chapter 1
Providing Safe Food

ServSafe
National Restaurant Association

Providing Safe Food

Objectives:

- Recognize the importance of food safety
- Understand how food becomes unsafe
- Identify TCS food
- Recognize the risk factors for foodborne illness
- Understand important prevention measures for keeping food safe

Challenges to Food Safety

A foodborne illness is a disease transmitted to people through food.

An illness is considered an outbreak when:

- Two or more people have the same symptoms after eating the same food
- An investigation is conducted by state and local regulatory authorities
- The outbreak is confirmed by laboratory analysis

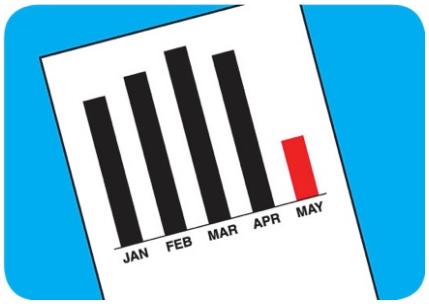
Challenges to Food Safety

Challenges include:

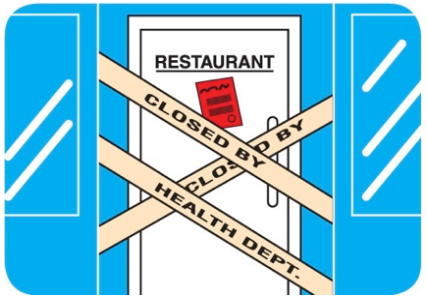
- Time and money
- Language and culture
- Literacy and education
- Pathogens
- Unapproved suppliers
- High-risk customers
- Staff turnover

Costs of Foodborne Illness

Costs of a foodborne illness to an operation:



Loss of customers and sales



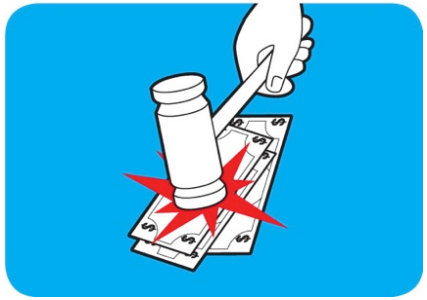
Loss of reputation

Negative media exposure

Lowered staff morale

Costs of Foodborne Illness

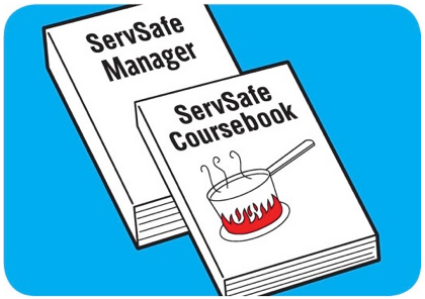
Costs of a foodborne illness to an operation:



Lawsuits and legal fees

Staff missing work

Increased insurance premiums

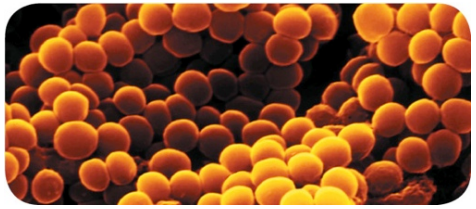


Staff retraining

How Foodborne Illnesses Occur

Unsafe food is the result of contamination:

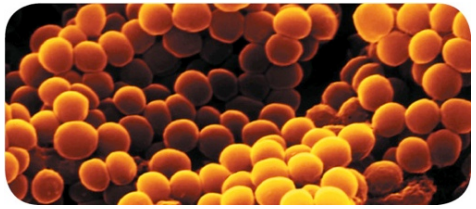
- Biological
- Chemical
- Physical



Contaminants

Biological contaminants:

- Bacteria
- Viruses
- Parasites
- Fungi



Contaminants

Chemical contaminants:

- Cleaners
- Sanitizers
- Polishes

Contaminants

Physical hazards:

- Metal shavings
- Staples
- Bandages
- Glass
- Dirt
- Natural objects (e.g., fish bones in a fillet)

How Food Becomes Unsafe

Five 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
5. Practicing poor personal hygiene

How Food Becomes Unsafe

Time-temperature abuse

Cross-contamination

Poor personal hygiene

Poor cleaning and sanitizing

How Food Becomes Unsafe

Time-temperature abuse:

- When food has stayed too long at temperatures good for pathogen growth

How Food Becomes Unsafe

Food has been time-temperature abused when:

- It has not been held or stored at correct temperatures
- It is not cooked or reheated enough to kill pathogens
- It is not cooled correctly

How Food Becomes Unsafe

Cross-contamination:

- When pathogens are transferred from one surface or food to another

How Food Becomes Unsafe

Cross-contamination can cause a foodborne illness when:

- Contaminated ingredients are added to food that receives no further cooking
- Ready-to-eat food touches contaminated surfaces
- A food handler touches contaminated food and then touches ready-to-eat food
- Contaminated cleaning cloths touch food-contact surfaces

How Food Becomes Unsafe

Poor personal hygiene can cause a foodborne illness when food handlers:

- Fail to wash their hands correctly after using the restroom
- Cough or sneeze on food
- Touch or scratch wounds and then touch food
- Work while sick

How Food Becomes Unsafe

Poor cleaning and sanitizing:

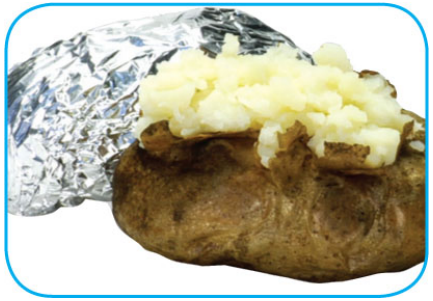
- Equipment and utensils are not washed, rinsed, and sanitized between uses
- Food contact surfaces are wiped clean instead of being washed rinsed, and sanitized
- Wiping cloths are not stored in a sanitizer solution between uses
- Sanitizer solution was not prepared correctly

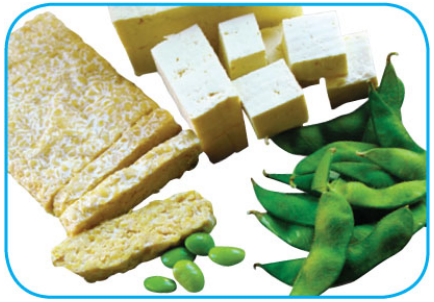
Food Most Likely to Become Unsafe

TCS food:

Food Most Likely to Become Unsafe

TCS food:






Ready-to-Eat Food

Ready-to-eat food is food that can be eaten without further:

- Preparation
- Washing
- Cooking

Ready-to-eat food includes:

- Cooked food
- Washed fruit and vegetables
- Deli meat
- Bakery items
- Sugar, spices, and seasonings

Populations at High Risk for Foodborne Illnesses

These people have a higher risk of getting a foodborne illness:

- Elderly people
- Preschool-age children
- People with compromised immune systems

Keeping Food Safe

Focus on these measures:

- Controlling time and temperature
- Preventing cross-contamination
- Practicing personal hygiene
- Purchasing from approved, reputable suppliers
- Cleaning and sanitizing

Keeping Food Safe

Training and monitoring:

- Train staff to follow food safety procedures
- Provide initial and ongoing training
- Provide all staff with general food safety knowledge
- Provide job specific food safety training
- Retrain staff regularly
- Monitor staff to make sure they are following procedures
- Document training

Keeping Food Safe

Government agencies:

- The Food and Drug Administration (FDA)
- U.S. Department of Agriculture (USDA)
- Centers for Disease Control and Prevention (CDC)
- U.S. Public Health Service (PHS)
- State and local regulatory authorities

chapter 2
Forms of Contamination

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You Can Prevent Contamination

Objectives:

- Biological, chemical, and physical contaminants and how to prevent them
- How to prevent the deliberate contamination of food
- How to respond to a foodborne-illness outbreak
- Common food allergens and how to prevent reactions to them

How Contamination Happens

Contaminants come from a variety of places:

- Animals we use for food
- Air, contaminated water, and dirt
- People
  - Deliberately
  - Accidentally

How Contamination Happens

People can contaminate food when:

- They don't wash their hands after using the restroom
- They are in contact with a person who is sick
- They sneeze or vomit onto food or food contact surfaces
- They touch dirty food-contact surfaces and equipment and then touch food

Biological Contamination

Microorganism:

- Small, living organism that can be seen only with a microscope

Pathogen:

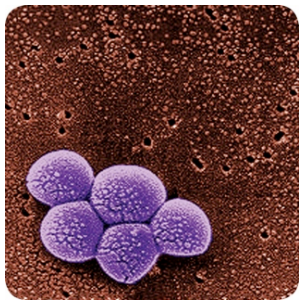
- Harmful microorganism
- Make people sick when eaten or produce toxins that cause illness

Toxin:

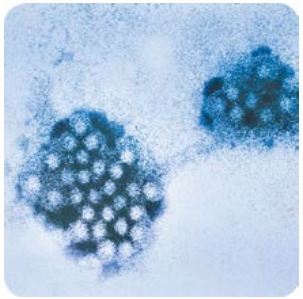
- Poison

Biological Contamination

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

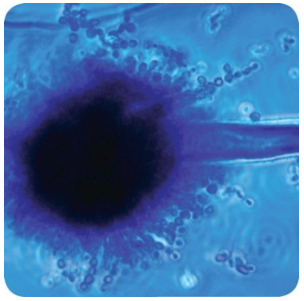


Bacteria



Viruses

Parasites



Fungi

Biological Contamination

Common symptoms of foodborne illness:

- Diarrhea
- Vomiting
- Fever
- Nausea
- Abdominal cramps
- Jaundice (yellowing of skin and eyes)

Onset times:

- Depend on the type of foodborne illness
- Can range from 30 minutes to six weeks

The “Big Six” Pathogens

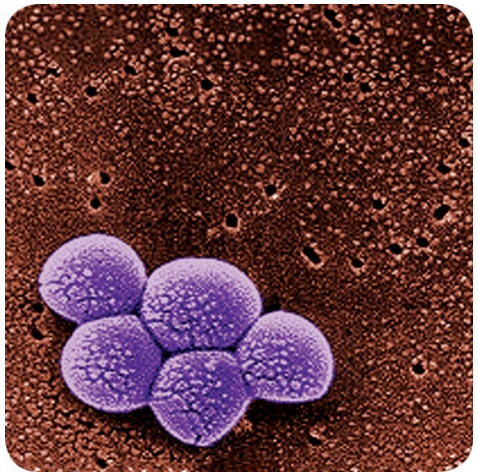
Food handlers diagnosed with illnesses from the “Big Six” pathogens cannot work in a foodservice operation while they are sick.

