

Storage Order	Food	Min. Internal Cooking Temp. / Time
1 (Top)	Ready to Eat/Plant Foods	135°F / No Min.
2	Fish/Seafood	145°F / 15 Sec.
3	Whole Cuts/Chops	
	Served Eggs	
	Roasts (pork, beef, veal, and lamb)	145°F / 4 Min.
4	Ground Meat and Fish/Ratites (emu, ostrich)	155°F / 17 Sec.
	Held Eggs	
5 (Bottom)	Poultry (Birds) – whole or ground	165°F / 1 Sec.
	Stuffing & Stuffed (meat, seafood, poultry, pasta)	
	Microwaved	
	Reheated	165°F / 15 Sec.

Important Numbers to Know	
0.0 - 1.0	Water Activity ( $a_w$ ) Scale (Moisture)
2°	+/- Accuracy of Food Thermometers
3°	+/- Accuracy of Air Thermometers
4	Inches off a counter/tabletop
4.6 - 7.5	Acidity pH Bad Zone
6	Inches off the floor
10	Sec. to scrub hands w/soap
20	Sec. for total handwashing time
24	Read-to-eat TCS food must be Date-Marked if held for longer than 24 hours
41°-135°	Temperature Danger Zone
45°	Milk, Eggs, Shellfish delivery temp. (but must be brought to 41° or lower within 4 hours)
70°-125°	The zone where bacteria grows most rapidly.
70°	Warmest water temp for Thawing
90	Days to be kept after the last shellfish was sold/served
100°	(Warm) Temperature for Handwashing
110°	Temperature for the Wash Sink of the 3-compartment sink
171°	Temp. for Heat Sanitizing Water
180°	Dishwasher final rinse temperature

Chemical Sanitizer Concentrations		
Chlorine	Iodine	Quats
50-99 ppm	12.5 – 25 ppm	Per Manufacture's Recommendations
7 Sec.	30 Sec.	30 Sec.
Heat Sanitizing (Hot Water) <b>171° F</b> for 30 Sec.		

Biological Contamination		
Biological	Description	Prevent by:
<b>Bacteria</b>	Grows best when FAT TOM conditions are right. Food, Acidity, Temperature, Time, Oxygen, Moisture	Controlling time & temperature
<b>Viruses</b>	Carried by humans and animals (requires a living host)	Washing hands/ good personal hygiene
<b>Parasites</b>	Requires a living host. Seafood, wild game and food washed with contaminated water	Buying from approved, reputable suppliers
<b>Fungi</b>	Includes yeast, molds and mushrooms	Buying from approved, reputable suppliers
<b>Toxins</b>	(Poisons) Related to seafood and mushrooms And Cannot be eliminated by cooking or freezing!	Buying from approved, reputable suppliers
	Common Toxins: <b>Ciguatera</b> – found in Barracuda, Amberjack, Grouper, Snapper (think BAGS) <b>Histamines</b> – found in Bonito, Mahi mahi, Mackerel, Tuna	Buy all seafood (and mushrooms) from approved, reputable suppliers

The Big Six		
Must be <b>EXCLUDED</b> , Reported, and have Permission to return from doctor/health department!		
Bacteria:	Salmonella Typhi	Ready to eat food, beverages
	Nontyphoidal Salmonella	Meat, poultry, produce, dairy
	Shigella	Feces and flies
	E Coli	Ground beef and contaminated produce
Viruses:	Hepatitis A	(Jaundice) Ready to eat food and shellfish from contaminated water
	Norovirus (Most Common!) Wash your hands!	(Vomit, Diarrhea) Ready to eat food and shellfish from contaminated water

