or maximum limit which must be met to prevent or eliminate a hazard
 - d. A point in the process where a hazard can be prevented, eliminated, or reduced to safe levels

Answer: d

Section: 10

Learning Objective: 10 Identify the basis for an effective HACCP system and summarize the seven HACCP principles.

10. Which is an example of a critical control point (CCP)?
- a. Required minimum internal cooking temperatures
 - b. Washing hands before preparing food
 - c. Using color-coded cutting boards
 - d. Cleaning and sanitizing surfaces correctly

Answer: a

Section: 10

Learning Objective: 10 Identify the basis for an effective HACCP system and summarize the seven HACCP principles.

11. The temperature of a beef roast is periodically checked to see if it has finished cooking. Each time it is determined that the roast has not reached 145°F (63°C), so it is placed back in the oven to continue cooking. Which of these actions is the corrective action?
- a. Physically checking the temperature of the roast
 - b. Having a target temperature of 145°F (63°C)
 - c. Placing the roast back into the oven
 - d. Periodically monitoring the temperature of the roast

Answer: c

Section: 10

Learning Objective: 10 Define active managerial control, identify how it can be achieved, and list the steps for implementing it.

12. How can a manager determine if a HACCP plan is working?
- a. Higher guest check averages
 - b. Fewer products rejected during receiving
 - c. Improvement in health inspection scores
 - d. Monitoring charts indicate hazards are being prevented

Answer: d

Section: 10

Learning Objective: 10 Identify the basis for an effective HACCP system and summarize the seven HACCP principles.

13. Which is an FDA public health intervention for controlling the risk factors for foodborne-illness?
- a. Keeping detailed supplier records
 - b. Developing standard operating procedures
 - c. Conducting annual equipment checks
 - d. Controlling hands as a vehicle of contamination

Answer: d

Section: 10

Learning Objective: 10 Summarize the FDA's public health interventions for controlling the common risk factors for foodborne-illness.

14. What is the purpose of a food safety management system?
- a. To prevent foodborne-illness by controlling the hazards throughout the flow of food
 - b. To teach employees to recognize the signs of foodborne-illness
 - c. To identify and address critical control points (CCPs) in the operation
 - d. To prepare for an imminent health hazard

Answer: a

Section: 10

Learning Objective: 10 Explain what a food safety management system is and list the food safety programs that must be in place for it to be effective.

15. What does a crisis management program need to be successful?
- a. A written plan
 - b. Corrective actions
 - c. Hired consultants
 - d. Extensive food safety knowledge

Answer: a

Section: 10

Learning Objective: 10 Describe how to prepare for, respond to, and recover from a crisis.

16. What three phases must a crisis management program focus on?
- a. Monitoring, Response, Prevention
 - b. Preparation, Response, Recovery
 - c. Prevention, Response, Corrective Action
 - d. Hazard Analysis, Corrective Action, Monitoring

Answer: b

Section: 10

Learning Objective: 10 Describe how to prepare for, respond to, and recover from a crisis.

17. What should be done when responding to a crisis?
- a. Work with the media.
 - b. Deny any accountability.
 - c. Rely on the media to relay facts.
 - d. Respond to media questions rather than take control.

Answer: a

Section: 10

Learning Objective: 10 Describe how to prepare for, respond to, and recover from a crisis.

18. A guest calls a restaurant and reports a foodborne-illness that they believe came from eating at the establishment. What should the manager do next?
- a. Avoid expressing concern.
 - b. Complete a foodborne-illness incident report.
 - c. Admit responsibility if they think the customer is correct.
 - d. Disregard the complaint until there are more facts.

Answer: b

Section: 10

Learning Objective: 10 Summarize the process for responding to a foodborne-illness outbreak.

19. What should a manager do after receiving multiple complaints of foodborne-illness?
- a. Contact the regulatory authority to assist.
 - b. Speak with their lawyer or legal team immediately.
 - c. Admit responsibility to all guests who call to report.
 - d. Throw out all product suspected in the incident.

Answer: a

Section: 10

Learning Objective: 10 Summarize the process for responding to a foodborne-illness outbreak.

20. What should a manager do if the regulatory authority confirms their operation is the source of a foodborne-illness outbreak?
- a. Deny accountability and seek legal counsel.
 - b. Throw out all product suspected in the incident.
 - c. Hire a third-party laboratory to conduct a private investigation.
 - d. Provide the regulatory authority with all appropriate documentation.

Answer: d

Section: 10

Learning Objective: 10 Summarize the process for responding to a foodborne-illness outbreak.

21. A broken water main has caused the water in an operation to appear brown. What should the manager do?
- a. Contact the local regulatory authority before use.
 - b. Use the water for everything except dishwashing.
 - c. Boil the water for one minute before use.
 - d. Use the water for everything except handwashing.

Answer: a

Section: 10

Learning Objective: 10 Define imminent health hazards, list examples, and describe the proper response to them.

22. In the event of an imminent health hazard, such as a water supply interruption, the operation must
- a. execute a HACCP plan.
 - b. reduce the hours of operation.
 - c. notify the regulatory authority.
 - d. maintain normal operating procedures.

Answer: c

Section: 10

Learning Objective: 10 Define imminent health hazards, list examples, and describe the proper response to them.

23. An imminent health hazard, such as a water supply interruption, requires immediate correction or
- a HACCP plan.
 - closure of the operation.
 - evaluation of the situation.
 - normal operating procedures.

Answer: b

Section: 10

Learning Objective: 10 Define imminent health hazards, list examples, and describe the proper response to them.

24. When should an imminent health hazard be corrected?
- Immediately
 - Within 24 hours
 - Within 48 hours
 - Within 30 days

Answer: a

Section: 10

Learning Objective: 10 Define imminent health hazards, list examples, and describe the proper response to them.

25. If an imminent health hazard has occurred and there is a significant risk to food safety, service must be stopped and
- the regulatory authority must be notified.
 - the public must be notified.
 - contaminated food must be cooked quickly.
 - food in packaging that is not intact must be used immediately.

Answer: a

Section: 10

Learning Objective: 10 Define imminent health hazards, list examples, and describe the proper response to them.

26. A group of practices and procedures intended to prevent foodborne-illness is called
- a HACCP plan.
 - a food safety management system.
 - active managerial control.
 - corrective action.

Answer: b

Section: 10

Learning Objective: 10 Explain what a food safety management system is and list the food safety programs that must be in place for it to be effective.

27. What information would be relevant to include in a foodborne-illness incident report?
- Whether the guest has any food intolerances
 - Whether the guest consumed any alcohol
 - When and where the customer sought medical attention
 - Contact information of the other guests in the party

Answer: c

Section: 10

Learning Objective: 10 Summarize the process for responding to a foodborne-illness outbreak.

28. Which HACCP principle is intended to help an operation maintain a HACCP plan and verify its effectiveness?
- Conduct a hazard analysis.
 - Determine critical control points.
 - Identify corrective actions.
 - Establish procedures for record keeping and documentation.

