CHAPTER 1: PROVIDING SAFE FOOD: THE PEOPLE - THE FOOD

Foodborne Illness: a disease transmitted to people by food.

►THE PEOPLE

Customers and High-risk Populations:

- Elderly- Nursing Homes.
- Preschool Children- Daycares.
- People with compromised immune systems-Hospitals/Medications/Treatments.

Food Manager/PIC:

- Become Certified in Food Safety Management.
- Be onsite to answer questions about procedures, ingredients, allergens, etc.
- Show you have the knowledge.
- Training (More about training in CH 8).
- Cooperate with inspectors. Learn from inspectors.

Suppliers: Buy from approved, reputable suppliers/sources/vendors!

Government Agencies:

State and Local Authorities (aka: health department or local regulatory authority.)

- Writes/adopts local food codes.
- Inspects and enforces local regulations.
- Issues licenses, permits.
- Approves construction.
- HACCP plans
- Variance. Ex: Live lobster tanks, sous vide.

USDA (United States Department of Agriculture)

- Inspects meat, poultry, and eggs.

FDA (Food and Drug Administration)

- Inspects all food except meat, poultry, and eggs.
- Publishes The Model Food Code (a recommendation/guide for state and local authorities.)

CDC (Centers for Disease Control)

- Researches foodborne illnesses and outbreaks.
- Critical Risk Factors in Active Managerial Control.

►THE FOOD-2 types of food most likely to become unsafe: TCS and RTE.

TCS Foods - Foods that are Time and Temperature Controlled for Safety:

- Milk and Dairy
- Eggs
- Meat
- Poultry
- Fish
- Shellfish and Crustaceans
- Sliced, Peeled or Cooked Fruits and Veggies
- Tofu or Soy, Soybeans
- Sprouts
- Garlic/oil

RTE Foods (Ready To Eat) - No more prep, washing or cooking is needed:

- Washed Whole Fruits and Veggies
- Deli Meats
- Sugar, Salt, Spices, Seasonings
- Cooked food

CHAPTER 2: FOODBORNE ILLNESS – CONTAMINANTS

►FOODBORNE ILLNESS – A disease transmitted to people by food.

A foodborne illness OUTBREAK occurs when:

- Two or more people have the same symptoms after eating the same food. (Call local regulatory authority.)
- An investigation is conducted by local regulatory authorities.
- The outbreak is confirmed by laboratory analysis.

Common Symptoms of foodborne illness: Diarrhea, nausea, vomiting, fever, jaundice.
Five ways foods become unsafe:

- #1 Poor Personal Hygiene/Handwashing
- Cross Contamination. (bacteria, viruses, parasites, fungi, chemicals, objects,etc.)
- Time-Temperature abuse
- Poor Cleaning and Sanitizing
- Buying from Unapproved Sources/Suppliers/Vendors

Adulterated food: food that is held or prepared under unsanitary conditions.

►CONTAMINANTS

Three types of contamination: Cross Contamination

- Biological (Bacteria, Viruses, Parasites, Fungi, Toxins)
- Chemical (Cleaners, sanitizers, pesticides, pewter, copper, etc.)
- Physical (Objects; hair, cherry pit)

Biological Contaminants – Harmful microorganisms called Pathogens.

Bacteria - *Prevent by controlling time & temperature.

FAT TOM

- **F**ood: Bacteria need nutrients to grow.
- **A**cidity: Neutral is bad (**4.6-7.5 ph**).
- **T**emperature Danger Zone (**41°F-135°F**). (Note: Grows the fastest b/w **70°F-125°F**).
- **T**ime: More time in the Temperature Danger Zone = more change for bacterial growth.
- **O**xygen: Some need it, some don't.
- **M**oisture: Water Activity. High levels (closer to **1.0**) are more prone to bacteria.

Virus – Require a living host. *Prevent by hand washing/good personal hygiene. Fecal-oral route. Dormancy.
Parasites - Require a host to live. Seafood/Wild game, contaminated. *Prevent by purchasing from approved, reputable suppliers/sources/vendors.
Fungi - Yeasts, Molds, Mushrooms. * Prevent by purchasing from approved, reputable suppliers.
Toxins – Naturally occur. Tingling, chills. *Prevent by purchasing from approved, reputable suppliers.
The Big 6 – 1-Exclude from work. 2-Call the health department. 3-Need permission to return to work.

- Bacteria - Salmonella Typhi- Found in ready to eat food, beverages. Typhoid Fever.
- Bacteria - Nontyphoidal Salmonella- Farm animals (poultry, eggs, meat, dairy), dirty produce.
- Bacteria - Shigella spp.- From flies and water contaminated by animal feces.
- Bacteria - E. Coli - Found in ground beef and contaminated produce.
- Virus - Hepatitis A (*Jaundice)- Ready to eat food and shellfish from contaminated water.
- Virus - **Norovirus- #1 Foodborne illness**! Vomit/Diarrhea.
- Honorable mentions…Listeria/Deli Meat. Botulism/Canned Foods.