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

Bacteria: Basic Characteristics

Location:

- Found almost everywhere



Detection:

- Cannot be seen, smelled, or tasted

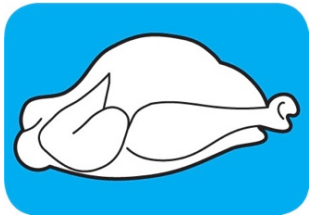
Growth:

- Will grow rapidly if FAT TOM conditions are correct

Prevention:

- Control time and temperature

What Bacteria Need to Grow



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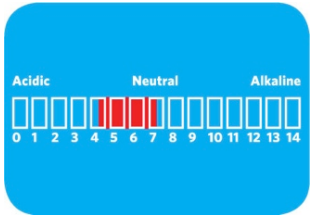
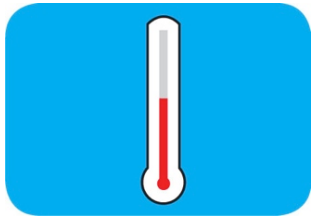
Food



A

Acidity

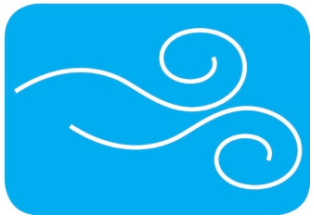


T

Temperature

T

Time



O

Oxygen

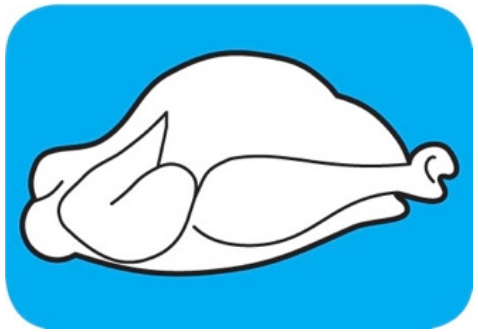
M

Moisture

What Bacteria Need to Grow

Food:

- Most bacteria need nutrients to survive
- TCS food supports the growth of bacteria better than other types of food



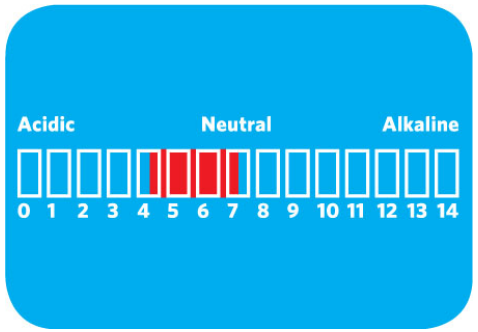
F

Food

What Bacteria Need to Grow

Acidity:

- Bacteria grow best in food that contains little or no acid



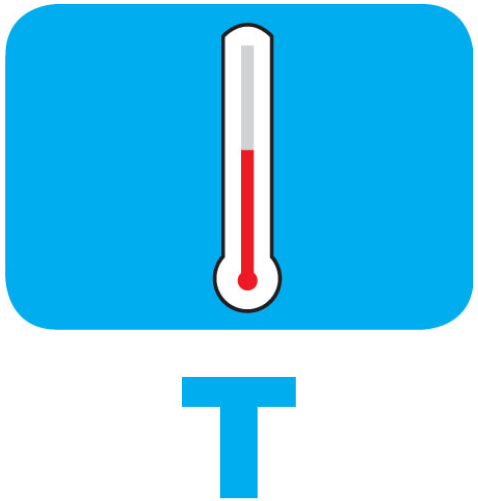
A

Acidity

What Bacteria Need to Grow

Temperature:

- Bacteria grow rapidly between 41˚F and 135˚F (5˚C and 57˚C)
  - This range is known as the temperature danger zone
- Bacteria growth is limited when food is held above or below the temperature danger zone

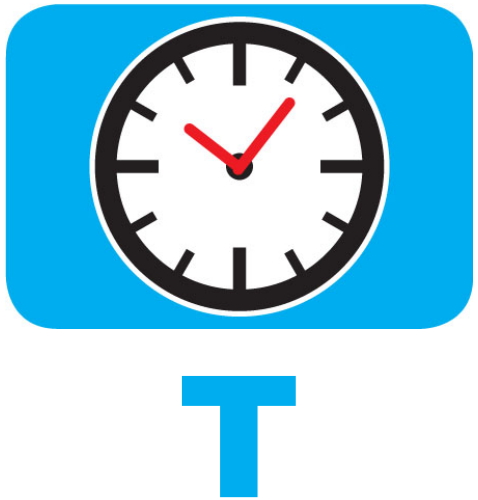


Temperature

What Bacteria Need to Grow

Time:

- Bacteria need time to grow
- The more time bacteria spend in the temperature danger zone, the greater chance they have to grow to unsafe levels.



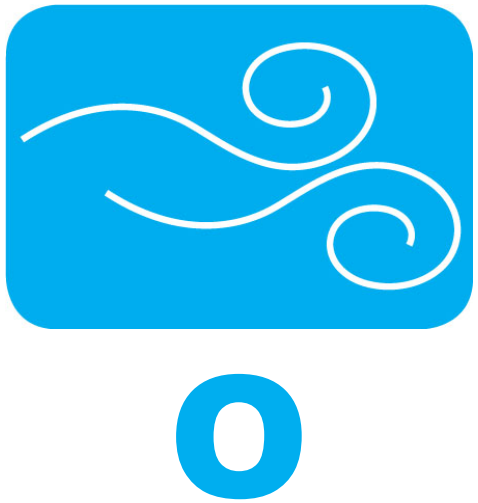
T

Time

What Bacteria Need to Grow

Oxygen:

- Some bacteria need oxygen to grow, while others grow when oxygen isn't there



Oxygen

What Bacteria Need to Grow

Moisture:

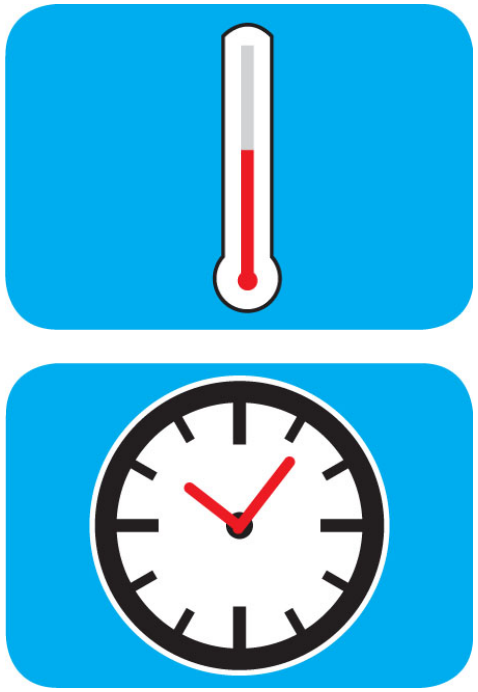
- Bacteria grow well in food with high levels of moisture
- a_w = water activity; the amount of moisture available in food for bacterial growth
- a_w scale ranges from 0.0 to 1.0
- Water has a water activity of 1.0

Moisture

Control FAT TOM

The conditions you can control:

- Temperature
  - Keep TCS food out of the temperature danger zone
- Time
  - Limit how long TCS food spends in the temperature danger zone



Major Bacteria That Cause Foodborne Illness

The FDA has identified four types of bacteria that cause severe illness and are highly contagious:

- *Salmonella* Typhi
- Nontyphoidal *Salmonella*
- *Shigella* spp.
- Shiga toxin-producing *Escherichia coli*

Major Bacteria That Cause Foodborne Illness

Bacteria: *Salmonella* Typhi (SAL-me-NEL-uh TI-fee)
Source: People

Food Linked with the Bacteria	Prevention Measures
• Ready-to-eat food • Beverages	• Exclude food handlers diagnosed with an illness caused by *Salmonella* Typhi from the operation
	• Wash hands
	• Cook food to minimum internal temperatures

Major Bacteria That Cause Foodborne Illness

Bacteria: Nontyphoidal *Salmonella* (SAL-me-NEL-uh)
Source: Farm animals, People

Food Linked with the Bacteria	Prevention Measures
• Poultry and eggs • Meat • Milk and dairy products • Produce	• Cook poultry and eggs to minimum internal temperatures
	• Prevent cross-contamination between poultry and ready-to-eat food
	• Keep food handlers who are vomiting or have diarrhea and have been diagnosed with an illness from nontyphoidal *Salmonella* out of the operation

Major Bacteria That Cause Foodborne Illness

Bacteria: *Shigella* spp. (shi-GEL-uh)
Source: Human feces

Food Linked with the Bacteria	Prevention Measures
• Food easily contaminated by hands, such as salads containing TCS food (potato, tuna, shrimp, macaroni, chicken)	• Exclude food handlers who have diarrhea and have been diagnosed with an illness caused by *Shigella* spp. from the operation • Exclude food handlers who have diarrhea from the operation
• Food that has made contact with contaminated water, such as produce	• Wash hands
	• Control flies inside and outside the operation

Major Bacteria That Cause Foodborne Illness

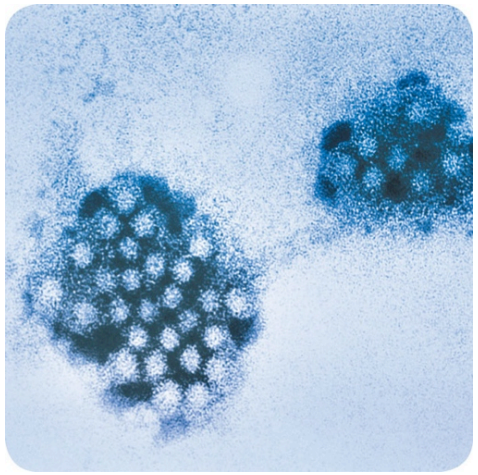
Bacteria: Shiga toxin-producing *Escherichia coli* (ess-chur-EE-kee-UH-KO-LI), also known as *E. coli*
Source: Intestines of cattle; infected people

Food Linked with the Bacteria	Prevention Measures
• Ground beef (raw and undercooked) • Contaminated produce	• Exclude food handlers who have diarrhea and have been diagnosed with a disease from the bacteria • Cook food, especially ground beef, to minimum internal temperatures
	• Purchase produce from approved, reputable suppliers
	• Prevent cross-contamination between raw meat and ready-to-eat food

Viruses: Basic Characteristics

Location:

- Carried by human beings and animals
  - Require a living host to grow
  - Do not grow in food
  - Can be transferred through food and remain infectious in food



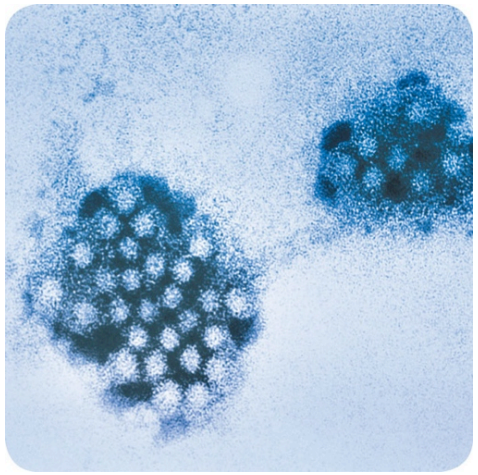
Sources:

- Food, water, or any contaminated surface
- Typically occur through fecal-oral routes

Viruses: Basic Characteristics

Destruction:

- Not destroyed by normal cooking temperatures
- Good personal hygiene must be practiced when handling food and food-contact surfaces
- Quick removal and cleanup of vomit is important



Major Viruses that Cause Foodborne Illnesses

The FDA has identified two viruses that are highly contagious and can cause severe illness:

- Hepatitis A
- Norovirus

Food handlers diagnosed with an illness from hepatitis A or Norovirus must not work in an operation while they are sick.

Major Viruses That Cause Foodborne Illness

Virus: Hepatitis A (HEP-a-TI-tiss)
Source: Human feces

Food Linked with the Virus	Prevention Measures
• Ready-to-eat food • Shellfish from contaminated water	• Exclude staff who have been diagnosed with hepatitis A from the operation.
	• Exclude staff who have jaundice for seven days or less from the operation.
	• Wash hands.
	• Avoid bare-hand contact with ready-to-eat food.
	• Purchase shellfish from approved, reputable suppliers.

Major Viruses That Cause Foodborne Illness

Virus: Norovirus (NOR-o-VI-rus)
Source: Human feces

Food Linked with the Virus	Prevention Measures
• Ready-to-eat food • Shellfish from contaminated water	• Exclude staff who are vomiting or have diarrhea and have been diagnosed with Norovirus from the operation.
	• Wash hands.
	• Avoid bare-hand contact with ready-to-eat food.
	• Purchase shellfish from approved, reputable suppliers.

Parasites: Basic characteristics

Location:

- Require a host to live and reproduce

Source:

- Seafood, wild game, and food processed with contaminated water, such as produce

Parasites: Basic characteristics

Prevention:

- Purchase food from approved, reputable suppliers
- Cook food to required minimum internal temperatures
- Fish that will be served raw or undercooked, must be frozen correctly by the manufacturer

Fungi: Basic Characteristics

Yeasts, molds, and mushrooms:

- Some molds and mushrooms produce toxins
- Throw out moldy food, unless mold is a natural part of the food
- Purchase mushrooms from approved, reputable suppliers

Biological Toxins

Origin:

- Naturally occur in certain plants, mushrooms, and seafood

Seafood toxins:

- Produced by pathogens found on certain fish
  - Tuna, bonito, mahimahi
  - Histamine produced when fish is time-temperature abused
- Occur in certain fish that eat smaller fish that have consumed the toxin
  - Barracuda, snapper, grouper, amberjack
  - Ciguatera toxin is an example

Biological Toxins

Illness:

- Symptoms and onset times vary with illness
- People will experience illness within minutes

General symptoms:

- Diarrhea or vomiting
- Neurological symptoms
  - Tingling in extremities
  - Reversal of hot and cold sensations
- Flushing of the face and/or hives
- Difficulty breathing
- Heart palpitations

Chemical Contaminants

Sources:

- Certain types of kitchenware and equipment (items made from pewter, copper, zinc, and some types of painted pottery)
- Cleaners, sanitizers, polishes, machine lubricants, and pesticides
- Deodorizers, first-aid products, and health and beauty products (hand lotions, hairsprays, etc.)