# Food Safety for Managers – Study Guide

## 1. Chapter 1: Providing Safe Food

- A. A foodborne illness is a disease transmitted to people by food. It's considered an **Outbreak** when:
  - a. Two or more people have the same symptoms after eating the same food.
  - b. An investigation is conducted by state and local regulatory authorities.
  - c. The outbreak is confirmed by a laboratory analysis.
- B. Two Types of food that are most likely to become unsafe:
  - a. TCS Food – Time and Temperature Control for Safety Foods. (Especially: Milk, Eggs, Poultry, Fish & Seafood, Meats, Cut or Cooked Fruits and Vegetables, Tofu or Soy, Sprouts)
  - b. Ready-to-Eat Food – Food that can be eaten without any further preparation, washing, or cooking. (for example: Cooked Food, Washed Fruits and Vegetables, Deli Meat, Bakery Items, Sugar & Spices)
- C. Three High-risk Populations
  - a. 1) Elderly 2) Preschool age children 3) People with compromised immune systems
- D. Food Manager/PIC (Person In Charge):
  - a. Become Certified in Food Safety Management
  - b. Be onsite to answer questions about procedures, ingredients, allergens, etc.
  - c. Show you have the knowledge
  - d. Train employees
- E. Government agencies
  - a. FDA (The Food and Drug Administration)
    - 1. Inspects all food (except meat, poultry, and eggs)
    - 2. Publishes The Model Food Code (as a recommendation/guide for state and local authorities).
    - 3. Regulates food transported across state lines
  - b. USDA (U.S. Department of Agriculture)
    - 1. Inspects meat, poultry, and eggs
  - c. CDC (Centers for Disease Control and Prevention)
    - 1. Investigates and researches foodborne-illness outbreaks
  - d. State and Local Authorities (The Health Department)
    - 1. Writes/adopts local food codes
    - 2. Inspects and Enforces locally
    - 3. Approves Construction
    - 4. Issues Licenses & Permits
    - 5. Approves Construction
    - 6. Investigates complaints and illnesses
    - 7. HACCP Plans/Variations (i.e. Offering live shellfish from display tank, curing food, etc.)

## 2. Chapter 2: FoodBorne Illness – Contaminants

- A. Common Symptoms of foodborne illness: Diarrhea, nausea, vomiting, fever, **jaundice**.
  - a. Five ways foods become unsafe:
    - 1. (#1) Personal Hygiene (washing hands)

2. Time-Temperature abuse
  3. Cross Contamination
  4. Poor Cleaning and Sanitizing
  5. Buying from Unapproved Sources
- b. Three types of Contaminants:
1. Biological (Bacteria, Viruses, Parasites, Fungi, Toxins).
  2. Chemical (Cleaners, sanitizers, pesticides, pewter copper, etc.).
  3. Physical (Objects: hair, fish bones, cherry pits, etc.).
- B. **Biological Contaminants** – Harmful microorganisms called pathogens. (Most common – Cross Contamination).
- a. **Bacteria** – Prevented by controlling Time & Temperature. (Keep food out of the danger zone and cook food to proper temperatures)
1. FAT TOM
  2. Food: Bacteria need nutrients to grow.
  3. Acidity: Neutral is bad (**4.6 – 7.5 pH**).
  4. Temperature: Danger Zone (**41°F - 135°F**) But bacteria grows the fastest between the temperatures of **70°F - 125°F**.
  5. Time: More time in the Temperature Danger Zone – more chance for bacterial growth.
  6. Oxygen: Some need oxygen to grow, but others can grow when oxygen is not present.
  7. Moisture: Water Activity. High levels (closer to **1.0**) are more prone to bacteria.
- b. **Virus** – Require a living host. Prevent by hand washing/good personal hygiene. (Can live through a freezer).
- c. **Parasites** – Require a host to live. Sometimes in contaminated water supply. Prevent by purchase from approved, reputable suppliers.
- d. **Fungi** – Yeasts, Molds, Mushrooms. Prevent by purchasing from approved, reputable suppliers.
- e. **Toxins** – Naturally occur. Most common symptoms include: Tingling, Reversal of Hot and Cold Sensation, etc. Prevent by purchasing from approved, reputable suppliers.
- C. **The Big 6** – Exclude from Work
- a. Bacteria – **Salmonella Typhi** – Found in ready to eat food, beverages. Typhoid Fever.
  - b. Bacteria – **Nontyphoidal Salmonella** – Farm animals (poultry, eggs, meat, dairy), dirty produce.
  - c. Bacteria – **Shigella spp.** – From flies and water contaminated by animal feces.
  - d. Bacteria – **E. Coli** – Found in ground beef and contaminated produce (cantaloupe).
  - e. Virus – **Hepatitis A** (Jaundice) – Ready-to-Eat food and shellfish from contaminated water.
  - f. Virus - **Norovirus** (Most common virus) – Ready-to-Eat food and shellfish from contaminated water.
- D. **Two Toxins** - Neurological, Tingling
- a. **Histamines** – Tuna, bonito, Mahimahi
  - b. **Ciguatera**– Barracuda, Amberjack, Grouper, Snapper. (BAGS)