Answer: d

Section: 10

Learning Objective: 10 Identify the basis for an effective HACCP system and summarize the seven HACCP principles.

29. A personal hygiene program, food safety training, and standard operating procedures are components of
- a. a HACCP plan.
 - b. a food safety management system.
 - c. a workplace security program.
 - d. a public health intervention.

Answer: b

Section: 10

Learning Objective: 10 Explain what a food safety management system is and list the food safety programs that must be in place for it to be effective.

30. While creating a HACCP plan, an operation determines that porkchops should be cooked for 17 minutes on the grill to reach a minimum internal temperature of 145°F (63°C). What should be established as a monitoring procedure?
- a. Record the temperature of each porkchop and review logs daily.
 - b. Clean and inspect the grill at regular intervals.
 - c. Check the temperature of each pork chop with a thermocouple thermometer.
 - d. Stop cooking a porkchop if it doesn't reach 145°F (63°C) after 18 minutes.

Answer: c

Section: 10

Learning Objective: 10 Identify the basis for an effective HACCP system and summarize the seven HACCP principles.

Section 11: Safe Facilities and Equipment

1. When is the regulatory authority required to review an establishment's construction plans?
 - a. When starting new construction or large remodeling
 - b. When starting any construction in the establishment
 - c. When the local building department requires it
 - d. When construction is occurring in a full-service establishment

Answer: a

Section: 11

Learning Objective: 11 Describe the proper operation of facilities and equipment.

2. What is the advantage of having the regulatory authority review construction plans?
 - a. It ensures that the facility will be constructed correctly.
 - b. It holds contractors accountable for their work.
 - c. It ensures that the construction meets FDA requirements.
 - d. It reduces the cost of the construction.

Answer: a

Section: 11

Learning Objective: 11 Describe the proper operation of facilities and equipment.

3. What are the most important food safety features to look for when selecting flooring, wall, and ceiling materials?
 - a. Absorbent and durable
 - b. Hard and durable
 - c. Porous and durable
 - d. Smooth and durable

Answer: d

Section: 11

Learning Objective: 11 Describe the proper operation of facilities and equipment.

4. What is the most important food safety consideration when selecting construction materials for the establishment?
 - a. The cost of the materials
 - b. The durability of the materials
 - c. The simplicity of cleaning the materials
 - d. The speed at which the materials can be installed

Answer: c

Section: 11

Learning Objective: 11 Describe the proper operation of facilities and equipment.

5. What should be considered when constructing restrooms?
 - a. They should be adjacent to storage areas.
 - b. They should not have self-closing doors.
 - c. Staff and guests should use the same restrooms.
 - d. Patrons should not pass through prep areas to reach them.

Answer: d

Section: 11

Learning Objective: 11 Describe the proper operation of facilities and equipment.

6. What must be included in restrooms?
 - a. Hand sanitizers
 - b. Signage
 - c. Warm-air hand dryer
 - d. Garbage containers if paper towels are provided

Answer: d

Section: 11

Learning Objective: 11 Describe the proper operation of facilities and equipment.

7. Where are handwashing stations required?
- a. Receiving areas
 - b. Dishwashing areas
 - c. Dry storage areas
 - d. Breakroom areas

Answer: b

Section: 11

Learning Objective: 11 Identify requirements for handwashing sinks and accessibility.

8. What is an acceptable method for drying hands at a handwashing station?
- a. A common-cloth towel
 - b. A cold air hand dryer
 - c. A continuous towel system
 - d. A freshly laundered apron

Answer: c

Section: 11

Learning Objective: 11 Identify requirements for handwashing sinks and accessibility.

9. Food contact surfaces must be easy to clean, durable, resistant to damage, and thick.
- a. porous.
 - b. smooth.
 - c. absorbent.

Answer: c

Section: 11

Learning Objective: 11 Identify whether equipment meets approved standards for foodservice equipment.

10. Which organization develops standards for the sanitary design and construction of foodservice equipment?
- a. USDA
 - b. NSF
 - c. FDA
 - d. EPA

Answer: b

Section: 11

Learning Objective: 11 Identify whether equipment meets approved standards for foodservice equipment.

11. Organizations that certify or classify that foodservice equipment meets sanitary design and construction standards must be accredited by the
- a. Edison Testing Laboratories (ETL).
 - b. Underwriters Laboratory (UL).
 - c. National Sanitation Foundation (NSF).
 - d. American National Standards Institute (ANSI).

Answer: d

Section: 11

Learning Objective: 11 Identify whether equipment meets approved standards for foodservice equipment.

12. What requirement must be met when selecting and installing dishwashing machines?
- a. Plumbing to the machine should be as short as possible.
 - b. Machines must be mounted 4" (10 centimeters) off the floor.
 - c. Machine thermometers must be scaled in increments no greater than 10°F (-12°C).
 - d. Machines should be mounted as close to three-compartment sinks as possible.

Answer: a

Section: 11

Learning Objective: 11 Explain requirements for installing equipment.

13. How high above the floor should floor-mounted equipment be?
- a. At least 1 inch (3 centimeters)
 - b. At least 2 inches (5 centimeters)
 - c. At least 4 inches (10 centimeters)
 - d. At least 6 inches (15 centimeters)

Answer: d

Section: 11

Learning Objective: 11 Explain requirements for installing equipment.

14. How high must legs be on table-mounted equipment?
- a. At least 1 inch (3 centimeters)
 - b. At least 2 inches (5 centimeters)
 - c. At least 4 inches (10 centimeters)
 - d. At least 6 inches (15 centimeters)

Answer: c

Section: 11

Learning Objective: 11 Explain requirements for installing equipment.

15. What is an approved source of potable water?
- a. Irrigation systems
 - b. Regularly tested private wells
 - c. Any public water main
 - d. Open, portable water containers

Answer: b

Section: 11

Learning Objective: 11 Identify whether equipment meets approved standards for foodservice equipment.

16. How often should private wells be tested?
- a. Once per year
 - b. Once every two years
 - c. Once every five years
 - d. Once every ten years

Answer: a

Section: 11

Learning Objective: 11 Identify whether equipment meets approved standards for foodservice equipment.

17. What is a cross-connection?
- a. A threaded faucet
 - b. A device that prevents a vacuum
 - c. A brass valve that mixes hot and cold water
 - d. A physical link between sources of safe and dirty water

Answer: d

Section: 11

Learning Objective: 11 Describe the proper operation of facilities and equipment.

18. To prevent backflow, a sink must be equipped with
- a. an air gap.
 - b. a vacuum assist.
 - c. an overflow drain.
 - d. a touchless control system.

Answer: a

Section: 11

Learning Objective: 11 Describe the proper operation of facilities and equipment.

19. A food handler drops the end of a hose into a mop bucket and turns the water on to fill it. What has the food handler done wrong?
- a. Prevented backflow
 - b. Created a cross-connection
 - c. Created an air-gap separation
 - d. Prevented atmospheric vacuuming

Answer: b

Section: 11

Learning Objective: 11 Describe the proper operation of facilities and equipment.