Chemical Contaminants

Symptoms:

- Vary depending on chemical consumed
- Most illnesses occur within minutes
- Vomiting and diarrhea are typical

Chemical Contaminants

Prevention:

- Only use chemicals approved for use in foodservice operations
- Purchase chemicals from approved, reputable suppliers
- Store chemicals away from prep areas, food-storage areas, and service areas.
  - Chemicals must be separated from food and food-contact surfaces by spacing and partitioning
- Chemicals must NEVER be stored above food or food-contact surfaces
- Use chemicals for their intended use and follow manufacturer's directions

Chemical Contaminants

Prevention:

- Only handle food with equipment and utensils approved for foodservice use
- Make sure the manufacturer's labels on original chemical containers are readable
- Keep MSDS current, and make sure they are accessible to staff at all times
- Follow the manufacturer's directions and local regulatory requirements when throwing out chemicals

Physical Contaminants

Sources:

- Common objects that get into food
  - Metal shavings from cans
  - Wood
  - Fingernails
  - Staples
  - Bandages
  - Glass
  - Jewelry
  - Dirt
- Naturally occurring objects such as fruit pits and bones

Physical Contaminants

Symptoms:

- Mild to fatal injuries are possible
- Cuts, dental damage, and choking
- Bleeding and pain

Prevention:

- Purchase food from approved, reputable suppliers
- Closely inspect food received
- Take steps to prevent physical contamination, including practicing good personal hygiene

Deliberate Contamination of Food

Groups who may attempt to contaminate food:

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

FDA defense tool:

- A.L.E.R.T.

Deliberate Contamination of Food

Assure	Make sure products received are from safe sources
Look	Monitor the security of products in the facility
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

Responding to a Foodborne-Illness Outbreak

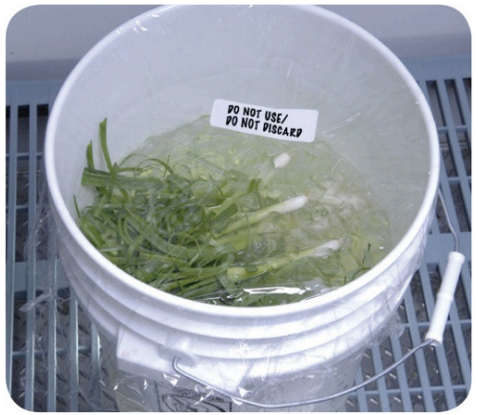
- Gather information
- Notify authorities
- Segregate product
- Document information
- Identify staff
- Cooperate with authorities
- Review procedures

Responding to a Foodborne-Illness Outbreak

- Gather information
  - Ask the person for general contact information
  - Ask the person to identify the food eaten
  - Ask for a description of symptoms
  - Ask when the person first got sick
- Notify authorities
  - Contact the local regulatory authority if an outbreak is suspected

Responding to a Foodborne-Illness Outbreak

- Segregate product
  - Set the suspected product aside if any remains
  - Include a label with “Do Not Use” and “Do Not Discard” on it
- Document the information
  - Log information about suspected product
  - Include a product description, product date, lot number, sell-by date, and pack size



Responding to a Foodborne-Illness Outbreak

- Identify staff
  - Keep a list of food handlers scheduled at time of incident
  - Interview staff immediately
- Cooperate with authorities
  - Provide appropriate documentation
- Review procedures
  - Determine if standards are being met
  - Identify if standards are not working

Food Allergens

Food allergen:

- A protein in a food or ingredient some people are sensitive to
- These proteins occur naturally
- When an enough of an allergen is eaten, an allergic reaction can occur

Food Allergens

Allergy symptoms:

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

Allergic reactions:

- Symptoms can become serious quickly
- A severe reaction, called anaphylaxis, can lead to death

Food Allergens

The Big Eight food allergens:

- Milk
- Eggs
- Soy
- Fish
- Tree nuts, such as almonds, walnuts, and pecans
- Peanuts
- Crustacean shellfish, including lobster, shrimp, and crab
- Wheat

Food Allergens

Know How To Read Food Labels

- Check food labels for allergens

Prevent Allergic Reactions

Service staff:

- Describe menu items to guests, identify any allergens in the item
- Suggest menu items without the allergen
- Clearly identify the guest's order for kitchen and service staff
- Deliver food separately to prevent cross-contact

Prevent Allergic Reactions

Kitchen staff:

- Avoid cross-contact
  - Do NOT cook different types of food in the same fryer oil
  - Do NOT put food on surfaces that have touched allergens

Prevent Allergic Reactions

Kitchen staff:

- Avoid cross-contact
  - Check recipes and ingredient labels
  - Wash, rinse, and sanitize cookware, utensils, and equipment before preparing an allergen special order
  - Make sure the allergen doesn't touch anything for customers with food allergies (food, beverages, utensils, etc.)
  - Wash your hands and change gloves before prepping food
  - Label food packaged on-site for retail use

chapter 3
The Safe Food Handler

ServSafe
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The Safe Food Handler

Objectives:

- Avoiding personal behaviors that can contaminate food
- Washing and caring for hands
- Dressing for work and handling work clothes
- Limiting where staff can eat, drink, smoke, and chew gum or tobacco
- Preventing staff who may be carrying pathogens from working with or around food, or from working in the operation

How Food Handlers Can Contaminate Food

Food handlers can contaminate food when they:

- Have a foodborne illness
- Have wounds that contain a pathogen
- Sneeze or cough
- Have contact with a person who is sick
- Touch anything that may contaminate their hands and don't wash them
- Have symptoms such as diarrhea, vomiting, or jaundice—a yellowing of the eyes or skin

How Food Handlers Can Contaminate Food

Actions that can contaminate food:

A. Scratching the scalp

B. Running fingers through hair

C. Wiping or touching the nose

D. Rubbing an ear

E. Touching a pimple or infected wound

F. Wearing a dirty uniform

G. Coughing or sneezing into the hand

H. Spitting in the operation

Managing a Personal Hygiene Program

Managers must focus on the following:

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

Handwashing

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

1. Wet hands and arms. Use running water as hot as you can comfortably stand. It should be at least 100˚ F(38˚ C).

2. Apply soap. Apply enough to build up a good lather.

3. Scrub hands and arms vigorously. Scrub them for 10 to 15 seconds. Clean 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. Consider using a paper towel to turn off the faucet and open the restroom door.

When to Wash Hands

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

- Using the restroom
- Handling raw meat, poultry, and seafood (before *and* after)
- Touching the hair, face, or body
- Sneezing, coughing, or using a tissue
- Eating, drinking, smoking, or chewing gum or tobacco
- Handling chemicals that might affect food safety

When to Wash Hands

Food handlers must wash their hands after:

- Taking out garbage
- Clearing tables or busing dirty dishes
- Touching clothing or aprons
- Handling money
- Leaving and returning to the kitchen/prep area.
- Handling service animals or aquatic animals
- Touching anything else that may contaminate hands

Hand Antiseptics

Hand antiseptics:

- Liquids or gels used to lower the number of pathogens on skin
- Must comply with the CFR and FDA standards
- Should be used only *after* handwashing
- Must NEVER be used in place of handwashing
- Should be allowed to dry before touching food or equipment

Hand Care

Requirements for food handlers:

Keep fingernails short and clean

Do NOT wear false nails

Do NOT wear nail polish

Infected Wounds or Cuts

Infected wounds or cuts:

- Contain pus
- Must be covered to prevent pathogens from contaminating food and food-contact surfaces

How a wound is covered depends on where it is located:

- Cover wounds on the hand or wrist with an impermeable cover, (e.g. bandage or finger cot) and then a single-use glove
- Cover wounds on the arm with an impermeable cover, such as a bandage
- Cover wounds on other parts of the body with a dry, tight-fitting bandage

Single-Use Gloves

Single-use gloves:

- Should be used when handling ready-to-eat food
  - Except when washing produce
  - Except when handling ready-to-eat ingredients for a dish that will be cooked to the correct temperature
- Must NEVER be used in place of handwashing
- Must NEVER be washed and reused
- Must fit correctly

Single-Use Gloves

How to use gloves:

- Wash hands before putting gloves on when starting a new task
- Select the correct glove size
- Hold gloves by the edge when putting them on
- Once gloves are on, check for rips or tears
- NEVER blow into gloves
- NEVER roll gloves to make them easier to put on

Single-Use Gloves

When to change gloves:

- As soon as they become dirty or torn
- Before beginning a different task
- After an interruption, such as taking a phone call
- After handling raw meat, seafood, or poultry and before handling ready-to-eat food

Bare-Hand Contact with Ready-to-Eat Food

Bare-hand contact with ready-to-eat food must be avoided unless:

- The food is an ingredient in a dish that does not contain raw meat, seafood, or poultry
  - The dish will be cooked to at least 145˚F (63˚C)
- The food is an ingredient in a dish containing raw meat, seafood, or poultry
  - The dish will be cooked to the required minimum internal temperature of the raw item(s)
- NEVER handle ready-to-eat food with bare hands when you primarily serve a high-risk population

Work Attire

Food handlers must:

- Wear a clean hat or other hair restraint
- Wear clean clothing daily
- Remove aprons when leaving food-preparation areas
- Remove jewelry from hands and arms before prepping food or when working around prep areas

Eating, Drinking, Smoking, and Chewing Gum or Tobacco

Food handlers must not:

- Eat, drink, smoke, or chew gum or tobacco

When:

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

Handling Staff Illnesses

If:

The food handler has a sore throat with a fever.

Then:

- **Restrict** the food handler from working with or around food
- **Exclude** the food handler from the operation if you primarily serve a high-risk population
- A written release from a medical practitioner is required before returning to work

Handling Staff Illnesses

If:

The food handler has at least one of these symptoms.

- Vomiting
- Diarrhea

Then:

Exclude the food handler from the operation

- Before returning to work, food handlers who vomited or had diarrhea must meet one of these requirements
  - Have had no symptoms for at least 24 hours
  - Have a written release from a medical practitioner

Handling Staff Illnesses

If:

The food handler has jaundice.

Then:

- Report the food handler to the regulatory authority
- **Exclude** food handlers from the operation if they have had jaundice for 7 days or less
- Food handlers must have a written release from a medical practitioner and approval from the regulatory authority before returning to work

Handling Staff Illnesses

If:

The food handler is vomiting or has diarrhea and has been diagnosed with an illness caused by one of these pathogens.

- Norovirus
- *Shigella* spp.
- Nontyphoidal *Salmonella*
- Shiga toxin-producing *E. coli*

Then:

- **Exclude** the food handler from the operation
- Work with the food handler's medical practitioner and/or the local regulatory authority to decide when the person can go back to work

Handling Staff Illnesses

If:

The food handler has been diagnosed with an illness caused by one of these pathogens.