E. **Chemical Contaminants**

- a. Certain types of kitchenware and equipment (items made from pewter, copper, zinc, and some types of painted pottery)
- b. Cleaners, sanitizers, polishes, machine lubricants, and pesticides
- c. Deodorizers, first-aid products, and health and beauty products (hand lotions, hairsprays, etc.)
- d. Store chemicals away from prep areas, food-storage areas, and service areas. Properly label chemicals.
- e. Use approved reputable suppliers.

F. **Physical Contaminants** – Common objects that get into food:

staples	jewelry	naturally occurring objects	dirt from unwashed fruits & veg.
glass/broken glass	bandages	fish or chicken bones	pests/droppings/rodent hair
plastic/packaging	fingernails	cherry pits	hair

G. **Deliberate/Intentional/Malicious Contamination of Food** – The FDA created a food defense program to prevent intentional contamination.

- a. **Assure** – make sure products received are from safe sources.
- b. **Look** – monitor the security of products in the facility.
- c. **Employees** – know who is in your facility.
- d. **Reports** – keep information related to food defense accessible.
- e. **Threat** – develop a plan for responding to suspicious activity or a threat to the operation.

H. **Food Allergens** – The Big Eight Food Allergens: Milk/Dairy, Eggs, Fish, Crustacean (Shellfish, Crab, Lobster, Shrimp), Soy/Tofu, Wheat/Gluten, Peanuts, and Tree Nuts (Walnuts, Pecans, etc.).

- a. Allergic Reaction – Immune system reacts to specific foods.
- b. Cross-Contact of allergens
- c. Symptoms: Hives or itchy rash, Swelling. Severe reaction, called anaphylaxis.
- d. Service staff: Describe menu items to guests, Identify any allergens in the item. Clearly mark order for the guest with the food allergy, Deliver food separately to prevent to prevent cross-contact. (**cross contact** is when two different foods touch).
- e. Wash, rinse, and sanitize cookware, utensils, and equipment before preparing allergen special order.
- f. Make sure thee allergen does not touch anything for customers with food allergies.
- g. Wash your hands and change gloves before prepping food.
- h. Label food packaged on-site for retail use.
- i. Do NOT put food on surfaces that have touched allergens.

**3. Chapter 3: The Safe Food Handler – Personal Hygiene and Staff Illness**

A. **Personal Hygiene**

**Staphylococcus** – found in humans particularly in the hair, nose, throat, or infected cuts and can be transmitted to food when these areas have been touched and then food is handled. Personal hygiene/hand washing is very important.

- a. Handwashing (total time should take **20 sec.**)
  - 1. Wet hands/exposed arms (use Warm **100°F** water)
  - 2. Soap

3. Scrub (**10-15 sec.**)
  4. Rinse
  5. Air dry or single use towel
  - b. Hand Sanitizer/Antiseptic
    1. FDA approved
    2. Never instead of handwashing
    3. Can be used After handwashing
  - c. Single Use Gloves
    1. Change after **4 hrs** of continuous use
    2. Change when starting a new task
    3. Never wash gloves.
    4. Wash hands before putting on gloves
  - d. Hand or wrist wound
    1. Cover with impermeable cover (bandage or finger cot) AND
    2. Wear single-use glove
  - e. Jewelry – cannot be worn by food prep workers or in food prep areas.
    1. No rings (Except for Plain Bands)
    2. No bracelets (Including medical alert bracelets)
    3. No watches
  - f. Aprons
    1. Remove when leaving food area
    2. Place dirty aprons in clean laundry bag
    3. Never wear in the bathroom
  - g. Eating, Drinking, Smoking, and Chewing Gum or Tobacco – (Small droplets of saliva can contain thousands of pathogens)
    1. Allowed: Only in designated areas
    2. Never while prepping or serving food
    3. Never in prep areas
    4. Never while working in areas used to clean utensils and equipment
    5. Allowed: Covered cup with a straw
- B. Staff Illness
- a. The Big 6 – **EXCLUDE**
    1. Report to Health Department
    2. Need permission from doctor and Health Dept. to return
  - b. Vomiting and diarrhea
    1. Exclude
    2. Must be symptom free for **24 hours**
  - c. Sore throat and fever
    1. Restricted: Food handlers can come to work but cannot work around food.
    2. Excluded: Food handlers who work primarily with high-risk populations must be excluded.