20. Which part of a sink prevents backflow of dirty water?
- a. Air gap
 - b. Tap valves
 - c. Floor grate
 - d. Aerator

Answer: a

Section: 11

Learning Objective: 11 Describe the proper operation of facilities and equipment.

21. What is the best way to prevent backflow?
- a. Never create an air gap.
 - b. Attach hoses directly to faucets.
 - c. Do not use vacuum breakers.
 - d. Avoid creating a cross-connection.

Answer: d

Section: 11

Learning Objective: 11 Describe the proper operation of facilities and equipment.

22. What is the first step that should be taken if raw sewage has backed up around a floor drain?
- a. Service must be stopped.
 - b. The operation must be closed.
 - c. The affected area must be closed.
 - d. The regulatory authority must be notified.

Answer: c

Section: 11

Learning Objective: 11 List requirements for proper garbage and biohazard removal.

23. What is the lighting intensity requirement for a prep area?
- a. 10 foot-candles (108 lux)
 - b. 20 foot-candles (215 lux)
 - c. 50 foot-candles (540 lux)
 - d. 70 foot-candles (754 lux)

Answer: c

Section: 11

Learning Objective: 11 Explain requirements for installing equipment.

24. What is the lighting intensity requirement for a dishwashing area?
- a. 10 foot-candles (108 lux)
 - b. 20 foot-candles (215 lux)
 - c. 50 foot-candles (540 lux)
 - d. 70 foot-candles (754 lux)

Answer: b

Section: 11

Learning Objective: 11 Explain requirements for installing equipment.

25. What is the lighting intensity requirement inside a walk-in cooler?
- a. 10 foot-candles (108 lux)
 - b. 20 foot-candles (215 lux)
 - c. 50 foot-candles (540 lux)
 - d. 70 foot-candles (754 lux)

Answer: a

Section: 11

Learning Objective: 11 Explain requirements for installing equipment.

26. How can lighting sources be prevented from contaminating food?
- a. By using LED bulbs
 - b. By using halogen bulbs only
 - c. By using fluorescent bulbs
 - d. By using shatter-resistant bulbs

Answer: d

Section: 11

Learning Objective: 11 Explain requirements for installing equipment.

27. Grease and condensation buildup on surfaces can be avoided with correct
- a. garbage disposal.
 - b. ventilation.
 - c. sanitizing.
 - d. lighting.

Answer: b

Section: 11

Learning Objective: 11 Describe the proper operation of facilities and equipment.

28. What should employees do regularly to maintain ventilation hoods?
- a. Inspect fan belts.
 - b. Clean interior ductwork.
 - c. Clean grease extractors.
 - d. Disassemble and clean wall-mounted fans.

Answer: c

Section: 11

Learning Objective: 11 Describe the proper operation of facilities and equipment.

29. Outdoor garbage containers must be
- a. washed frequently.
 - b. kept covered with tight-fitting lids.
 - c. stored away from customer parking areas.
 - d. lined with plastic or wet-strength papers.

Answer: b

Section: 11

Learning Objective: 11 List requirements for proper garbage and biohazard removal.

30. Where should garbage cans be cleaned?
- a. In food storage areas
 - b. Next to food-prep areas
 - c. In dishwashing areas
 - d. Away from food and utensils

Answer: d

Section: 11

Learning Objective: 11 List requirements for proper garbage and biohazard removal.

31. When the kitchen garbage can was full, an employee placed the full garbage bag on a prep table and tied it securely. Then he carried it to the dumpster and disposed of it. What was done incorrectly?
- a. The employee waited until the garbage was full.
 - b. The bag was disposed of in a dumpster.
 - c. The bag was placed on a prep table.
 - d. The employee tied the bag shut.

Answer: c

Section: 11

Learning Objective: 11 List requirements for proper garbage and biohazard removal.

32. Kitchen equipment should be maintained regularly by
- a. qualified professionals.
 - b. appointed employees.
 - c. managers.
 - d. skilled owners.

Answer: a

Section: 11

Learning Objective: 11 List requirements for proper garbage and biohazard removal.

Section 12: Cleaning and Sanitizing

1. What must operations have to effectively clean up vomit and diarrhea?
 - a. Written procedures
 - b. Monthly health inspections
 - c. Specialized cleaning permits
 - d. Designated employees

Answer: a

Section: 12

Learning Objective: 12 Explain how and when to clean nonfood contact surfaces.

2. A food handler needs to clean a range hood. Which cleaner should they use?
 - a. Detergent
 - b. Degreaser
 - c. Delimer
 - d. Abrasive cleaner

Answer: b

Section: 12

Learning Objective: 12 Identify different types of cleaners and their uses.

3. Which cleaner should be used for removing the water scale in a steam table?
 - a. Detergent
 - b. Degreaser
 - c. Delimer
 - d. Abrasive cleaner

Answer: c

Section: 12

Learning Objective: 12 Identify different types of cleaners and their uses.

4. A dish washer needs to remove baked-on food from a pan. Which cleaner should they use?
- a. Detergent
 - b. Degreaser
 - c. Delimer
 - d. Abrasive cleaner

Answer: d

Section: 12

Learning Objective: 12 Identify different types of cleaners and their uses

5. A food handler needs to remove a fresh layer of dirt from the wall. What cleaner should they use?
- a. Detergent
 - b. Degreaser
 - c. Delimer
 - d. Abrasive cleaner

Answer: a

Section: 12

Learning Objective: 12 Identify different types of cleaners and their uses.

6. What is the definition of sanitizing?
- a. Washing a surface to a clean level
 - b. Using a cloth on a surface until it is clean
 - c. Lowering the amount of dirt on a surface to safe levels
 - d. Reducing the pathogens on a surface to safe levels

Answer: d

Section: 12

Learning Objective: 12 Describe different methods of sanitizing and their correct use.

7. What should be done to ensure that a chemical sanitizer being used on a food-prep surface is at the correct strength?
- a. Rinse it from the surface, and then apply it a second time.
 - b. Test the surface to confirm that there are no pathogens.
 - c. Heat it to the temperature recommended by the manufacturer.
 - d. Use a test kit to check the sanitizer's concentration when mixing it.

Answer: d

Section: 12

Learning Objective: 12 Describe different methods of sanitizing and their correct use.

8. Which factor impacts the effectiveness of chemical sanitizers?
- a. Color
 - b. Concentration
 - c. Air temperature
 - d. Storage container

Answer: b

Section: 12

Learning Objective: 12 Describe different methods of sanitizing and their correct use.

9. Surfaces can be sanitized using chemicals or
- a. heat.
 - b. alcohol.
 - c. acids.
 - d. disinfectants.

Answer: a

Section: 12

Learning Objective: 12 Describe different methods of sanitizing and their correct use.