Two Toxins-

- Histamines- Tuna, bonito, mahimahi.
- Ciguatera- Barracuda, Amberjack, Grouper, Snapper.

Chemical Contaminants- Cleaners, Sanitizers, Pesticides, Pewter/Copper.

- Use approved reputable suppliers/sources/vendors.
- Store and use chemicals properly. Follow manufacturer's instructions.

Physical Contaminants- Objects (hair, plastic, cherry pit, etc.)
Allergic Reaction – Immune system reacts to specific proteins in some foods.
Allergens- Cross-Contact

Symptoms: Hives or itchy rash, Swelling. Severe reaction, called anaphylaxis.

- Staff onsite who know ingredients, Use separate fryers, Wash-rinse-sanitize utensil/equipment.
- Milk/Dairy, Soy/Tofu, Eggs, Wheat/Gluten, Fish, Shellfish/Crustacean, Peanuts, Tree nuts, and Sesame.

CHAPTER 3: THE SAFE FOOD HANDLER – PERSONAL HYGIENE AND STAFF ILLNESS

►PERSONAL HYGIENE

Staphylococcus-Wiping or touching the nose hairs.
Handwashing - Think about washing hands "BEFORE" food, utensils, equipment, gloves, etc. *Before **and** after raw meat.

20 seconds Handwashing:

- Wet hands/exposed arms (**85˚F**)

- Soap
- Scrub **10-15 sec**
- Rinse
- Air dry/Single use towel

Hand Sanitizer/Antiseptic- FDA approved. Never instead of handwashing.
Single Use Gloves – Change after **4 hrs** of use or when changing tasks.
Hand or wrist wound-impermeable cover (bandage or finger cot) and single-use glove.
Plain metal wedding band only. (no medical alert jewelry.)
Aprons- Remove and hang when leaving food area. Place dirty aprons in clean laundry bag.
Covered cup with straw only in food areas. Saliva spreads bacteria and viruses.

►STAFF ILLNESS

- **The Big 6**- 1-Excluded. 2-Report to health department. 3-Need permission from Dr. and health dept. to return.
- Vomiting and diarrhea – Excluded. Must be symptom free **24 hrs** to return to work.
- Sore throat and fever: Restricted-Food handlers can come to work, but cannot work around food items.
  Excluded-Food handlers who work primarily with high risk are excluded.

CHAPTER 4: THERMOMETERS/PROBES

►TYPES OF THERMOMETERS/PROBES

- Thermometers/Thermocouples/Thermistors (general terms).
- Bimetallic -Dimple.
- Maximum Registering-Dishwasher (Final Rinse- Automatic **180˚F,** Stationary **165˚F**).
- Time-Temperature Indicator (TTI)-Delivery/Packaging (Change Color).
- Immersion-Soup.
- Surface/ Infrared -Equipment.
- Penetration-Meat.
- Air-Cooler/Vehicles.

General Thermometer Guidelines.

- Wash, rinse, sanitize, and air-dry thermometers before and after use.
- Calibrate them before each shift and as needed.
- Accurate to **+/- 2˚F** for food and **+/- 3˚F** for air. Ok to be lower, just can't be higher.
- Only use stainless steel or glass thermometers in shatterproof casing.
- Insert the thermometer stem or probe into thickest part.
- Take more than one reading in different spots.
- Wait for the thermometer reading to steady.
- Calibrate: Ice-point-Submerge in Ice and Water for **30 sec**. Adjust calibration nut to **32˚F**.

CHAPTER 5: THE FLOW OF FOOD: PURCHASING – RECEIVING - STORAGE

►PURCHASING

Approved reputable suppliers/sources/vendors only. NEVER from home! No Uncle Charlie's homemade hot sauce.

►RECEIVING

Temperature criteria for receiving deliveries:

- Cold TCS food should be received at **41˚F** or lower.
- Hot TCS food: Receive at **135˚F** or higher.
- Milk and shucked fish may be received at **45˚F internal** temp. Cool to **41˚F** or lower in **4 hrs**.
- Shell Eggs and live shellfish may be received at **45˚F air/ambient** temp. Cool to **41˚F** or lower in **4 hrs.**

Deliveries received must:

- Be inspected upon arrival at the operation. Work with vendors who will deliver during slow times.
- Be from an approved supplier/source. Key drop deliveries. Clean vehicles.
- Have been placed in the correct storage location to maintain the required temperature.

Reject damaged, pest damaged, expired items, broken protective seals, soiled eggs.
Recalls- Take out of inventory. Move to separate area. Place a sign "Do not use. Do not discard."
Required documents: Shellfish, Raw fish, Farm raised fish- Keep **shell stock tags for 90 days** after the last portion is sold.

►STORAGE

Storage Order* See "Storage Order/Minimal Internal Cooking Temperature Chart in Ch 6*

Labeling food for use on-site:

All items not in their original containers must be labeled with the common food name.

Labeling food packaged on-site for retail sale: If **2 or more** ingredients.

- Common name.
- Quantity of the food.
- List of 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 allergens.