#### 4. Chapter 4: The Flow of Food – Hazards in the Flow of Food and Monitoring Time & Temp.

- A. Preventing Cross-Contamination (the transfer of pathogens)
  - a. Separate equipment: use separate equipment for each type of food
  - b. Clean and sanitize all work surfaces, equipment, and utensils before and after each task.
  - c. Prep food at different times: prepare raw meat, fish, and poultry at different times than read-to-eat food (when using the same prep table)
  - d. Buy prepared foods that do not require much prepping or handling
- B. Preventing Time-Temperature Abuse
  - a. Time-Temp. Control: Food held in the range of 41°F and 135°F has been time-temperature abused.
  - b. Food has been time-temp. abused whenever it is handled in the following ways.
    - 1. Cooked to the wrong internal temperature
    - 2. Held at the wrong temperature
    - 3. Cooked or reheated incorrectly
- C. Thermometers/Probes
  - a. Types of Thermometers/Probes
    - 1. Bimetallic –Sensing area between tip and dimple
    - 2. Thermocouples/Thermistors – Senses temperature right at the tip.
    - 3. Immersion – for liquids like soup
    - 4. Surface/Infrared – for temping equipment surfaces
    - 5. Penetration – for meat
    - 6. Air-Cooler/Vehicles
    - 7. Maximum Registering Dishwasher (Final Rinse **180°F**)
    - 8. Time- Temp. Indicator (TTI) – Delivery/Packaging (Change Color)
  - b. General Thermometer Guidelines
    - 1. Wash, rinse, sanitize, and air-dry thermometers before and after use.
    - 2. Calibrate them before each shift. (Also: after they've been bumped or dropped, after they've been exposed to extreme temp. changes, and before deliveries arrive)
    - 3. Accurate to **+/- 2°F** for food thermometers and **+/- 3°F** for air.
    - 4. Only use stainless steel or glass thermometers in shatterproof casing
    - 5. Insert the thermometer stem or probe into thickest part
    - 6. Take more than one reading in different spots
    - 7. Wait for the thermometer reading to steady
    - 8. Calibrate: Ice-point (Submerge in Ice and Water for **30 sec.** Adjust calibration nut to **32°F**)

#### 5. Chapter 5: The Flow of Food: Purchasing, Receiving, and Storage

- A. Purchasing
  - a. Approved, reputable suppliers/sources only
  - b. These suppliers have been inspected and can supply an inspection report
  - c. These suppliers meet all applicable local, state, and federal laws.
  - d. ! NEVER from home and no Grandma Joyce's homemade jams.

## B. Receiving

### a. General Purchasing and Receiving Principles

1. Make specific staff responsible for receiving
2. Have enough trained staff available to receive food promptly
3. Inspect delivery trucks for signs of contamination
4. Visually check food items and check temperatures
5. Store items promptly after receiving

### b. Deliveries received must:

1. Be inspected upon arrival at the operation
2. Be from an approved supplier/source
3. Have been placed in the correct storage location to maintain the required temperature

### c. Temperature criteria for receiving delivers:

1. Cold TCS food Receive at **41°F** or lower
2. Hot TCS food Receive at **135°F** or higher
3. Milk and shucked fish may be received at **45°F** internal temp as long as it's cooled to **41°F** or lower in **4 hrs.**
4. Shell Eggs, live shellfish may be received at **45°F** air temp as long as they're cooled to **41°F** or lower in **4 hrs.**