- Hepatitis A
- *Salmonella* Typhi

Then:

- **Exclude** the food handler from the operation
- Work with the food handler's medical practitioner and/or the local regulatory authority to decide when the person can go back to work

chapter 4
The Flow of Food: An Introduction

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The Flow of Food

Objectives:

- How to prevent cross-contamination
- How to prevent time-temperature abuse
- How to use the correct kinds of thermometers to take temperatures

The Flow of Food

To keep food safe throughout the flow of food:

- Prevent cross-contamination
- Prevent time-temperature abuse

Preventing Cross-Contamination

Separate equipment:

- Use separate equipment for each type of food

Clean and sanitize:

- Clean and sanitize all work surfaces, equipment, and utensils after each task

Preventing Cross-Contamination

Prep food at different times:

- Prepare raw meat, fish, and poultry at different times than ready-to-eat food (when using the same prep table)

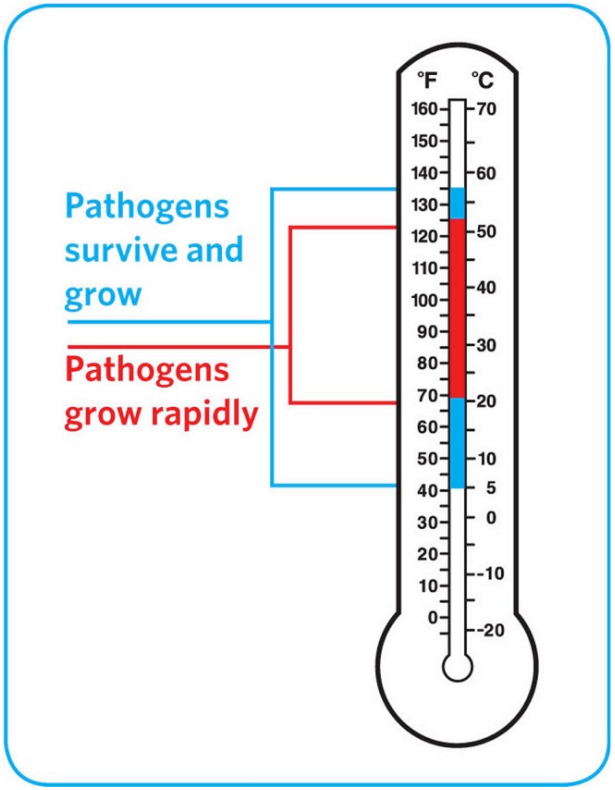
Buy prepared food:

- Buy food items that don't require much prepping or handling

Preventing Time-Temperature Abuse

Time-temperature control:

- Food held in the range of 41˚F and 135˚F (5˚C and 57˚C) has been time-temperature abused
- Food has been time-temperature abused whenever it is handled in the following ways
  - Cooked to the wrong internal temperature
  - Held at the wrong temperature
  - Cooked or reheated incorrectly



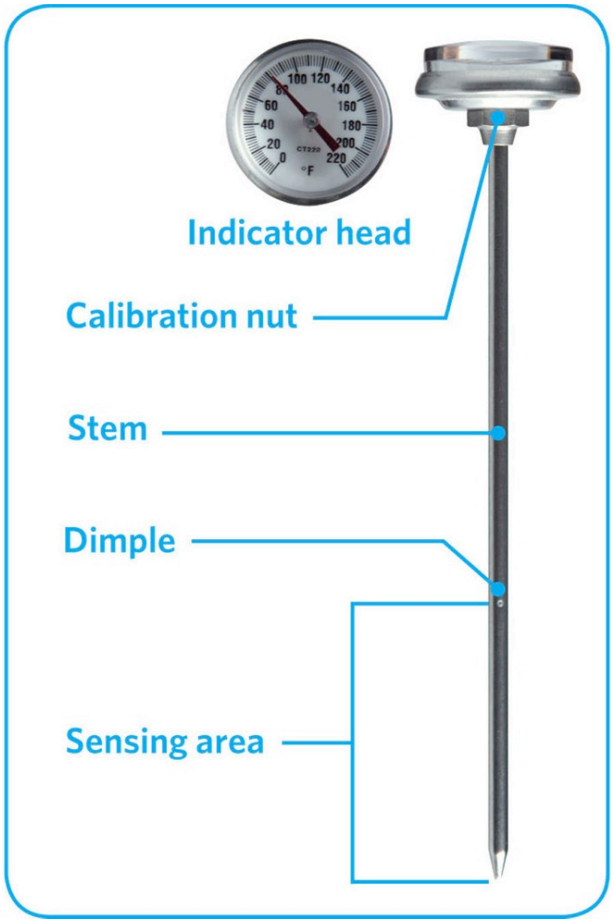
Preventing Time-Temperature Abuse

Avoid time-temperature abuse:

- Monitor time and temperature
- Make sure the correct kinds of thermometers are available.
- Regularly record temperatures and the times they are taken
- Minimize the time that food spends in the temperature danger zone
- Take corrective actions if time-temperature standards are not met

Monitoring Time and Temperature

Bimetallic stemmed thermometer



Monitoring Time and Temperature

Thermocouples and thermistors:

- Measure temperature through a metal probe
- Display temperatures digitally
- Come with interchangeable probes
  - Immersion probe
  - Surface probe
  - Penetration probe
  - Air probe
- Have a sensing area on the tip of their probe

Monitoring Time and Temperature

Infrared (laser) thermometers:

- Used to measure the surface temperature of food and equipment
- Hold as close to the food or equipment as possible
- Remove anything between the thermometer and the food, food package, or equipment
- Follow manufacturers' guidelines

Monitoring Time and Temperature

Time-temperature indicators (TTI):

- Monitor both time and temperature
- Are attached to packages by the supplier
- A color change appears on the device when time-temperature abuse has occurred

Maximum registering tape:

- Indicates the highest temperature reached during use
- Used where temperature readings cannot be continuously observed

General Thermometer Guidelines

When using thermometers:

- Wash, rinse, sanitize, and air-dry thermometers before and after using them
- Calibrate them before each shift to ensure accuracy
- Make sure thermometers used to measure the temperature of food are accurate to +/- 2˚F or +/- 1˚C
- Only use glass thermometers if they are enclosed in a shatterproof casing

General Thermometer Guidelines

When using thermometers:

- Insert the thermometer stem or probe into thickest part of the product (usually the center)
- Take more than one reading in different spots
- Wait for the thermometer reading to steady before recording the temperature

chapter 5
The Flow of Food: Purchasing, Receiving, and Storage

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The Flow of Food: Purchasing, Receiving, and Storage

Objectives:

- Purchase food from approved, reputable suppliers
- Use criteria to accept or reject food during receiving
- Label and date food
- Store food and nonfood items to prevent time-temperature abuse and contamination

General Purchasing and Receiving Principles

Purchase food from approved, reputable suppliers:

- Have been inspected
- Meet all applicable local, state, and federal laws

Arrange deliveries so they arrive:

- When staff has enough time to do inspections
- When they can be correctly received

General Purchasing and Receiving Principles

Receiving principles:

- Make specific staff responsible for receiving
  - Train them to follow food safety guidelines
  - Provide them with the correct tools
- Have enough trained staff available to receive food promptly
  - Inspect delivery trucks for signs of contamination
  - Visually check food items and check temperatures
- Store items promptly after receiving

Receiving and Inspecting

Key drop deliveries:

- Supplier is given after-hour access to the operation to make deliveries
- Deliveries must meet the following criteria
  - Be inspected upon arrival at the operation
  - Be from an approved source
  - Have been placed in the correct storage location to maintain the required temperature
  - Have been protected from contamination in storage
  - Is NOT contaminated
  - Is honestly presented

Receiving and Inspecting

Rejecting deliveries:

- Separate rejected items from accepted items
- Tell the delivery person what is wrong with the item
- Get a signed adjustment or credit slip before giving the rejected item to the delivery person
- Log the incident on the invoice or receiving document

Receiving and Inspecting

Recalls:

- Identify the recalled food items
- Remove the item from inventory, and place it in a secure and appropriate location
- Store the item 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
- Inform staff not to use the product
- Refer to the vendor's notification or recall notice to determine what to do with the item

Receiving and Inspecting

Checking the temperature of meat, poultry, and fish:

- Insert the thermometer stem or probe into the thickest part of the food (usually the center)

Receiving and Inspecting

Checking the temperature of ROP Food (MAP, vacuum-packed, and *sous vide* food):

- Insert the thermometer stem or probe between two packages
- As an alternative, fold packaging around the thermometer stem or probe

Receiving and Inspecting

Checking the temperature of other packaged food:

- Open the package and insert the thermometer stem or probe into the food

Receiving and Inspecting

Temperature criteria for deliveries:

- **Cold TCS food:** Receive at 41˚F (5˚C) or lower, unless otherwise specified
- **Live shellfish:** Receive oysters, mussels, clams, and scallops at an air temperature of 45˚F (7˚C) and an internal temperature no greater than 50˚F (10˚C)
  - Once received, the shellfish must be cooled to 41˚F (5˚C) or lower in four hours
- **Shucked shellfish:** Receive at 45˚F (7˚C) or lower
  - Cool the shellfish to 41˚F (5˚F) or lower in four hours

Receiving and Inspecting

Temperature criteria for deliveries:

- **Shell eggs:** Receive at an air temperature of 45˚F (7˚C) or lower
- **Milk:** Receive at 45˚F (7˚C) or lower
  - Cool the milk to 41˚F (5˚C) or lower in four hours
- **Hot TCS food:** Receive at 135˚F (57˚C) or higher
- **Frozen food:** Receive frozen solid

Receiving and Inspecting

Temperature criteria for deliveries:

- Reject frozen food if there is evidence of thawing and refreezing
  - Fluids or water stains in case bottoms or on packaging
  - Ice crystals or frozen liquids on the food or packaging

Receiving and Inspecting

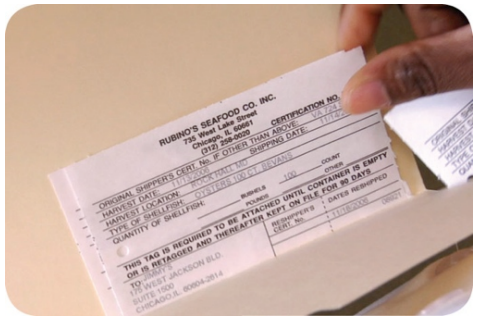
Reject packaged items with:

- Tears, holes, or punctures in packaging; reject cans with swollen ends, rust, or dents
- Bloating or leaking (ROP food)
- Broken cartons or seals
- Dirty and discolored packaging
- Leaks, dampness, or water stains
- Signs of pests or pest damage
- Expired use-by/expiration dates
- Evidence of tampering

Receiving and Inspecting

Required documents:

- Shellfish must be received with shellstock identification tags
  - Tags indicate when and where the shellfish were harvested
  - Must be kept on file for 90 days from the date the last shellfish was used from its delivery container



Receiving and Inspecting

Required documents:

- Fish that will be eaten raw or partially cooked
  - Documentation must show the fish was correctly frozen before being received
  - Keep documents for 90 days from the sale of the fish
- Farm raised fish
  - Must have documentation stating the fish was raised to FDA standards
  - Keep documents for 90 days from the sale of the fish

Receiving and Inspecting

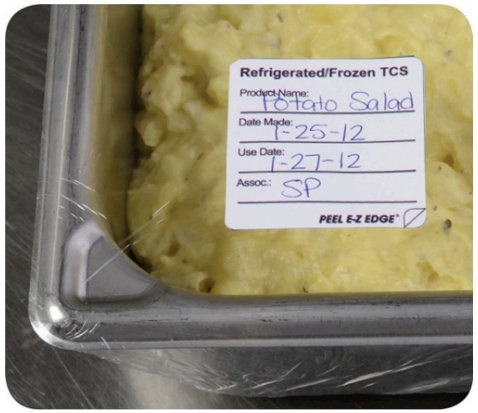
Assessing food quality:

- **Appearance:** Reject food that is moldy or has an abnormal color
- **Texture:** Reject meat, fish, or poultry if
  - It is slimy, sticky, or dry
  - It has soft flesh that leaves an imprint when touched
- **Odor:** Reject food with an abnormal or unpleasant odor

Storage

Labeling food for use on-site:

- All items not in their original containers must be labeled
- Food labels should include the common name of the food or a statement that clearly and accurately identifies it
- It is not necessary to label food if it clearly will not be mistaken for another item



Storage

Labeling food packaged on-site for retail sale:

- Common name of the food or a statement clearly identifying it
- Quantity of the food
- If the item contains two or more ingredients, list the ingredients and sub ingredients in descending order by weight
- List of artificial colors and flavors in the food, including chemical preservatives
- Name and place of business of the manufacturer, packer, or distributor
- Source of each major food allergen contained in the food

Storage

Date marking:

- Ready-to-eat TCS food must be marked if held for longer than 24 hours
  - Date mark must indicate when the food must be sold, eaten, or thrown out

Storage

Date marking:

- Ready-to-eat TCS food can be stored for only seven days if it is held at 41˚F (5˚C) or lower
  - The count begins on the day that the food was prepared or a commercial container was opened
  - For example, potato salad prepared and stored on October 1 would have a discard date of October 7 on the label
  - Some operations write the day or date the food was prepared on the label. Others write the use-by day or date on the label

Storage

Date marking:

If:

- A commercially processed food has a use-by date that is less than seven days from the date the container was opened

Then:

- The container should be marked with this use-by date as long as the date is based on food safety

Storage

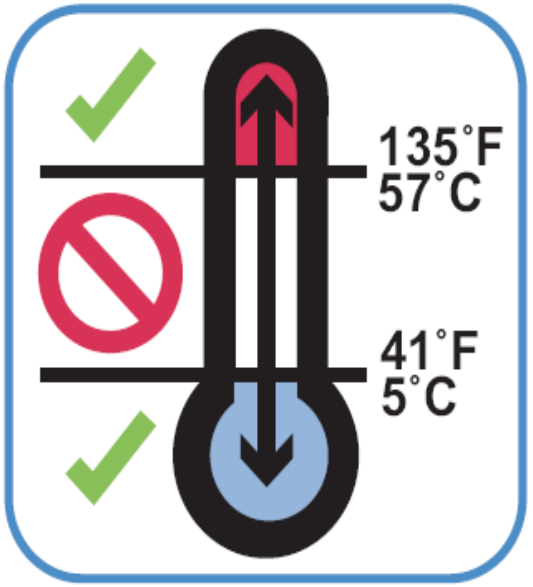
Date marking:

- When combining food in a dish with different use-by dates, the discard date of the dish should be based on the earliest prepared food
- Consider a shrimp and sausage jambalaya prepared on December 4
  - The shrimp has a use-by date of December 8
  - The sausage has a use-by date of December 10
  - The use-by date of the jambalaya is December 8

Storage

Temperatures:

- Store TCS food at an internal temperature of 41˚F (5˚C) or lower or 135˚F (57˚C) or higher
- 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 +/- 3˚F or +/- 1.5˚C
- Place the device in the warmest part of refrigerated units, and the coldest part of hot-holding units



Storage

Temperatures:

- Do NOT overload coolers or freezers
  - Prevents airflow
  - Makes unit work harder
- Frequent opening of the cooler lets warm air inside, which can affect food safety
- Use open shelving
  - Lining shelving restricts circulation
- Monitor food temperatures regularly
  - Randomly sample food temperatures

Storage

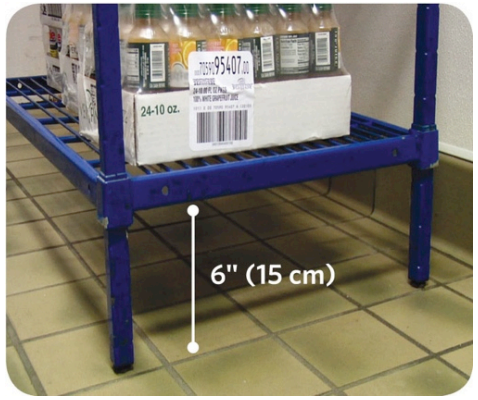
Rotate food to use the oldest inventory first:

- One way to rotate products is to follow FIFO
  1. Identify the food item's use-by or expiration date
  2. Store items with the earliest use-by or expiration dates in front of items with later dates
  3. Once shelved, use those items stored in front first
  4. Throw out food that has passed its manufacturer's use-by or expiration date

Storage

Preventing cross-contamination:

- Store all items in designated storage areas
  - Store items away from walls and at least six inches (15 centimeters) off the floor
  - Store single-use items (e.g., sleeve of single-use cups, single-use gloves) in original packaging



Storage

Preventing cross-contamination:

- Store food in containers intended for food
- Use containers that are durable, leak proof, and able to be sealed or covered
- NEVER use empty food containers to store chemicals; NEVER put food in empty chemical containers

Storage

Preventing cross-contamination:

- Keep all storage areas clean and dry
- Clean up spills and leaks immediately
- Clean dollies, carts, transporters, and trays often
- Store food in containers that have been cleaned and sanitized
- Store dirty linens in clean, nonabsorbent containers or washable laundry bags

Storage

Preventing cross-contamination:

- Wrap or cover food
- Store raw meat, poultry, and seafood separately from ready-to-eat food
  - If this is not possible, 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

Storage

Preventing cross-contamination:

- Store food items in the following top-to-bottom order
  - A. Ready-to-eat food
  - B. Seafood
  - C. Whole cuts of beef and pork
  - D. Ground meat and ground fish
  - E. Whole and ground poultry
- This storage order is based on the minimum internal cooking temperature of each food

Storage

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

- To prevent contamination, NEVER store food in these areas
  - Locker rooms or dressing rooms
  - Restrooms or garbage rooms
  - Mechanical rooms
  - Under unshielded sewer lines or leaking water lines
  - Under stairwells

chapter 6
The Flow of Food: Preparation

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National Restaurant Association

General Preparation Practices

Objectives:

- Prevent cross-contamination and time-temperature abuse
- Thaw food correctly
- Cook food to a minimum internal temperature
- Cool and reheat food to the correct temperature in the correct amount of time

General Preparation Practices

When prepping food:

- Only remove as much food from the cooler as you can prep in a short period of time
  - This limits time-temperature abuse
- Return prepped food to the cooler or cook it as quickly as possible
- Make sure workstations, cutting boards, and utensils are clean and sanitized

General Preparation Practices

Food and color additives:

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

General Preparation Practices

Present food honestly:

- Do NOT use the following to misrepresent the appearance of food
  - Food additives or color additive
  - Colored overwraps
  - Lights
- Food not presented honestly must be thrown out

General Preparation Practices

Corrective actions:

- Food must be thrown out in the following situations
  - When it is handled by staff who have been restricted or excluded from the operation due to illness
  - When it is contaminated by hands or bodily fluids from the nose or mouth
  - When it has exceeded the time and temperature requirements designed to keep food safe

Thawing

Four methods for thawing food:

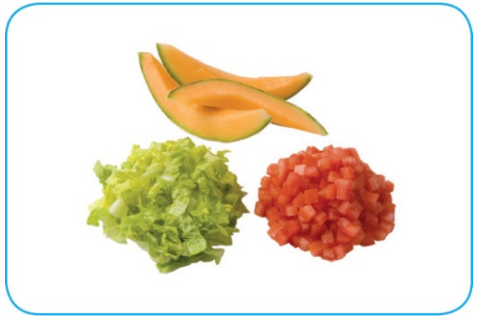
1. Thaw food in a cooler, keeping its temperature at 41˚F (5˚C) or lower
2. Submerge food under running water at 70˚F (21˚C) or lower
    - Never let the temperature of the food go above 41˚F (5˚C) for longer than four hours
3. Thaw food in a microwave, only if cooked immediately after thawing
4. Thaw as part of the cooking process

Thawing ROP Fish

- Frozen fish received in ROP packaging must be thawed carefully.
- If the label states that the product must remain frozen until use, then remove fish from packaging:
  - Before thawing under refrigeration.
  - Before or immediately after thawing under running water.

Prepping Specific Food

Produce:



- Make sure produce does not touch surfaces exposed to raw meat, seafood, or poultry
- Wash it thoroughly under running water before
  - Cutting
  - Cooking
  - Combining with other ingredients

Prepping Specific Food

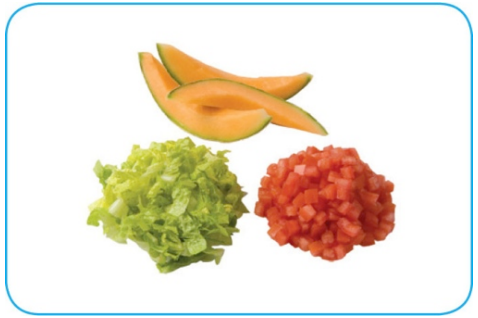
Produce:

- Produce can be washed in water containing ozone to sanitize it
  - Check with your local regulatory authority
- When soaking or storing produce in standing water or an ice-water slurry, do NOT mix
  - Different items
  - Multiple batches of the same item

Prepping Specific Food

Produce:

- Refrigerate and hold sliced melons, cut tomatoes, and cut leafy greens at 41˚F (5˚C) or lower
- Do NOT serve raw seed sprouts if primarily serving a high-risk population



Prepping Specific Food

Eggs and egg mixtures:

- Handle pooled eggs (if allowed) with care
  - Cook promptly after mixing or store at 41˚F (5˚C) or lower
  - Clean and sanitize containers between batches
- Consider using pasteurized shell eggs or egg products when prepping dishes that need little or no cooking

Prepping Specific Food

Eggs for high-risk populations:

- Use pasteurized shell eggs if eggs will be pooled
- Use pasteurized eggs or egg products when serving raw or undercooked dishes
  - Unpasteurized shell eggs can be used if the dish will be cooked all the way through (i.e. omelets, cakes)

Prepping Specific Food

Salads containing TCS food:

- Make sure leftover TCS ingredients (i.e. pasta, chicken, potatoes) have been handled safely by ensuring that they were
  - Cooked, held, and cooled correctly
  - Stored for less than seven days at 41˚F (5˚C) or lower

Prepping Specific Food

Ice:

- NEVER use ice as an ingredient if it was used to keep food cold
- Transfer ice using clean and sanitized containers and scoops
- NEVER hold ice in containers that held chemicals or raw meat, seafood, or poultry

Prepping Specific Food

Ice:

- Store ice scoops outside ice machines in a clean, protected location
- NEVER use a glass to scoop ice or touch ice with hands

Preparation Practices That Have Special Requirements

You need a variance if prepping food in these ways:

- Packaging fresh juice on-site for sale at a later time, unless the juice has a warning label
- Smoking food to preserve it but not to enhance flavor
- Using food additives or components to preserve or alter food so it no longer needs time and temperature control for safety
- Curing food

Preparation Practices

You need a variance if prepping food in these ways:

- Packaging food using a reduced-oxygen packaging (ROP) method
- Sprouting seeds or beans
- Offering live shellfish from a display tank
- Custom-processing animals for personal use (i.e. dressing a deer)

Cooking Food

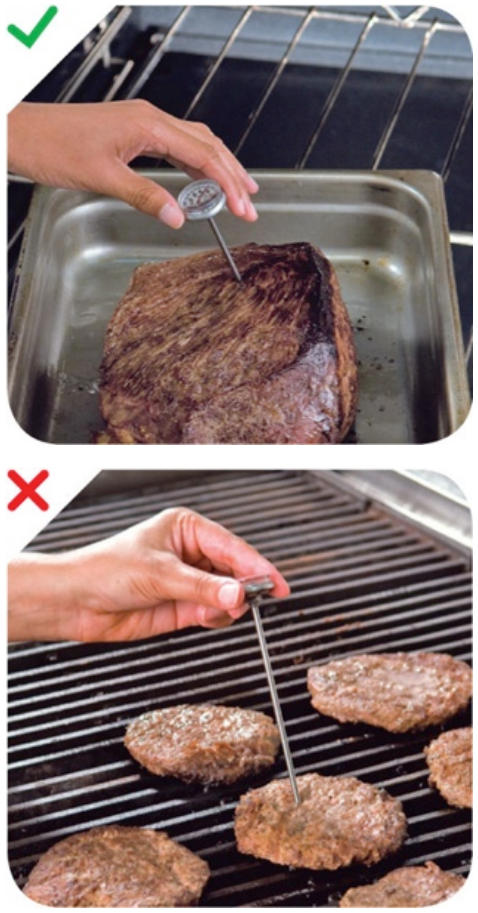
When cooking TCS food, the internal portion must:

- Reach the required minimum internal temperature
- Hold that temperature for a specific amount of time

Cooking Food

When checking temperatures:

- Pick 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



Cooking Requirements for Specific Food

Minimum internal cooking temperature:

165˚F (74˚C) for 15 seconds

- Poultry—whole or ground chicken, turkey or duck
- Stuffing made with fish, meat, or poultry
- Stuffed meat, seafood, poultry, or pasta
- Dishes that include previously cooked, TCS ingredients

Cooking Requirements for Specific Food

Minimum internal cooking temperature:

155˚F (68˚C) for 15 seconds

- Ground meat—beef, pork, and other meat
- Injected meat—including brined ham and flavor-injected roasts
- Mechanically tenderized meat
- Ratites including ostrich and emu
- Ground seafood—including chopped or minced seafood
- Shell eggs that will be hot-held for service

Cooking Requirements for Specific Food

Minimum internal cooking temperature:

145˚F (63˚C) for 15 seconds

- Seafood—including fish, shellfish, and crustaceans
- Steaks/chops of pork, beef, veal, and lamb
- Commercially raised game
- Shell eggs that will be served immediately

Cooking Requirements for Specific Food

Minimum internal cooking temperature:

145˚F (63˚C) for four minutes

- Roasts of pork, beef, veal, and lamb
- Alternate cooking times/temperatures
  - 130˚F (54˚C) 112 minutes
  - 131˚F (55˚C) 89 minutes
  - 133˚F (56˚C) 56 minutes
  - 135˚F (57˚C) 36 minutes
  - 136˚F (58˚C) 28 minutes
  - 138˚F (59˚C) 18 minutes
  - 140˚F (60˚C) 12 minutes
  - 142˚F (61˚C) 8 minutes
  - 144˚F (62˚C) 5 minutes

Cooking Requirements for Specific Food

Minimum internal cooking temperature:

135˚F (57˚C)

- Fruit, vegetables, grains (rice, pasta), and legumes (beans, refried beans) that will be hot-held for service

Cooking TCS Food in a Microwave

Minimum internal cooking temperature:

165˚F (74˚C)

- Meat
- Seafood
- Poultry
- Eggs

Cooking TCS Food in a Microwave

Guidelines for microwave cooking:

- Cover food to prevent the surface from drying out
- Rotate or stir it halfway through cooking so heat reaches the food more evenly
- Let it 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 the food is cooked through

Partial Cooking During Preparation

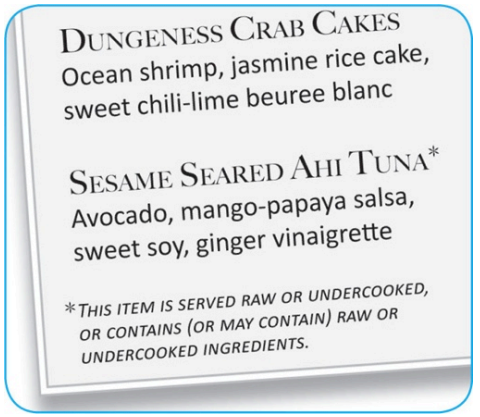
If partially cooking meat, seafood, poultry, or eggs or dishes containing these items:

- NEVER cook the food longer than 60 minutes during initial cooking
- Cool the food immediately after initial cooking
- Freeze or refrigerate the food after cooling it
- Heat the food to its required minimum internal temperature before selling or serving it
- Cool the food if it will not be served immediately or held for service

Consumer Advisories

If your menu includes raw or undercooked TCS items, you must:

- Note it on the menu next to the items
  - Asterisk the item
  - Place a footnote at the menu bottom indicating the item is raw, undercooked, or contains raw or undercooked ingredients
- Advise customers who order this food of the increased risk of foodborne illness
  - Post a notice in the menu
  - Provide this information using brochures, table tents, or signs



Consumer Advisories

The FDA advises against offering these items on a children's menu if they are raw or undercooked:

- Meat
- Poultry
- Seafood
- Eggs

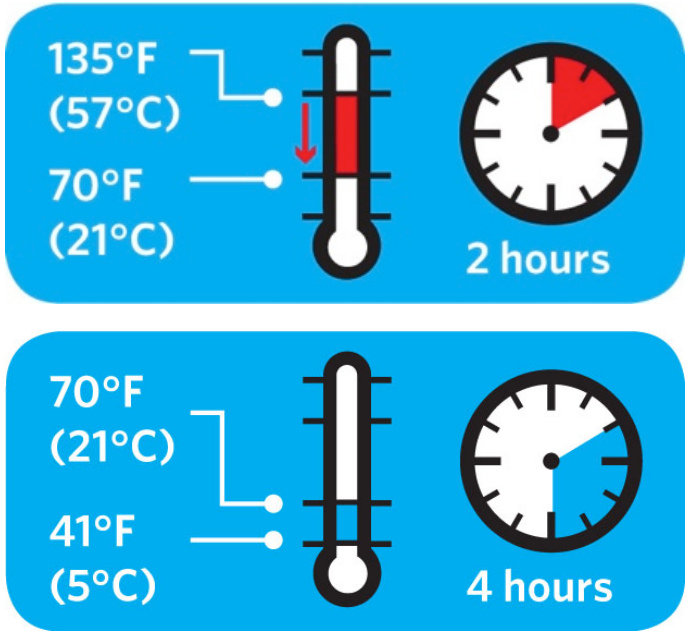
Operations That Mainly Serve High-Risk Populations

NEVER serve:

- Raw seed sprouts
- Raw or undercooked eggs, meat, or seafood
  - Over-easy eggs
  - Raw oysters on the half shell
  - Rare hamburgers

Cooling Food

Cooling requirements:



Cooling Food

If you cool food from 135˚F to 70˚F (57˚C to 21˚C) in less than two hours:

- Use the remaining time to cool it to 41˚F (5˚C) or lower
- The total cooling time cannot be longer than six hours

Example:

- If you cool food from 135˚F to 70˚F (57˚C to 21˚C) in one hour
- Then you have five hours to get the food to 41˚F (5˚C) or lower

Methods for Cooling Food

Before cooling food, start by reducing its size:

- Cut larger items into smaller pieces
- Divide large containers of food into smaller containers or shallow pans

Methods for Cooling Food

Methods for cooling food safely and quickly:

- Place food in an ice-water bath
- Stir it with an ice paddle
- Place it in a blast chiller

Storing Food for Further Cooling

When storing food for further cooling:

- Loosely cover food containers before storing them
- Food can be left uncovered if protected from contamination
  - Storing uncovered containers above other food, especially raw seafood, meat, and poultry, will help prevent cross-contamination

Reheating Food

Food reheated for immediate service:

- Can be reheated to any temperature if it was cooked and cooled correctly

Food reheated for hot-holding:

- Must be reheated to an internal temperature of 165˚F (74˚C) for 15 seconds within two hours
- Reheat commercially processed and packaged ready-to-eat food to an internal temperature of at least 135˚F (57˚C)

chapter 7
The Flow of Food: Service

ServSafe
National Restaurant Association

Service

Objectives:

- Holding hot food
- Holding cold food
- Using time as a method of control for food
- Preventing contamination in self-service areas and when serving food to customers

Guidelines for Holding Food

Food covers and sneeze guards:

- Cover food and install sneeze guards to protect food from contaminants
  - Covers protect food from contamination and help maintain food temperatures

Guidelines for Holding Food

Temperature:

- Hold TCS food at the correct temperature
  - Hot food: 135˚F (57˚C) or higher
  - Cold food: 41˚F (5˚C) or lower
- Check temperatures at least every four hours
  - Throw out food not at 41˚F (5˚C) or lower
  - Check temperatures every two hours to leave time for corrective action

Guidelines for Holding Food

Temperature:

- NEVER use hot-holding equipment to reheat food unless it's designed for it
  - Reheat food correctly, and then move it into a holding unit

Holding Food Without Temperature Control

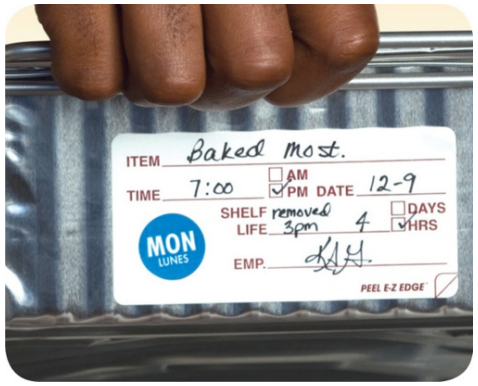
Cold food can be held without temperature control for up to six hours if:

- It was held at 41˚F (5˚C) or lower before removing it from refrigeration
- It does not exceed 70˚F (21˚C) during service
  - Throw out food that exceeds this temperature
- It has a label specifying:
  - Time it was removed from refrigeration
  - Time it must be thrown out
- It is sold, served, or thrown out within six hours

Holding Food Without Temperature Control

Hot food can be held without temperature control for up to four hours if:

- It was held at 135˚F (57˚C) or higher before removing it from temperature control
- It has a label specifying when the item must be thrown out
- It is sold, served, or thrown out within four hours



Kitchen Staff Guidelines

Prevent contamination when serving food:

- Wear single-use gloves whenever handling ready-to-eat food
  - As and alternative use spatulas, tongs, deli sheets, or other utensils
- Use clean and sanitized utensils for serving
  - Use separate utensils for each food
  - Clean and sanitize utensils after each task
  - At minimum, clean and sanitize them at least once every four hours

Kitchen Staff Guidelines for Serving Food

Prevent contamination when serving food:

- Store serving utensils correctly between uses
  - On a clean and sanitized food-contact surface
  - In the food with the handle extended above the container rim

Service Staff Guidelines for Serving Food

Handling dishes and glassware:

Correct





Incorrect





Preset Tableware

If you preset tableware:

- Prevent it from being contaminated
  - Wrap or cover the items

Table settings do not need to be wrapped or covered if extra settings:

- Are removed when guests are seated
- Are cleaned and sanitized after guests have left

Refilling Returnable Take-Home Containers for Food

- Some jurisdictions allow the refilling of take-home food containers.
- Take-home food containers must be:
  - Designed to be reused
  - Provided to the customer by the operation
  - Cleaned and sanitized correctly

Refilling Returnable Take-Home Containers for Beverages

- Some jurisdictions allow the refilling of take-home beverage containers.
- These can be refilled for the same customer with non-TCS food.
  The container must be:
  - Able to be effectively cleaned at home and at the operation
  - Rinsed with fresh, pressurized hot water before refilling
  - Refilled using a process that prevents contamination

Re-serving Food

NEVER re-serve:

- Food returned by one customer to another customer
- Uncovered condiments
- Uneaten bread
- Plate garnishes

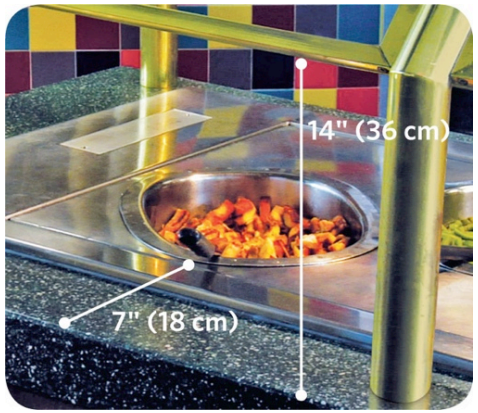
Generally, only unopened, prepackaged food in good condition can be re-served:

- Condiment packets
- Wrapped crackers or breadsticks

Self-Service Areas

Prevent time-temperature abuse and contamination:

- Use sneeze guards
  - Must be located 14" (36cm) above the counter
  - Must extend 7" (18cm) beyond the food
- Identify all food items
  - Label food
  - Place salad dressing names on ladle handles



Self-Service Areas

Prevent time-temperature abuse and contamination:

- Keep hot food at 135˚F (57˚C) or higher
- Keep cold food at 41˚F (5˚C) or lower
- Keep raw meat, fish, and poultry separate from ready-to-eat food
- Do NOT let customers refill dirty plates or use dirty utensils at self-service areas

Self-Service Areas

Prevent time-temperature abuse and contamination:

- Stock food displays with the correct utensils for dispensing food
- Do NOT use ice as an ingredient if it was used to keep food or beverages cold

Labeling Bulk Food in Self-Service Areas

When labeling bulk food in self-service areas:

- Make sure the label is in plain view of the customer
- Include the manufacturer or processor label provided with the food
  - As an alternative, provide the information using a card, sign, or other labeling method

Labeling Bulk Food in Self-Service Areas

A label is not needed for bulk unpackaged food, such as bakery products, if:

- The product makes no claim regarding health or nutrient content
- No laws requiring labeling exist
- The food is manufactured or prepared on the premises
- The food is manufactured or prepared at another regulated food operation or processing plant owned by the same person

Off-Site Service

When delivering food off-site:

- Use insulated, food-grade containers designed to stop food from mixing, leaking, or spilling
- Clean the inside of delivery vehicles regularly
- Check internal food temperatures
- Label food with a use-by date and time, and reheating and service instructions

Off-Site Service

When delivering food off-site:

- 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
- Store raw meat, poultry, and seafood, and ready-to-eat items separately

Vending Machines

To keep vended food safe:

- Check product shelf life daily
  - Refrigerated food prepped on-site and not sold in seven days must be thrown out
- Keep TCS food at the correct temperature
- Dispense TCS food in its original container
- Wash and wrap fresh fruit with edible peels before putting it in the machine

chapter 8
Food Safety Management Systems

ServSafe
National Restaurant Association

Service

Objectives:

- Food safety management systems
- Active managerial control
- Hazard Analysis Critical Control point (HACCP)

Food Safety Management Systems

Food safety management system:

- Group of practices and procedures intended to prevent foodborne illness
- Actively controls risks and hazards throughout the flow of food

Food Safety Programs

These are the foundation of a food safety management system:

Personal hygiene program

Food safety training program

Supplier selection and specification program

Quality control and assurance program

Food Safety Programs

These are the foundation of a food safety management system:

Cleaning and sanitation program

Standard operating procedures (SOPs)

Facility design and equipment maintenance program

Pest control program

Active Managerial Control

Focuses on controlling the five most common risk factors for foodborne illness:

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

Active Managerial Control

There are many ways to achieve active managerial control in the operation:

- Training programs
- Manager supervision
- Incorporation of standard operating procedures (SOPs)
- HACCP

These are critical to the success of active managerial control:

- Monitoring critical activities in the operation
- Taking the necessary corrective action when required
- Verifying that the actions taken control the risks factors