10. What is the minimum temperature that water must be to sanitize surfaces?

- a. 140°F (60°C)
- b. 165°F (74°C)
- c. 171°F (77°C)
- d. 180°F (82°C)

Answer: c

Section: 12

Learning Objective: 12 Describe different methods of sanitizing and their correct use.

11. The three most common types of chemical sanitizers are chlorine, iodine, and

- a. quats.
- b. disinfectant.
- c. alcohol.
- d. steam.

Answer: a

Section: 12

Learning Objective: 12 Describe different methods of sanitizing and their correct use.

12. What can reduce the effectiveness of a chemical sanitizer?

- a. Leftover detergent
- b. Air temperature
- c. Density of equipment
- d. The water's oxygen level

Answer: a

Section: 12

Learning Objective: 12 Describe different methods of sanitizing and their correct use.

13. What is the contact time for chlorine sanitizer at 50-99 ppm?
- a. At least 5 seconds
 - b. At least 7 seconds
 - c. At least 10 seconds
 - d. At least 30 seconds

Answer: b

Section: 12

Learning Objective: 12 Describe different methods of sanitizing and their correct use.

14. What is the contact time for iodine sanitizer at 12.5-25 ppm?
- a. At least 5 seconds
 - b. At least 7 seconds
 - c. At least 10 seconds
 - d. At least 30 seconds

Answer: d

Section: 12

Learning Objective: 12 Describe different methods of sanitizing and their correct use.

15. Which item requires sanitizing?
- a. Flooring
 - b. Knives
 - c. Walls
 - d. Ovens

Answer: b

Section: 12

Learning Objective: 12 Describe how and when to clean and sanitize food contact surfaces and equipment.

16. Which surfaces must be both cleaned and sanitized?
- a. Walls
 - b. Cutting boards
 - c. Storage shelves
 - d. Garbage containers

Answer: b

Section: 12

Learning Objective: 12 Describe how and when to clean and sanitize food contact surfaces and equipment.

17. When should a food-contact surface be cleaned and sanitized?
- a. Every 6 hours
 - b. Before working with a different type of food
 - c. After the food handler changes gloves
 - d. At the end of the food handler's shift

Answer: b

Section: 12

Learning Objective: 12 Describe how and when to clean and sanitize food contact surfaces and equipment.

18. What is the correct way to clean and sanitize a prep table?
- a. Air-dry, remove food from surface, rinse, sanitize, clean
 - b. Remove food from surface, rinse, clean, sanitize, air-dry
 - c. Sanitize, remove food from surface, clean, rinse, air-dry
 - d. Remove food from surface, clean, rinse, sanitize, air-dry

Answer: d

Section: 12

Learning Objective: 12 Describe how and when to clean and sanitize food contact surfaces and equipment.

19. If a food-contact surface is in constant use, it should be cleaned and sanitized at least every
- a. 2 hours.
 - b. 4 hours.
 - c. 6 hours.
 - d. 8 hours.

Answer: b

Section: 12

Learning Objective: 12 Describe how and when to clean and sanitize food contact surfaces and equipment.

20. In a heat-sanitizing dishwashing machine, what is the minimum temperature for the final rinse?
- a. 152°F (67°C)
 - b. 180°F (82°C)
 - c. 192°F (89°C)
 - d. 200°F (93°C)

Answer: b

Section: 12

Learning Objective: 12 Describe how to clean and sanitize items in a dishwashing machine and three-compartment sink.

21. How often must dishwashing machines be checked for cleanliness?
- a. Once per hour
 - b. Once per day
 - c. Once per week
 - d. Once per month

Answer: b

Section: 12

Learning Objective: 12 Describe how to clean and sanitize items in a dishwashing machine and three-compartment sink.

22. What must be done before washing items in a dishwashing machine?

- a. Items must be prewashed.
- b. Items must be sanitized.
- c. Items must be washed and rinsed.
- d. Items must be rinsed, scraped, or soaked.

Answer: d

Section: 12

Learning Objective: 12 Describe how to clean and sanitize items in a dishwashing machine and three-compartment sink.

23. What must be done after washing items in a dishwashing machine?

- a. Items must be towel dried.
- b. Items must be air-dried.
- c. Items must be dried by hand.
- d. Items must be dried in the machine.

Answer: b

Section: 12

Learning Objective: 12 Describe how to clean and sanitize items in a dishwashing machine and three-compartment sink.

24. What is the first task when preparing to wash dishes in a three-compartment sink?

- a. Remove leftover food from the dishes.
- b. Fill the first sink with detergent and water.
- c. Clean and sanitize the sinks and drain boards.
- d. Make sure there is a working clock with a second hand.

Answer: c

Section: 12

Learning Objective: 12 Describe how to clean and sanitize items in a dishwashing machine and three-compartment sink.

25. The first step in cleaning and sanitizing items in a three-compartment sink is
- air-drying items.
 - washing items in detergent.
 - immersing items in sanitizer.
 - rinsing, scraping, or soaking items.

Answer: d

Section: 12

Learning Objective: 12 Describe how to clean and sanitize items in a dishwashing machine and three-compartment sink.

26. What should the water temperature be in the detergent compartment of a three-compartment sink?
- 70°F (21°C)
 - 90°F (32°C)
 - 110°F (43°C)
 - 165°F (74°C)

Answer: c

Section: 12

Learning Objective: 12 Describe how to clean and sanitize items in a dishwashing machine and three-compartment sink.

27. When should the sanitizer solution be changed in a three-compartment sink?
- After 10-15 minutes
 - When the concentration drops
 - When the water appears different
 - When dishes don't appear to be as clean

Answer: b

Section: 12

Learning Objective: 12 Describe how to clean and sanitize items in a dishwashing machine and three-compartment sink.

28. Why is it important to clean nonfood contact surfaces regularly?
- a. It prevents pests.
 - b. It is required by the FDA.
 - c. It reduces pathogens to safe levels.
 - d. It eliminates the need to sanitize them.

Answer: a

Section: 12

Learning Objective: 12 Explain how and when to clean nonfood contact surfaces.

29. What is the minimum distance that clean utensils, tableware, and equipment must be stored from the floor?
- a. 1 inch (3 centimeters)
 - b. 2 inches (5 centimeters)
 - c. 4 inches (10 centimeters)
 - d. 6 inches (15 centimeters)

Answer: d

Section: 12

Learning Objective: 12 Describe how to clean and sanitize items in a dishwashing machine and three-compartment sink.

30. How should glassware be stored after it has been cleaned and sanitized?
- a. Right side up
 - b. Upside down
 - c. Stacked but upside down
 - d. Unstacked but right side up

Answer: b

Section: 12

Learning Objective: 12 Describe how to clean and sanitize items in a dishwashing machine and three-compartment sink.

31. When pouring sanitizer from its original container into a spray bottle, the spray bottle must be labeled with the
- common name of the chemical.
 - expiration date of the chemical.
 - date the chemical was transferred.
 - name of the person who transferred the chemical.