### d. Reject packages with

1. Tears, holes, or punctures.
2. Cans with swollen ends, rust, or dents
3. Bloating or leaking ROP (reduced-oxygen packaging) food
4. Broken cartons or seals
5. Dirty and discolored packaging, leaks, dampness, or water stains
6. Signs of pests or pest damage
7. Expired use-by/ expiration dates
8. Evidence of tampering

### e. Required documents (all of which must be kept for **90 days from when the last one is sold/served.**

1. Shellfish must be received with **Shell Stock Identification Tags.**
2. Fish that will be eaten raw or partially cooked must have documentation stating it was properly frozen.
3. Farm raised fish must come with documentation stating it meets FDA standards

## C. Storage

### a. All items not in their original container must be labeled w/the common food name.

### b. Labeling food packaged on-site for retail sale (If **2 or more** ingredients).

1. Common name
2. Quantity of the food
3. List of ingredients in descending order by weight
4. List of artificial colors and flavors including chemical preservatives
5. Name and place of business of the manufacturer, packer, or distributor
6. Source of each major food allergens

- c. Date Marking
  1. Ready-to-eat TCS food must be marked if held for longer than **24 hrs.**
  2. Must indicate when the food must be sold, eaten or discarded
  3. Ready-to-eat TCS food can be stored for only **7 days** if it is held at **41°F** or lower. (count includes first day, so for example: food prepared on June 1, must be discarded on June 7<sup>th</sup>)
- d. Temperatures
  1. Store TCS food at an internal temperature of **41°F** or lower or **135°F** or higher
  2. Store frozen food at temperatures that keep it frozen
  3. Storage units must have at least one air temperature measuring device accurate to **+/- 3°F**
  4. Place the device in the warmest part of cooler units (near the door), and the coldest part of hot-holding units.
- e. **Rotate** food to use the oldest inventory first (Use FIFO – first in first out)

## 6. Chapter 6: The Flow of Food: Preparation

### A. Thawing: 4 methods for thawing food:

- a. Thaw in a cooler, keeping its temp at **41°F** or lower
- b. Submerge food under **running** water at **70°F** or lower
- c. Thaw as part of the cooking process (i.e. Frozen cheese sticks cooked in the fryer)
- d. Can use a microwave to thaw **ONLY** if cooked immediately after thawing

Note: Check for warning labels on vacuum packaged frozen fish. Some cannot be thawed in ROP packaging.

### B. Preparation

- a. Preventing Cross-Contamination (the transfer of pathogens)
  1. Separate equipment: use separate equipment for each type of food.
  2. Clean and sanitize all work surfaces, equipment, and utensils after each task.
  3. Prep food at different times: prepare raw meat, fish, and poultry at different times than ready-to-eat food.
  4. Buy prepared foods that do not require much prepping or handling.
- b. Appearance – You must present food honestly. If you find it has been misrepresented, throw it out.
- c. Corrective Action for Contaminated Food – Discard when:
  1. Food handled by staff who have been restricted or excluded
  2. Food has been contaminated by equipment, unclean hand, bodily fluids
  3. Food has been time-temperature abused in any of the following ways:
    - i. Cooked to the wrong internal temp.
    - ii. Held at the wrong temp (in the Danger Zone)
    - iii. Reheated incorrectly
- d. Only remove as much food from the cooler as you can prep in a short period of time.

- e. Prepping Specific Food:
  - 1. Produce:
    - i. Wash in running water
    - ii. Pull apart leafy greens
  - 2. Eggs for high-risk populations:
    - i. Use pasteurized shells eggs if eggs will be pooled
    - ii. Use pasteurized eggs or egg products when serving raw or undercooked dishes
    - iii. Unpasteurized shell eggs can be used if the dis will be cooked all the way through (cakes, omelets, etc.)
- f. Preparation Practices that have Special Requirements
  - 1. A **Variance** is a written document issued by the Regulatory Authority that authorizes a modification or waiver of one or more requirements of the Code.
  - 2. You need a variance if preparing food in these ways:
    - i. Packaging fresh juice on-sight for sale at a later time, unless the juice has a warning label
    - ii. Smoking food to **preserve** but not to enhance flavor
    - iii. Using food additives or components to preserve or alter food so it no longer needs time and temperature control for safety
    - iv. Curing food
    - v. Packaging food using ROP (reduced-oxygen packaging) method including sous vide
    - vi. Sprouting seeds or beans
    - vii. Custom-processing animals for personal use (i.e. dressing a deer)
    - viii. Offering live shellfish from a display tank. (if you don't have a variance, then those shellfish are just for display and not cooking!)