Active Managerial Control

The FDA provides recommendations for controlling the common risk factors for foodborne illness:

- Demonstration of knowledge
- Staff health controls
- Controlling hands as a vehicle of contamination
- Time and temperature parameters for controlling pathogens
- Consumer advisories

HACCP

The HACCP approach:

- HACCP is based on identifying significant biological, chemical, or physical hazards at specific points within a product's flow through an operation
- Once identified, hazards can be prevented, eliminated, or reduced to safe levels

HACCP

To be effective, a HACCP system must be based on a written plan:

- It must be specific to each facility's menu, customers, equipment, processes, and operations
- A plan that works for one operation may not work for another

The 7 HACCP Principles

The seven HACCP principles:

1. Conduct a hazard analysis
2. Determine critical control points (CCPs)
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

The 7 HACCP Principles

Principle 1: Conduct a hazard analysis

- Identify potential hazards in the food served by looking at how it is processed
- Identify TCS food items and determine where hazards are likely to occur for each one; look for biological, chemical, and physical contaminants

Salads, cold sandwiches → Prepare → Serve

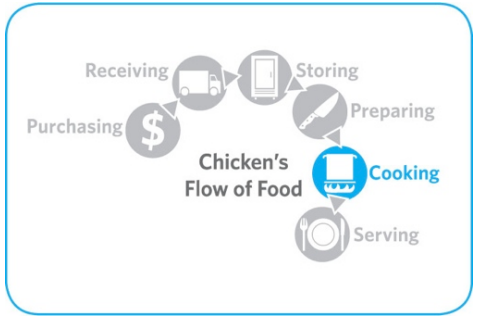
Grilled chicken sandwiches, hamburgers → Prepare → Cook → Serve

Chili, soup, sauces → Prepare → Cook → Hold → Cool → Reheat → Serve

The 7 HACCP Principles

Principle 2: Determine critical control points (CCPs)

- Find points in the process where identified hazards can be prevented, eliminated, or reduced to safe levels—these are the CCPs
- Depending on the process, there may be more than one CCP



The 7 HACCP Principles

Principle 3: Establish critical limits

- For each CCP, establish minimum or maximum limits
- These limits must be met to
  - Prevent or eliminate the hazard
  - Reduce it to a safe level

The 7 HACCP Principles

Principle 4: Establish monitoring procedures

- Determine the best way to check critical limits
  - Make sure they are consistently met
- Identify who will monitor them and how often

The 7 HACCP Principles

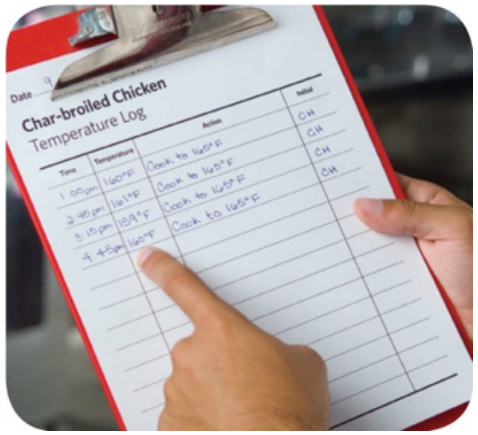
Principle 5: Identify corrective actions

- Identify steps that must be taken when a critical limit is not met
- Determine these steps in advance

The 7 HACCP Principles

Principle 6: Verify that the system works

- Determine if the plan is working as intended
- Evaluate the plan on a regular basis using
  - Monitoring charts
  - Records
  - Hazard analysis
- Determine if your plan prevents, reduces, or eliminates identified hazards



The 7 HACCP Principles

Principle 7: Establish procedures for record keeping and documentation

Keep records for these actions:

- Monitoring activities
- Corrective actions
- Validating equipment (checking for good working condition)
- Working with suppliers (invoices, specifications, etc.)

HACCP

These specialized processing methods require a variance and may require a HACCP plan:

- Smoking food as a method to preserve it (but not to enhance flavor)
- Using food additives or components such as vinegar to preserve or alter food so it no longer requires time and temperature control for safety
- Curing food
- Custom-processing animals

HACCP

These specialized processing methods require a variance and may require a HACCP plan:

- Packaging food using ROP methods including
  - MAP
  - Vacuum-packed
  - *Sous vide*
- Treating (e.g. pasteurizing) juice on-site and packaging it for later sale
- Sprouting seeds or beans

chapter 9
Safe Facilities and Pest Management

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Safe Facilities and Pest Management

Objectives:

- Pick materials and equipment that are safe for use in foodservice operations
- Install and maintain equipment
- Avoid food safety hazards caused by utilities
- Maintain your facility
- Handle emergencies
- Prevent and control pests

Interior Requirements for a Safe Operation

Floors, walls, and ceilings:

- Materials must be smooth and durable for easier cleaning
- Must be regularly maintained

Equipment Selection

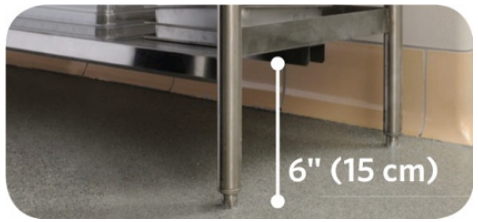
Foodservice equipment must meet these standards if it will come in contact with food:

- Nonabsorbent, smooth, and corrosion resistant
- Easy to clean
- Durable
- Resistant to damage

Installing and Maintaining Equipment

Floor-mounted equipment must be either:

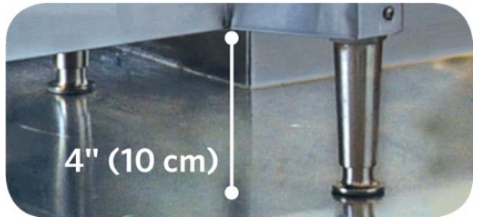
- Mounted on legs at least six inches (15 centimeters) high
- Sealed to a masonry base



Installing and Maintaining Equipment

Tabletop equipment should be either:

- Mounted on legs at least four inches (10 centimeters) high
- Sealed to the countertop



Installing and Maintaining Equipment

Once equipment has been installed:

- It must be maintained regularly
- Only qualified people should maintain it
- Set up a maintenance schedule with your supplier or manufacturer
- Check equipment regularly to make sure it is working correctly

Dishwashing Machines

Dishwashers must be installed:

- So they are reachable and conveniently located
- In a way that keeps utensils, equipment, and other food-contact services from becoming contaminated
- Following manufacturer's instructions

Dishwashing Machines

When selecting dishwashers make sure:

- The detergents and sanitizers used are approved by the local regulatory authority
- They have the ability to measure water temperature, water pressure, and cleaning and sanitizing chemical concentration
- Information about the correct settings is posted on the machine

Three-Compartment Sinks

Purchase sinks large enough to accommodate large equipment and utensils.

Handwashing Stations

Handwashing stations must be conveniently located and are required in:

- Restrooms or directly next to them
- Food-prep areas
- Service areas
- Dishwashing areas

Handwashing sinks must be used only for handwashing.

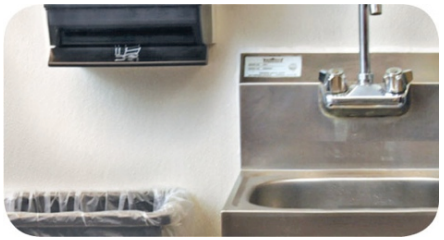
Handwashing Stations

Handwashing stations must have:

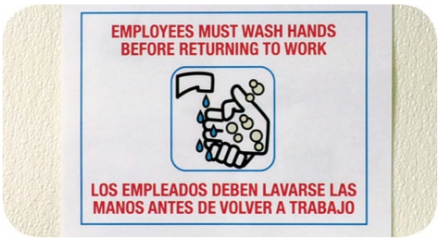
Hot and cold running water

Soap

A way to dry hands



Garbage container



Signage

Water and Plumbing

Acceptable sources of drinkable water:

- Approved public water mains
- Regularly tested and maintained private sources
- Closed, portable water containers
- Water transport vehicles

Water and Plumbing

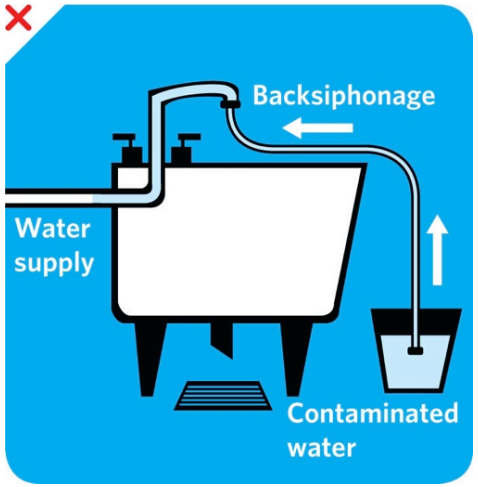
Cross-connection:

- Physical link between safe water and dirty water from
  - Drains
  - Sewers
  - Other wastewater sources

Water and Plumbing

Backflow:

- Reverse flow of contaminants through a cross-connection into the drinkable water supply



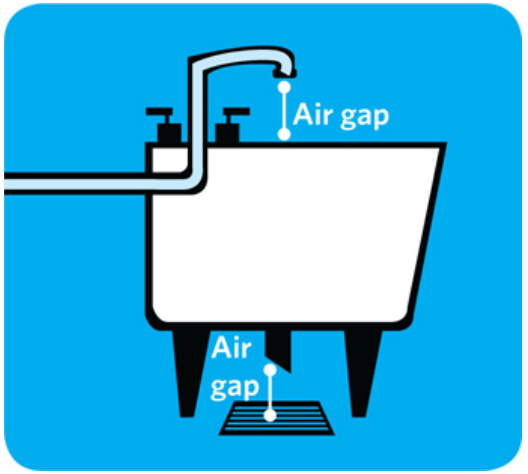
Backsiphonage:

- A vacuum created in the plumbing system that sucks contaminants back into the water supply
  - Can occur when high water use in one area of the operation creates a vacuum
  - A running hose in a mop bucket can lead to backsiphonage

Water and Plumbing

Backflow prevention methods:

Vacuum breaker



Air gap

Lighting

Consider the following when installing and maintaining lighting:

- Different areas of the facility have different lighting intensity requirements
- Local jurisdictions usually require prep areas to be brighter than other areas
- All lights should have shatter-resistant lightbulbs or protective covers
- Replace burned out bulbs with correct size bulbs

Ventilation

Ventilation systems:

- Must be cleaned and maintained to prevent grease and condensation from building up on walls and ceilings
  - Follow manufacturer's recommendations
  - Meet local regulatory requirements

Garbage

Garbage:

- Remove from prep areas as quickly as possible
  - Be careful not to contaminate food and food-contact surfaces
- Clean the inside and outside of containers frequently
  - Clean them away from food-prep and storage areas

Garbage

Indoor containers must be:

- Leak proof, waterproof, and pest proof
- Easy to clean
- Covered when not in use

Designated storage areas:

- Store waste and recyclables separately from food and food-contact surfaces
- Storage must not create a nuisance or a public health hazard

Garbage

Outdoor containers must:

- Be placed on a smooth, durable nonabsorbent surface
  - Asphalt or concrete
- Have tight-fitting lids
- Be covered at all times
- Have their drain plugs in place

Emergencies That Affect the Facility

Imminent health hazard:

- A significant threat or danger to health
- Requires immediate correction or closure to prevent injury

Possible imminent health hazards:

- Electrical power outages
- Fire
- Flood
- Sewage backups

Emergencies That Affect the Facility

How to respond to a crisis affecting the facility:

- Determine if there is a significant risk to the safety or security of your food
- If the risk is significant
  - Stop service
  - Notify the local regulatory authority
- Decide how to correct the problem
  - Establish time-temperature control
  - Clean and sanitize surfaces
  - Verify water is drinkable
  - Reestablish physical security of the facility

Pest Management

Three rules of pest prevention:

1. Deny pests access to the operation
2. Deny pests food, water, and shelter
3. Work with a licensed Pest Control Operator (PCO)

Pest Prevention

To keep pests from entering with deliveries:

- Check deliveries before they enter the operation
  - Refuse shipments if pests or signs of pests (egg cases, body parts) are found

Pest Prevention

Make sure all of the points where pests can access the building are secure:

- Screen windows and vents
- Seal cracks in floors and walls, and around pipes
- Install air curtains (also called air doors or fly fans) above or alongside doors

Pest Prevention

Deny pests shelter:

- Throw out garbage quickly and correctly
- Keep containers clean and in good condition
- Keep outdoor containers tightly covered
- Clean up spills around containers immediately
- Store recyclables correctly
  - Keep recyclables in clean, pest-proof containers
  - Keep containers as far away from the building as regulations allow

Pest Prevention

Deny pests shelter:

- Store food and supplies quickly and correctly
  - Keep them away from walls and at least six inches (15 cm) off the floor
  - Rotate products (FIFO) so pests cannot settle and breed
- Clean the operation thoroughly
  - Clean up food and beverage spills immediately
  - Clean break rooms after use
  - Keep cleaning tools and supplies clean and dry

Pest Control

Contact your PCO immediately if you see these or any other pest-related problems:

- Feces
- Nests
- Damage on products, packaging, and the facility itself

chapter 10
Cleaning and Sanitizing

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National Restaurant Association

Cleaning and Sanitizing

Objectives:

- Different methods of sanitizing and how to make sure they are effective
- How and when to clean and sanitize surfaces
- How to wash items in a dishwasher or a three-compartment sink and then store them
- How to use and store cleaning tools and supplies
- How to develop a cleaning program

Cleaners

Cleaners must be:

- Stable and noncorrosive
- Safe to use

When using them:

- Follow manufacturers' instructions
- Do NOT use one type of detergent in place of another unless the intended use is the same

Sanitizing

Surfaces can be sanitized using:

- Heat
  - The water must be at least 171˚F (77˚C)
  - Immerse the item for 30 seconds
- Chemicals
  - Chlorine
  - Iodine
  - Quats

Sanitizing

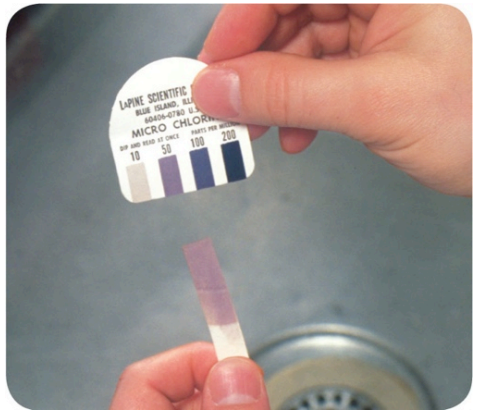
Chemical sanitizing:

- Food-contact surfaces can be sanitized by either
  - Soaking them in a sanitizing solution
  - Rinsing, swabbing, or spraying them with a sanitizing solution
- In some cases a detergent-sanitizer blend can be used
  - Use it once to clean
  - Use it a second time to sanitize

Sanitizer Effectiveness

Concentration:

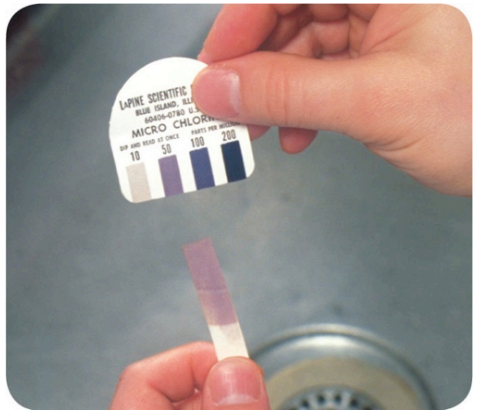
- Sanitizers should be mixed with water to the correct concentration
  - **Not enough sanitizer** may make the solution weak and useless
  - **Too much sanitizer** may make the solution too strong, unsafe, and corrode metal



Sanitizer Effectiveness

Concentration:

- Check concentration with a test kit
  - Make sure it is designed for the sanitizer used
  - Check the concentration often
- Change the solution when
  - It's dirty
  - The concentration is too low



Sanitizer Effectiveness

Temperature:

- Follow manufacturer's recommendations for the correct temperature

Contact time:

- The sanitizer must make contact with the object for a specific amount of time
- Minimum times differ for each sanitizer

Sanitizer Effectiveness

Water hardness and pH:

- Find out what your water hardness and pH is from your municipality
- Work with your supplier to identify the correct amount of sanitizer to use

Guidelines for the Effective Use of Sanitizers

	Chlorine	
Water temperature	≥100°F (38°C)	≥75°F (24°C)
Water pH	≤10	≤8
Water hardness	As per manufacturer's recommendations	
Sanitizer concentration range	50–99 ppm	50–99 ppm
Sanitizer contact time	≥7 sec	≥7 sec

Guidelines for the Effective Use of Sanitizers

	Iodine	Quats
Water temperature	68°F (20°C)	75°F (24°C)
Water pH	≤5 or as per manufacturer's recommendations	As per manufacturer's recommendations
Water hardness	As per manufacturer's recommendations	≤500 ppm or as per manufacturer's recommendations
Sanitizer concentration range	12.5–25 ppm	As per manufacturer's recommendations
Sanitizer contact time	≥30 sec	≥30 sec

How and When to Clean and Sanitize

How to clean and sanitize:

1. Scrape or remove food bits from the surface

2. Wash the surface

3. Rinse the surface

4. Sanitize the surface

5. Allow the surface to air-dry

How and When to Clean and Sanitize

Food-contact surfaces must be cleaned and sanitized:

- After they are used
- Before working with a different type of food
- Any time a task was interrupted and the items may have been contaminated
- After four hours if the items are in constant use

How and When to Clean and Sanitize

Cleaning and sanitizing stationary equipment:

- Unplug the equipment
- Take the removable parts off the equipment
  - Wash, rinse, and sanitize them by hand or run the parts through a dishwasher if allowed
- Scrape or remove food from the equipment surfaces
- Wash the equipment surfaces

How and When to Clean and Sanitize

Cleaning and sanitizing stationary equipment:

- Rinse the equipment surfaces with clean water
- Sanitize the equipment surfaces
  - Make sure the sanitizer comes in contact with each surface
- Allow all surfaces to air-dry
- Put the unit back together

How and When to Clean and Sanitize

Clean-in-place equipment:

- Equipment holding and dispensing TCS food must be cleaned and sanitized every day unless otherwise indicated by the manufacturer
- Check local regulatory requirements

Machine Dishwashing

High-temperature machines:

- Final sanitizing rinse must be at least 180˚F (82˚C)
  - 165˚F (74˚C) for stationary rack, single-temperature machines

Chemical-sanitizing machines:

- Clean and sanitize at much lower temperatures
- Follow the temperature guidelines provided by the manufacturer

Dishwasher Operation

Guidelines:

- Clean the machine as often as needed
- Scrape, rinse, or soak items before washing
- Use the correct dish racks
- NEVER overload dish racks
- Air-dry all items
- Check the machine's water temperature and pressure

Monitoring High Temperature Dishwashing Machines

When using high-temperature dishwashing machines, provide staff with tools to check the temperature of the items being sanitized.

Options include:

- Maximum registering thermometers
- Temperature sensitive tape

Manual Dishwashing

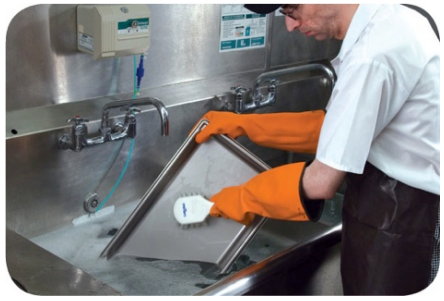
Setting up a three-compartment sink:

- Clean and sanitize each sink and drain board
- Fill the first sink with detergent and water at least 110˚F (43˚C)
- Fill the second sink with clean water
- Fill the third sink with water and sanitizer to the correct concentration
- Provide a clock with a second hand to let food handlers know how long items have been in the sanitizer

Three-Compartment Sinks

Steps for cleaning and sanitizing:

1. Rinse, scrape, or soak items before washing them



2. Wash items in the first sink

3. Rinse items in the second sink

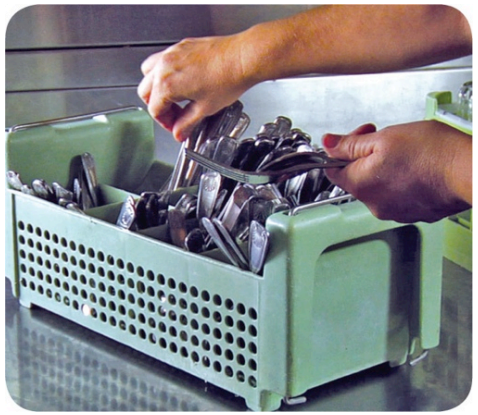
4. Sanitize items in the third sink

5. Air-dry items on a clean and sanitized surface

Storing Tableware and Equipment

When storing clean and sanitized tableware and equipment:

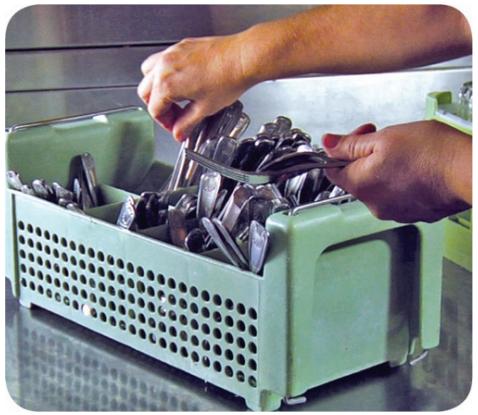
- Store them at least six inches (15 cm) off the floor
- Clean and sanitize drawers and shelves before items are stored
- Store glasses and cups upside down on a clean and sanitized shelf or rack



Storing Tableware and Equipment

When storing clean and sanitized tableware and equipment:

- Store flatware and utensils with handles up
- Cover the food-contact surfaces of stationary equipment until ready for use
- Clean and sanitize trays and carts used to carry clean tableware and utensils



Cleaning and Sanitizing in the Operation

When cleaning the premises:

- Clean nonfood-contact surfaces regularly
  - Includes floors, ceilings, walls, equipment exteriors, etc.
  - Prevents dust, dirt, food residue and other debris from building up

Cleaning and Sanitizing in the Operation

Cleaning up after people who get sick:

- Diarrhea and vomit in the operation must be cleaned up correctly
  - It can carry Norovirus, which is highly contagious
- Correct cleanup can prevent food from becoming contaminated and keep others from getting sick
- Check with your local regulatory authority regarding requirements for cleaning up vomit and diarrhea. A written cleanup plan may be required.

Cleaning and Sanitizing in the Operation

Consider the following when developing a plan for cleaning up vomit and diarrhea:

- How you will contain liquid and airborne substances, and remove them from the operation
- How you will clean, sanitize, and disinfect surfaces
- When to throw away food that may have been contaminated
- What equipment is needed to clean up these substances, and how it will be cleaned and disinfected after use
- When a food handler must wear personal protective equipment

Cleaning and Sanitizing in the Operation

Develop a plan for cleaning up vomit and diarrhea:

- How staff will be notified of the correct procedures for containing, cleaning, and disinfecting these substances
- How to segregate contaminated areas from other areas
- When staff must be restricted from working with or around food or excluded from working in the operation
- How sick customers will be quickly removed from the operation
- How the cleaning plan will be implemented

Cleaning and Sanitizing in the Operation

Storing cleaning tools and chemicals:

- Place in a separate area away from food and prep areas

The storage area should have:

- Good lighting so chemicals can be easily seen
- Utility sink for filling buckets and washing cleaning tools
- Floor drain for dumping dirty water
- Hooks for hanging cleaning tools

Cleaning and Sanitizing in the Operation

NEVER:

- Dump mop water or other liquid waste into toilets or urinals
- Clean tools in sinks used for
  - Handwashing
  - Food prep
  - Dishwashing

Using Foodservice Chemicals

Chemicals:

- Only purchase those approved for use in foodservice operations
- Store them in their original containers away from food and food-prep areas
- If transferring them to a new container, label it with the common name of the chemical

Using Foodservice Chemicals

Chemicals:

- Keep MSDS for each chemical
- When throwing chemicals out, follow
  - Instructions on the label
  - Local regulatory requirements

Developing a Cleaning Program

To develop an effective cleaning program:

- Create a master cleaning schedule
- Train your staff to follow it
- Monitor the program to make sure it works

Developing a Cleaning Program

To create a master cleaning schedule, identify:

- What should be cleaned
- Who should clean it
- When it should be cleaned
- How it should be cleaned

Developing a Cleaning Program

Monitoring the cleaning program:

- Supervise daily cleaning routines
- Check cleaning tasks against the master schedule every day
- Change the master schedule as needed
- Ask staff for input on the program