Answer: a

Section: 12

Learning Objective: 12 Explain the requirements for safely using and storing cleaning tools and chemicals.

32. How should chemicals be stored?
- Above food
 - Away from prep areas
 - In food storage areas
 - With kitchenware

Answer: b

Section: 12

Learning Objective: 12 Explain the requirements for safely using and storing cleaning tools and chemicals.

33. Which feature is most important for a chemical storage area?
- Good lighting
 - Wall hooks
 - Nonskid floor mats
 - Emergency shower system

Answer: a

Section: 12

Learning Objective: 12 Explain the requirements for safely using and storing cleaning tools and chemicals.

34. What is the correct way to store mops in between uses?
- a. Propped in a corner
 - b. In a clean bucket
 - c. In a utility sink
 - d. Hanging on a hook

Answer: d

Section: 12

Learning Objective: 12 Explain the requirements for safely using and storing cleaning tools and chemicals.

35. A busser poured some cleaner from its original container into a smaller working container. What else does the busser need to do?
- a. Label the working container with its contents.
 - b. Read the safety data sheet (SDS) for the cleaner.
 - c. Use a new wiping cloth when first using the working container.
 - d. Note on the original container that some cleaner was put into a working container.

Answer: a

Section: 12

Learning Objective: 12 Explain the requirements for safely using and storing cleaning tools and chemicals.

36. What step must managers take after creating a master cleaning schedule and training staff on how to use it?
- a. Monitor the cleaning program.
 - b. Determine what should be cleaned.
 - c. Determine who should do each task.
 - d. Time staff on how long they take to clean.

Answer: a

Section: 12

Learning Objective: 12 Summarize how to develop a cleaning program.

37. What is the first step to developing an effective cleaning program?
- a. Hire cleaning personnel.
 - b. Create a master cleaning schedule.
 - c. Identify cleaning needs in the operation.
 - d. Purchase cleaning supplies and protective gear.

Answer: c

Section: 12

Learning Objective: 12 Summarize how to develop a cleaning program.

38. When must chemical sanitizers be available?
- a. When the operation is open to the public
 - b. During all hours of operation
 - c. At the beginning of each shift
 - d. Before a shift ends

Answer: b

Section: 12

Learning Objective: 12 Describe different methods of sanitizing and their correct use.

Section 13: Integrated Pest Management

1. A food handler who is receiving a food delivery observes signs of pests in the food. What should be done?
 - a. The head chef should be warned of the pests.
 - b. The food handler should remove all evidence of the pests.
 - c. The shipment should be refused and prevented from entering the operation.
 - d. The shipment should be stored outside the kitchen until a manager inspects it.

Answer: c

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

2. What is one way to keep an operation pest-free?
 - a. Seal all cracks in floors and walls.
 - b. Keep outdoor garbage containers open.
 - c. Clean up food spills at the end of each shift.
 - d. Store food and supplies one inch off the floor in storage.

Answer: a

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

3. What is a basic rule of an Integrated Pest Management program?
 - a. Work with a pest control operator.
 - b. Destroy pests on sight.
 - c. Use pesticides.
 - d. Set traps.

Answer: a

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

4. What is an important way to deny pests access to any operation?
- a. Use pesticides.
 - b. Use approved, reputable suppliers.
 - c. Set rodent traps.
 - d. Spray regularly for flies.

Answer: b

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

5. What size should the mesh in window screening be to effectively keep out pests?
- a. At least 2 mesh per square inch
 - b. At least 6 mesh per square inch
 - c. At least 10 mesh per square inch
 - d. At least 16 mesh per square inch

Answer: d

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

6. What scenario can lead to pest infestation?
- a. Storing recyclables in paper bags
 - b. Installing air curtains above doors
 - c. Rotating products using the FIFO method
 - d. Storing food at least 6 inches (15 centimeters) off the floor

Answer: a

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

7. How should garbage be handled to deny pests food and shelter?
- a. Leave outdoor containers uncovered to remove moisture.
 - b. Store garbage inside the kitchen to deny access to pests outside.
 - c. Remove garbage frequently so pests won't be attracted to it.
 - d. Keep recyclables close to the building to encourage removal.

Answer: c

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

8. What should be done when storing food and supplies to discourage pests?
- a. Store them against walls.
 - b. Store them at least 2 inches (5 centimeters) off the floor.
 - c. Rotate them in storage.
 - d. Store them on the floor.

Answer: c

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

9. What information should be recorded and shared with the pest control operator if pests are spotted at the operation?
- a. Color, weight, gender
 - b. Date, time, location
 - c. Size, type, number
 - d. Species, frequency, temperature

Answer: b

Section: 13

Learning Objective: 13 Identify signs of pest infestation and activity.

10. Dirt tracks are spotted along light-colored walls. What type of pest may be present?

- a. Roaches
- b. Centipedes
- c. Bees or wasps
- d. Mice or rats

Answer: d

Section: 13

Learning Objective: 13 Identify signs of pest infestation and activity.

11. Pepper-like black specks are found near the electrical motor in a refrigeration unit. What type of pest may be present?

- a. Roaches
- b. Rats
- c. Mice
- d. Flies

Answer: a

Section: 13

Learning Objective: 13 Identify signs of pest infestation and activity.

12. Holes are found in the ground around some quiet places along the building. What type of pest may be present?

- a. Roaches
- b. Rats
- c. Mice
- d. Flies

Answer: b

Section: 13

Learning Objective: 13 Identify signs of pest infestation and activity.

13. Nesting materials are found in a drawer under a prep table. What type of pest may be present?
- a. Wasps
 - b. Roaches
 - c. Rats
 - d. Mice

Answer: d

Section: 13

Learning Objective: 13 Identify signs of pest infestation and activity.

14. Why should an operation avoid purchasing and applying pesticides?
- a. They can accelerate an infestation.
 - b. They are illegal in most states.
 - c. It is not cost effective.
 - d. They can be harmful if applied incorrectly.

Answer: d

Section: 13

Learning Objective: 13 Explain considerations for storing and applying pesticides.

15. When should pesticides be applied?
- a. At the end of the shift
 - b. At the beginning of the shift
 - c. When staff is not there
 - d. During slow periods in the week

Answer: c

Section: 13

Learning Objective: 13 Explain considerations for storing and applying pesticides.

16. What should be done after pesticides have been applied?
- a. Wash, rinse, and sanitize food-contact surfaces.
 - b. Stay out of the establishment for 48 hours.
 - c. Have staff wear respirators if near sprayed areas.
 - d. Cover all equipment for 12 hours.

Answer: a

Section: 13

Learning Objective: 13 Explain considerations for storing and applying pesticides.

17. Who should store pesticides used in a facility?
- a. Pest control operators
 - b. General managers
 - c. Shift managers
 - d. Owner/Operators

Answer: a

Section: 13

Learning Objective: 13 Explain considerations for storing and applying pesticides.