**C. Cooking**

- a. **Review Chart of Minimum Internal Cooking Temperatures and Times**
- b. **Guidelines for microwave cooking:**
  - 1. Cover food
  - 2. Rotate or stir it halfway through cooking
  - 3. Let it stand for at least two minutes
  - 4. Check the temperature in at least two places

**D. Storage Order/Minimum internal cooking temperatures**

Storage Order	Food	Min. Internal Cooking Temp. / Time
1 (Top)	Ready to Eat/Plant Foods	135°F / No Min.
2	Fish/Seafood	145°F / 15 Sec.
3	Whole Cuts/Chops	
4	Ground Meat and Fish/Ratites (emu, ostrich)	155°F / 17 Sec.
5 (Bottom)	Poultry (Birds) – whole or ground	165°F / 1 Sec.

## E. Cooling

- a. Hot food needs to be cooled to **70°F** in **2 hrs** and then you have **4 more hrs to cool it to 41°F**  
The total cooling time cannot be longer than **6 hrs**, but you get all 6 hrs. (ie: If you cool food from 70°F in 1 hr, then you have 5 hrs to 41°F)
- b. Ways to cool food:
  1. Smaller pieces or place in smaller pans
  2. Shallow pans
  3. Stainless steel
  4. Ice-water bath
  5. Ice paddle
  6. Blast chiller

## F. Reheating

- a. For hot holding: Reheat TCS food to **165°F for 15 sec.**

## 7. Chapter 7: The Flow of Food: Service

### A. Holding

- a. Guidelines for holding food with temperature control
  1. Temperature:
    - i. Hot food: **135°F** or higher
    - ii. Cold food: **41°F** or lower
    - iii. Must check temp at least every **4 hrs**. Throw out food not at **41°F** or lower
    - iv. Optional-check temperatures every 2 hrs to leave time for corrective action
- b. Holding Food Without Temperature Control (Think at home on your countertop)
  1. Cold food can be held without temperature control for up to **6 hours** if:
    - i. It was held at **41°F** or lower before removing it from refrigeration
    - ii. It does not exceed **70°F** during service
      - a. Throw out food that exceeds this temp.
  2. Hot food can be held without temperature control for up to **4 hrs**.
    - i. It was held at 135°F or higher before removing it from temp control
    - ii. It has a label specifying when the item must be thrown out
    - iii. It is sold, served or thrown out within four hours

### B. Serving

- a. High-risk Populations – Do Not Serve:
  1. Sprouts
  2. Unpasteurized Milk, Eggs, or Juice
  3. Raw or Undercooked: meat, poultry, seafood, eggs
- b. Consumer Advisories – Advise customers of the increased risk of foodborne illness from raw or undercooked TCS items
- c. Utensils
  1. Separate utensils for each food
  2. Change or clean and sanitize after **4 hours**
  3. Handles extended above container rim

- 4. Scoops/spoons can be under running water at any temp or in container of water at **135°F**
- d. Re-serve **ONLY** unopened, prepackaged food in good condition (i.e. condiments packages, wrapped crackers)
- e. Bulk Food
  - 1. No label for bulk unpackaged food if:
    - i. No claim to nutrients
    - ii. Prepared on premises
- f. Vended Food
  - 1. Must be wrapped (wrap the apple)
  - 2. Throw out refrigerated food prepped on-site if not sold within **7 days** of prep.

## 8. Chapter 8: Food Safety Management Systems

- A. **Active Managerial Control** – Your **overall responsibility** to actively control risk factors for foodborne illness.
  - a. Identify and document potential risks and ways to control or eliminate them.
  - b. Monitor critical activities.
  - c. Corrective action to fix improper procedures or behaviors.
  - d. Verify that policies, procedures, and corrective actions are followed.
  - e. Training and retraining as needed.
  - f. Periodically assess the system to make sure it is working.
- B. **Food Safety Management Systems** – Examples:
  - a. Personal Hygiene Program
  - b. Pest Control Program
  - c. Cleaning/Sanitizing Program
  - d. Standard Operating Procedures (SOPs)
  - e. Supplier Selection Program
  - f. Food Safety Training Program (ServSafe)
  - g. FDA Food Defense Program Tool to prevent Deliberate/Intentional/Malicious Contamination of Food: A.L.E.R.T.
    - Assure** – make sure products received are from safe sources
    - Look** – monitor the security of products, install cameras, look for recalled or damaged items
    - Employees**– know who is in your facility
    - Reports** – keep information related to food defense accessible
    - Threat** – develop a plan for responding, know who to notify/contact
  - h. HACCP Program (Hazard Analysis Critical Control Point)
    - 1. Based on identifying significant biological, chemical, or physical hazards at specific critical control points within a product’s flow.
    - 2. Once identified, the hazards can be prevented, eliminated, or reduced to safe levels.
    - 3. Seven HACCP Principals:
      - Principle 1 – Conduct a hazard analysis
      - Principle 2 – Determine the critical control points (CCPs).
      - Principle 3 –Establish critical limit(s) for each CCP.

- Principle 4 – Set up systems to monitor each CCP.
- Principle 5 – Establish corrective actions.
- Principle 6 – Establish verification procedures.
- Principle 7 – Recordkeeping and documentation.

## 9. Chapter 9: Safe Facilities and Pest Management

### A. Safe Facilities

- a. Standards Organizations
  - 1. ANSI set standards for the food service industry
  - 2. NSF set standards for foodservice equipment
- b. Interior Requirements for a Safe Operation
  - 1. Floors, walls, and ceilings- materials must be:
    - i. Nonabsorbent
    - ii. Smooth
    - iii. Corrosion resistant
    - iv. Easy to clean
    - v. Durable
    - vi. Resistant to damage and be regularly maintained
  - 2. Floor Equipment/Storage
    - i. **Coving** must be installed where floors and walls meet.
    - ii. Floor-mounted equip/storage must be mounted on legs at least **6 inches** high.
    - iii. Tabletop/countertop equipment/storage should be mounted on legs at least **4 inches** high.
  - 3. Handwashing Stations must be used **ONLY** for handwashing.
    - i. Hot- and cold-running water. Use Warm (**100°F**)
    - ii. Soap
    - iii. Single use towels or air dryer
    - iv. Garbage Container
    - v. Signage (informing staff to wash hands before returning to work)
  - 4. Water and Plumbing
    - i. Only water that is drinkable (**potable**) can be used for the prep of food and come in contact with food-contact surfaces.
  - 5. Cross-connection: Physical link between safe water and dirty or contaminated water.
    - i. Backflow: Reverse flow of contaminants through a cross-connection into the drinkable water supply.
    - ii. Backsiphonage: A vacuum created in the plumbing that sucks contaminants back into the water supply.
    - iii. 2 Backflow prevention methods: Vacuum breaker and **Air Gap**. Air Gap is Best!
  - 6. Grease – Grease traps
    - i. Need cleaned regularly by licensed plumber
    - ii. Prevents drain water backup

- 7. Ventilation System
  - i. Prevent grease and moisture build up
  - ii. Prevent long drying times
- 8. Garbage
  - i. Indoor Containers must be:
    - a. Leak proof, waterproof and pest proof
    - b. Easy to clean
    - c. Covered when not in use
  - ii. Outdoor Containers must:
    - a. Placed on a smooth, durable nonabsorbent surface such as asphalt or concrete (No gravel)
    - b. Have tight-fitting lids and be covered at all times. Closed but doesn't have to be enclosed
    - c. Have their drain plugs in place
    - d. Be cleaned regularly to avoid pests

**B. Pest Management/Pest Prevention**

**a. Deny Access:**

- 1. Check deliveries before they enter the operation
- 2. Refuse shipments if there are pests or signs of pests
- 3. Make sure all points where pests can access the building are secure
- 4. Install air curtains (also called air doors, strip doors or fly fans)

**b. Deny Harborage (food, water, and shelter):**

- 1. Throw out garbage quickly and correctly
- 2. Keep containers clean and in good condition
- 3. Keep outdoor containers tightly covered
- 4. Clean up spills around containers immediately
- 5. Keep recyclables in clean, pest-proof containers
- 6. Store food and supplies quickly and correctly (FIFO)

**c. Work with a licensed PCO (Pest Control Operator)**

- 1. Regularly schedule inspections/treatment with restricted use pesticides.