18. Where should pesticides be kept if they are stored at the location?
- a. With equipment
 - b. In dry storage areas only
 - c. In their original containers
 - d. In new, clearly marked containers

Answer: c

Section: 13

Learning Objective: 13 Explain considerations for storing and applying pesticides.

19. Who should apply toxic pest control materials in a foodservice operation?
- a. A certified applicator
 - b. A shift manager
 - c. The general manager
 - d. The owner

Answer: a

Section: 13

Learning Objective: 13 Explain considerations for storing and applying pesticides.

20. What is the most effective way to eliminate pests that have entered the operation?
- a. Raise the heat in the operation after-hours.
 - b. Lower the heat in the operation after-hours.
 - c. Work with a licensed pest control operator (PCO).
 - d. Apply over-the-counter pesticides around the operation.

Answer: c

Section: 3

Learning Objective: 13 Summarize ways to prevent pest risks.

21. What should be considered when selecting a pest control operator (PCO)?
- a. The PCO's pricing
 - b. The PCO's insurance provider
 - c. Whether the PCO can provide service when the operation is closed
 - d. Whether the PCO has references

Answer: d

Section: 13

Learning Objective: Describe the criteria for selecting a pest control operator (PCO).

22. A restaurant manager notices bees frequently flying around the outdoor patio. What should be done to keep them away from customers who are dining on the patio?
- a. Stop the service of sugar-laden foods on the patio.
 - b. Install electronic insect eliminators at each patio table.
 - c. Hire a PCO to remove any hives in the area.
 - d. Have the manager spray insecticide around the perimeter.

Answer: c

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

23. What should be included in the PCO's treatment plan?
- a. Original blueprints of the facility
 - b. Any building defects that may be a barrier to treatment
 - c. Names of employees who will be in the building during treatment
 - d. Types of food processed in the operation

Answer: b

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

24. What is the greatest danger that pests pose to a foodservice operation?
- a. Damaged electrical wiring
 - b. Damaged supplies
 - c. Loss of customers
 - d. Spread of diseases

Answer: d

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

25. What is a sign that rats or mice may be present in the operation?
- a. Signs of gnawing in storage areas
 - b. A strong oily odor
 - c. Scurrying sounds when the operation is quiet
 - d. Glass breaking overnight

Answer: a

Section: 13

Learning Objective: 13 Identify signs of pest infestation and activity.

26. How should an operation prevent pests from entering through its pipes?
- a. Install air curtains at doorways.
 - b. Communicate regularly with utility providers.
 - c. Apply pesticides around any exposed pipes.
 - d. Cover floor drains with hinged grates.

Answer: d

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

27. What is a responsibility of a licensed pest control operator?
- a. Seal any holes in the building.
 - b. Check deliveries for signs of pests.
 - c. Be present for health inspections.
 - d. Keep records of pest control measures.

Answer: d

Section: 13

Learning Objective: 13 Describe the criteria for selecting a pest control operator (PCO).

28. What should managers do to support the PCO's initial inspection?
- a. Give them partial access to the building.
 - b. Require all staff to be on-site.
 - c. Provide building plans and equipment layouts.
 - d. Deep clean the premises before the inspection.

Answer: c

Section: 13

Learning Objective: 13 Describe the criteria for selecting a pest control operator (PCO).

29. Employees at a restaurant are trained to store mops on hooks and empty water from the mop buckets before closing each night. What basic rule of an integrated pest management system does this demonstrate?
- a. Deny pests access to the operation.
 - b. Deny pests food, water, and shelter.
 - c. Follow documented processes.
 - d. Provide staff with training.

Answer: b

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

30. How should operations prevent pests from entering an establishment with a delivery?
- a. Only accept deliveries during the day when pests are visible.
 - b. Use the first-in-first-out method after adding new products to storage.
 - c. Check deliveries before they enter your operation.
 - d. Isolate newly delivered products for 24 hours before adding to storage.

Answer: c

Section: 13

Learning Objective: 13 Summarize ways to prevent pest risks.

Section 14: Food Safety Regulations and Standards

1. Which government agency is responsible for issuing the Food Code?
 - a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies

Answer: a

Section: 14

Learning Objective: 14 Summarize the roles of federal, state, and local regulatory agencies as related to food safety.

2. Which government agency is responsible for inspecting all food except meat, poultry, and eggs?
 - a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies

Answer: a

Section: 14

Learning Objective: 14 Summarize the roles of federal, state, and local regulatory agencies as related to food safety.

3. Which government agency regulates food transported across state lines?
 - a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies

Answer: b

Section: 14

Learning Objective: 14 Summarize the roles of federal, state, and local regulatory agencies as related to food safety.

4. Which government agency inspects meat, poultry, and eggs?
- a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies

Answer: b

Section: 14

Learning Objective: 14 Summarize the roles of federal, state, and local regulatory agencies as related to food safety.

5. Which government agency investigates foodborne-illness outbreaks for other agencies?
- a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies

Answer: c

Section: 14

Learning Objective: 14 Summarize the roles of federal, state, and local regulatory agencies as related to food safety.

6. Which government agency conducts an inspection program for cruise ships?
- a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies

Answer: c

Section: 14

Learning Objective: 14 Summarize the roles of federal, state, and local regulatory agencies as related to food safety.

7. Which government agency inspects foodservice operations?
- a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies

Answer: d

Section: 14

Learning Objective: 14 Summarize the roles of federal, state, and local regulatory agencies as related to food safety.

8. Which government agency is responsible for enforcing requirements in foodservice establishments?
- a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies

Answer: d

Section: 14

Learning Objective: 14 Summarize the roles of federal, state, and local regulatory agencies as related to food safety.

9. Which government agency reviews an operation's HACCP plan?
- a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies

Answer: d

Section: 14

Learning Objective: 14 Summarize the roles of federal, state, and local regulatory agencies as related to food safety.

10. Which government agency investigates complaints and illnesses against a foodservice operation?
- a. FDA
 - b. USDA
 - c. CDC
 - d. State and local regulatory agencies

Answer: d

Section: 14

Learning Objective: 14 Summarize the roles of federal, state, and local regulatory agencies as related to food safety.

11. What is the purpose of a regulatory inspection?
- a. To correct deficiencies
 - b. To ensure the quality of the food served
 - c. To ensure that an operation is meeting minimum standards
 - d. To produce a grade so the public can rate the establishment

Answer: c

Section: 14

Learning Objective: 14 Describe the importance of regulatory inspections and self-inspections.

12. What type of foodservice operation is subject to a regulatory inspection?
- a. Full-service operations
 - b. Quick-service operations
 - c. All operations that serve food
 - d. All operations that serve high-risk customers

Answer: c

Section: 14

Learning Objective: 14 Describe the importance of regulatory inspections and self-inspections.

13. What is the most critical risk designation used by a regulatory authority during an inspection?
- a. Priority item
 - b. Priority foundation item
 - c. Core item
 - d. Basis item

Answer: a

Section: 14

Learning Objective: 14 State the key components of an inspection.