**C. Imminent Health Hazard** – is a significant threat or danger to health and requires immediate correction or closure to prevent injury.

- a. Possible imminent health hazards include: Electrical power outages, Fire, Flood, Sewage backups
- b. Contact your local regulatory authority on closures
- c. Need permission from local regulatory authority to reopen

**10. Chapter 10: Cleaning and Sanitizing**

**A. Cleaning**

- a. Master Cleaning Schedule: Who, What, When, How
- b. Food-contact surfaces and equipment must be cleaned and sanitized:
  - 1. Before working with a different type of food
  - 2. Any time a task was interrupted, and the items were contaminated

3. After **4 hours** of constant use
4. On a frequent, regular, and ongoing basis
- c. Cleaning removes food and other debris by using cleaners (4 main types of cleaners)
  1. Detergents
  2. Abrasive cleaners
  3. Degreaser
  4. Delimer (mineral buildup)
- B. **Sanitizing** – reduces pathogens (not 100%). 2 methods: Chemical or Heat
  - a. PPM = Parts per Million
  - b. Use a test kit to check concentration
  - c. Hard water makes sanitizers weak
  - d. Hot water is more effective
- C. How to clean and sanitize:
  - a. Scrape, rinse or remove food bits from the surface
  - b. Wash the surface
  - c. Rinse the surface
  - d. Sanitize the surface
  - e. Allow the surface to air-dry
- D. Hot Water, Chlorine, Iodine, Quats Sanitizing

Chemical Sanitizer Concentrations		
Chlorine	Iodine	Quats
50-99 ppm	12.5 – 25 ppm	Per Manufacture’s Recommendations
7 Sec.	30 Sec.	30 Sec.
Heat Sanitizing ( <b>Hot Water</b> ) <b>171° F</b> for 30 Sec.		

- E. **Dishwashing**
  - a. Machine Dishwashing – Use a maximum registering thermometer
    1. High-temperature machines: Final heat sanitizing rinse:
      - i. **165°F** for stationary rack, single-temperature machines
      - ii. **180°F** automatic dishwashers
  - b. **Chemical-sanitizing machines:**
    1. Clean and sanitize at much lower temperatures
  - c. **Manual Dishwashing**
    1. Setting up a three-compartment sink:
      - i. Clean and sanitize each sink and drain board
      - ii. Fill the first sink with detergent and water at least **110°F**
      - iii. Fill the second sink with clean water
      - iv. Fill the third sink with water and sanitizer to the correct concentration (or **171°F** water)
      - v. Provide a clock with a second hand to let food handlers know how long items have been in the sanitizer

2. The Process – Steps for Manual Dishwashing:
    - i. Rinse, scrape, or soak items before washing them
    - ii. Wash items in the first sink
    - iii. Rinse items in the second sink
    - iv. Sanitize items in the third sink
    - v. Air-dry items on a clean and sanitized surface
  - d. **Wet wiping cloths** must be stored in sanitizer solution between uses (Change the solution when necessary)
  - e. **Non-Food Contact Surfaces** (Walls and Floors)
    1. Regular cleaning to avoid dirt/pathogens/pests.
    2. No need to sanitize
  - f. **Written procedures** must be in place for cleaning up vomit and diarrhea
    1. Specific procedure
    2. Training
    3. Personal protective equipment
- F. **Cleaning Supplies/Chemical Storage**
- a. Chemicals
    1. SDS (Safety Data Sheets) OSHA First aid procedures and hazards
    2. Store in original container or for smaller secondary containers, label with common name when is use.
  - b. Cleaning/Chemical Storage Area
    1. Good Lighting
    2. Hooks for mops/tools
    3. Utility/Service sink for filling buckets and washing cleaning tools
    4. Floor drain for dumping dirty water