14. Which risk designation used by a regulatory authority during an inspection relates to general sanitation?
- a. Priority item
 - b. Priority foundation item
 - c. Core item
 - d. Basis item

Answer: c

Section: 14

Learning Objective: 14 State the key components of an inspection.

15. Having soap at a handwashing sink has which risk designation when inspecting an establishment?
- a. Priority item
 - b. Priority foundation item
 - c. Core item
 - d. Basis item

Answer: b

Section: 14

Learning Objective: 14 State the key components of an inspection.

16. What is the minimum interval for the inspection of a foodservice establishment by a regulatory agency?
- a. At least once every six months
 - b. At least once per year
 - c. At least once every two years
 - d. At least once every five years

Answer: a

Section: 14

Learning Objective: 14 State the key components of an inspection.

17. What is a benefit of a self-inspection?
- a. Improved food quality
 - b. Reduction in the frequency of formal health inspections
 - c. Decrease in need for liability insurance
 - d. Shorter formal inspections by regulatory agencies

Answer: a

Section: 14

Learning Objective: 14 Describe the importance of regulatory inspections and self-inspections.

18. When will health inspectors typically arrive?
- a. During service
 - b. In the morning
 - c. Without warning
 - d. After notifying the operation

Answer: c

Section: 14

Learning Objective: 14 State the key components of an inspection.

19. What can be a consequence of refusing entry to a health inspector?
- a. Revocation of the operation's permit
 - b. An increase in inspection frequency
 - c. Jail time
 - d. Lawsuits

Answer: a

Section: 14

Learning Objective: 14 State the key components of an inspection.

20. What records might a health inspector reasonably request?
- a. OSHA violations
 - b. Purchasing records
 - c. Employee records
 - d. Financial records

Answer: b

Section: 14

Learning Objective: 14 State the key components of an inspection.

21. What does a manager's signature on a health inspection form indicate?
- a. Acknowledgment that they received it
 - b. Agreement to violations documented
 - c. Agreement to outcomes agreed upon
 - d. Admittance to violation of the law

Answer: a

Section: 14

Learning Objective: 14 State the key components of an inspection.

22. When must violations of priority items typically need to be acted upon?
- a. Within 12 hours
 - b. Within 24 hours
 - c. Within 48 hours
 - d. Within 72 hours

Answer: d

Section: 14

Learning Objective: 14 Identify corrective actions to take when found to be in violation of a regulation.

23. What is an example of a hazard that could result in closure of the operation?
- a. Significant lack of refrigeration
 - b. Evidence that pests are in the establishment
 - c. Interruption of electrical service for two hours or less
 - d. A foodborne-illness complaint against the establishment

Answer: a

Section: 14

Learning Objective: 14 Identify corrective actions to take when found to be in violation of a regulation.

24. A manager receives an inspection report. What should they do first?
- a. Make a copy of the report.
 - b. Study the report.
 - c. Discuss a follow up visit.
 - d. Contact a legal representative to help review the report.

Answer: b

Section: 14

Learning Objective: 14 State the key components of an inspection.

25. What organization conducts research into the causes of foodborne-illnesses and assists with investigating outbreaks?
- a. CDC
 - b. FDA
 - c. PHS
 - d. USDA

Answer: c

Section: 14

Learning Objective: 14 Summarize the roles of federal, state, and local regulatory agencies as related to food safety.

26. A regulatory inspector arrives during lunch service. What should the manager do first?
- a. Present any food safety certifications.
 - b. Notify the kitchen staff.
 - c. Ask the inspector for identification.
 - d. Grant the inspector access to the building.

Answer: c

Section: 14

Learning Objective: 14 State the key components of an inspection.

27. A large cockroach infestation and extensive lack of refrigeration can result in
- a. increased licensing fees.
 - b. decreased inspection requirements.
 - c. closure of the operation by the regulatory authority.
 - d. a delay of an inspection until the situation is corrected.

Answer: c

Section: 14

Learning Objective: 14 Identify corrective actions to take when found to be in violation of a regulation.

28. A restaurant manager wants to conduct a self-inspection. Which guideline should they follow?
- Identify the top three risks to food safety.
 - Use the same checklist that the regulatory authority uses.
 - Conduct it when the operation is closed.
 - Repeat the self-inspection once each year.

Answer: b

Section: 14

Learning Objective: 14 Describe the importance of regulatory inspections and self-inspections.

29. An operation receives an inspection report that notes a sanitation deficiency related to the employee restroom. What action should the manager take?
- Review the master cleaning schedule.
 - File an appeal with the regulatory authority.
 - Conduct a self-inspection and compare the results.
 - Fix the deficiency within 45 days.

Answer: a

Section: 14

Learning Objective: 14 Identify corrective actions to take when found to be in violation of a regulation.

30. What would the regulatory authority consider a core item violation?
- Food being held at incorrect temperatures
 - Dirty floors
 - Improper handwashing
 - Lack of dish detergent

Answer: b

Section: 14

Learning Objective: 14 State the key components of an inspection.

Section 15: Staff Food Safety Training

1. When should staff be trained on food safety?
 - a. After the first year
 - b. After their first six months
 - c. After a few weeks on the job
 - d. Immediately after being hired

Answer: d

Section: 15

Learning Objective: 15 Discuss the importance of initial and ongoing food safety training.

1. How can training needs be identified in a new hire?
 - a. By asking them
 - b. By talking to their coworkers
 - c. By observing job performance
 - d. By talking to their previous employer

Answer: c

Section: 15

Learning Objective: 15 Discuss the importance of initial and ongoing food safety training.

1. Which staff members need general food safety knowledge?
 - a. All staff members
 - b. Part-time staff
 - c. Front-of-house staff
 - d. Back-of-house staff

Answer: a

Section: 15

Learning Objective: 15 Discuss the importance of initial and ongoing food safety training.

4. Which food safety topic is it critical for staff to receive training on?
- a. How to conduct a self-inspection
 - b. How to identify an approved supplier
 - c. How to identify specific foodborne-illnesses
 - d. How to label food for storage

Answer: d

Section: 15

Learning Objective: 15 List critical food safety knowledge needed by food handlers.

5. When should staff be retrained in food safety?
- a. Periodically
 - b. Weekly
 - c. Monthly
 - d. Annually

Answer: a

Section: 15

Learning Objective: 15 Identify the need to retrain staff in food safety.

6. What does the success of on-the-job training depend on?
- a. The skill of the trainer
 - b. The learning style of the learner
 - c. The skill level of the learner
 - d. The humor of the trainer

Answer: a

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

7. What can make classroom training more effective?
- a. Using a lecture style format
 - b. Using an activity-based approach
 - c. Relying on telling rather than doing
 - d. Penalizing mistakes made in class

Answer: b

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

8. What can make the use of games in classroom training more effective?
- a. If they are fun and easy to play
 - b. If they are overly challenging
 - c. If they are creating excessive competition
 - d. If they favor people who are more social

Answer: a

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

9. What can make demonstrations in classroom training more effective?
- a. Modeling a task before providing instructions
 - b. Following a Tell, Show, and Do approach
 - c. Letting the learner identify the task steps before starting
 - d. Letting the learner practice a task without feedback

Answer: b

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

10. When is technology-based training most appropriate?
- a. When budget does not matter
 - b. When teaching millennials
 - c. When staff members need to learn at their own pace
 - d. When instructors are not available to teach the information

Answer: c

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

11. What should a manager do after a staff member completes food safety training?
- a. Document it.
 - b. Consider their training complete.
 - c. Cross-train them on other job functions.
 - d. Provide them with a certificate.

Answer: a

Section: 15

Learning Objective: 15 Explain the requirement to maintain food safety training records.

12. How can training needs be identified for an employee who has worked at an operation for over a year?
- a. Ask the employee to self-assess their food safety knowledge.
 - b. Ask the regulatory authority to conduct an inspection while the employee is working.
 - c. Observe the employee's performance on the job.
 - d. Observe how other staff members interact with the employee.

Answer: c

Section: 15

Learning Objective: 15 Identify the need to retrain staff in food safety.

13. What is the purpose of documenting employee food safety training?
- a. A health inspector might ask for it.
 - b. The CDC requires it.
 - c. It demonstrates the employee's commitment.
 - d. It is good for public relations.

Answer: a

Section: 15

Learning Objective: 15 Explain the requirement to maintain food safety training records.

14. What critical knowledge should staff have about cleaning and sanitizing?
- a. How to handle garbage
 - b. How to order chemicals from a supplier
 - c. When to conduct a self-inspection
 - d. When to refuse a delivery

Answer: a

Section: 15

Learning Objective: 15-2 List critical food safety knowledge needed by food handlers.

15. What critical knowledge should staff have about controlling time and temperature?
- a. How to identify and prevent food allergens
 - b. How to hold and store TCS food
 - c. How to wash and dry produce
 - d. How to accept and store invoices

Answer: b

Section: 15

Learning Objective: 15 List critical food safety knowledge needed by food handlers.

16. What should a manager do after an employee has been fully trained?
- a. Shift their focus to new or untrained staff.
 - b. Ask the employee to mentor untrained staff.
 - c. Require the employee to repeat the training every year.
 - d. Monitor the employee to make sure they continue to follow procedures.

Answer: d

Section: 15

Learning Objective: 15 Discuss the importance of monitoring staff members after training them in food safety.

17. What does a food handler certification represent?
- a. Permission to operate a foodservice operation
 - b. Proof that an operation has passed their regulatory authority's inspections
 - c. Proof that an employee has received proper food safety training
 - d. Immunity from a foodborne-illness outbreak

Answer: c

Section: 15

Learning Objective: 15 Explain the requirement to maintain food safety training records.

18. After watching employees incorrectly wash their hands during dinner service, a manager decides to retrain staff on proper handwashing procedures. What is this an example of?
- a. Monitoring on the job performance
 - b. Documenting training opportunities
 - c. Selecting appropriate training methods
 - d. Disciplining employees

Answer: a

Section: 15

Learning Objective: 15 Identify the need to retrain staff in food safety.

19. What critical knowledge should staff have about controlling cross-contamination?
- a. What is appropriate work attire
 - b. What to do for people who have food allergies
 - c. How to properly cool and reheat food
 - d. How to calculate a product's use-by date

Answer: b

Section: 15

Learning Objective: 15 List critical food safety knowledge needed by food handlers.

20. What is general food safety knowledge that all employees of a foodservice operation should know?
- a. How to inspect deliveries
 - b. How to order cleaning supplies
 - c. How to store food in a cooler
 - d. How to properly wash hands

Answer: d

Section: 15

Learning Objective: 15 List critical food safety knowledge needed by food handlers.

21. What is the recommended length for an instructional video segment?
- a. 3-5 minutes
 - b. 7-10 minutes
 - c. 15-30 minutes
 - d. 45-90 minutes

Answer: a

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

22. Research on learning motivation recommends which strategy to capture and hold a learner's attention?
- a. Using a variety of media
 - b. Randomly selecting learners to answer questions
 - c. Presenting information in a lecture format
 - d. Administering frequent exams

Answer: a

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

23. A manager wants to demonstrate the process of sanitizing a prep table for a new hire. What should the trainer do first?
- a. Show the new hire how to sanitize the table.
 - b. Create a record of the training session.
 - c. Tell the new hire how to sanitize the table.
 - d. Allow the new hire to practice sanitizing.

Answer: c

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

24. What can instructors do to make videos an effective training tool?
- a. Show videos that are at least 30 minutes in length.
 - b. Assign videos only as homework.
 - c. Provide questions for the learners to consider as they watch.
 - d. Reprimand learners who aren't paying attention.

Answer: c

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

25. Why is it important to monitor employees after initial training?
- a. People might pay less attention to actions that seem intuitive.
 - b. People will do the wrong thing if they think no one is watching.
 - c. Monitoring allows a manager to gauge an employee's work ethic.
 - d. Most employees won't retain what they learned in initial training.

Answer: a

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

26. What is a potential disadvantage of on-the-job (OTJ) training?
- a. It works best for large groups.
 - b. It has a low success rate.
 - c. It requires hiring an outside contractor.
 - d. It takes experienced staff members away from their jobs.

Answer: d

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

27. For whom is asynchronous training most appropriate?
- a. Learners who want on-the-job training opportunities
 - b. Learners who want to get together in a classroom
 - c. Learners who do not speak English as a first language
 - d. Learners who need to complete the training at different times

Answer: d

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

28. What is the biggest advantage of technology-based training?
- a. It is effective for all learners.
 - b. It can be delivered when and where the staff needs it.
 - c. It is one of the least expensive training methods.
 - d. It does not require an experienced trainer.

Answer: b

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

29. What is an important tool in preventing employees from experiencing the “forgetting curve”?
- a. Passion for food safety
 - b. Repetition of key information
 - c. Memorization of the food safety facts
 - d. Persuasion of the dangers of foodborne-illness

Answer: b

Section: 15

Learning Objective: 15 Discuss the importance of initial and ongoing food safety training.

30. A trainer divides learners into small groups and assigns a food safety topic to each group. After learners read about the topic with their group members, they rotate into new groups. Then they teach their new group members about the topic they researched with their previous group. What activity-based teaching strategy is the trainer using?
- a. Role-playing
 - b. Guided discussion
 - c. Jigsaw design
 - d. Demonstrations

Answer: c

Section: 15

Learning Objective: 15 Summarize different ways to train staff when teaching food safety.

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National Restaurant Association Education Foundation

<https://restaurant.org/>

For additional practice tests, section information, please login into the following site:

<https://www.servsafe.com/home>

Additional Practice Tests available online:

<https://www.youtube.com/> Search ServSafe practice test