Date Marking:

- Ready-to-eat TCS food must be marked if held for longer than **24 hrs.**
- Date marks must indicate when the food expires, must be discarded by, or must be used by.
- Food can be stored for **7 days** from date prepared or opened.

Temperatures:

- Store TCS food at an internal temperature of **41˚F** or lower or **135˚F** or higher.
- Store frozen food at temperatures that keep it frozen.
- Storage units must have at least one air temperature measuring device accurate to **+/- 3˚F.**
- Place the device in the warmest part of cooler units, and the coldest part of hot-holding units.

Follow FIFO -Rotate items with newest in front.

Containers: leakproof, waterproof, pest proof, cleanable, able to be sealed or covered.

CHAPTER 6: THE FLOW OF FOOD: THAWING - PREPARATION – COOKING – COOLING - REHEATING

►THAWING

4 methods for thawing food:

- Thaw food in a cooler, keeping its temperature at **41˚F** or lower.
- Submerge food under running (not standing) water at **70˚F** or lower.
- Thaw food in a microwave, cook immediately after thawing.
- Thaw as part of the cooking process. Ex: Frozen hamburger directly on the grill.

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

►PREPARATION

Preventing Cross-Contamination (the transfer of pathogens/microorganisms).

- Separate equipment: use separate equipment for each type of food. Color code equipment.
- Clean and sanitize all work surfaces, equipment, and utensils after each task.
- Prep food at different times: prepare raw meat, fish, and poultry at different times than ready-to-eat food.
- Buy prepared foods that do not require much prepping or handling.

Appearance-You must present food honestly. If you find it is misleading or has been misrepresented, throw it out.

Corrective Action for Contaminated Food- Discard it!

Only remove as much food from the cooler as you can prep in a short period of time.

Prepping Specific Food

Produce:

- Wash in running water.
- Pull apart leafy greens.

Eggs for high-risk populations:

- Use pasteurized shell eggs or egg products.
- Unpasteurized shell eggs can be used if the dish will be cooked all the way through (omelets, cakes).

Bare hand contact is acceptable: 1-when washing produce. 2-when prepping food that will be cooked to the required minimum internal temperature. (Carrots or meat for stew). 3-never for a high risk population.

►COOKING

Storage Order/Minimum internal cooking temperatures.

STORAGE ORDER (Top ↓ Bottom)	TEMPS/TIMES	*Other	*Other
Ready to Eat/Plant Foods	135˚F No Min		
Fish/Seafood	145˚F - 15 sec		
Whole Cuts/Chops	145˚F - 15 sec	Served Eggs	Roasts (4 Min)
Ground Meat and Fish/ Ratites	155˚F - 17 sec	Held Eggs	
Birds	165˚F - 1 sec	Stuffed/ Microwaved	Reheated (15 sec)

Guidelines for microwave cooking:

- Cover food.
- Rotate or stir it halfway through cooking.
- Let it stand for at least two minutes.
- Check the temperature in the thickest part and at least two places.

►COOLING

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**.

Example: If you cool food from to 70˚F in 1 hr, then you have 5 hrs to 41˚F.

Ways to cool food:

- Smaller pieces or smaller pans
- Shallow pans
- Stainless steel
- Ice-water bath
- Ice paddle
- Blast chiller
- Ice or cold water from a potable source

►REHEATING

For hot holding:

Reheat TCS food to **165 ˚F for 15 seconds**.

CHAPTER 7: THE FLOW OF FOOD: HOLDING - SERVING

►HOLDING

Guidelines for Holding Food with temperature control.

Temperature:

- Hot food: **135˚F** or higher.
- Cold food: **41˚F** or lower.
- Must Check temperatures at least every **4 hrs**. Throw out food not at **41˚F** or lower.
- Optional-Check temperatures every **2 hrs** to leave time for corrective action.

Holding Food *Without* Temperature Control (aka Using only time as a method). (Think picnic or on your countertop.)

Cold food can be held without temperature control for up to **6 hrs** if:

- It does not exceed **70˚F** during service.

Hot food can be held without temperature control for up to **4 hrs**.

►SERVING

High-Risk Populations- Do not serve sprouts, unpasteurized milk or juice, raw or undercooked meat, poultry, or seafood, unpasteurized or undercooked eggs.

Consumer Advisories -Warning on the menu re: the increased risk of foodborne illness from raw or undercooked food.

Utensils

- Separate utensils for each food.
- Change or clean and sanitize after **4 hrs.**
- Handles extended above container rim.

- Ice cream scoops/butter spoons can be under draining running water any temp or container of water at **135˚F.**

Single-service items: disposable utensils, paper plates, etc.
Re-serve only unopened, prepackaged food– Condiment packages, wrapped crackers – protected by the wrapper.
Self-Service Area – Food Bar/Salad Bar

- Hold food at the correct temperature: Hot food: **135˚F** or higher/Cold food: **41**˚F or lower
- Use sneeze guards.
- More than one clean/fresh plate but not the same plate.
- Only item that can be reused is a drinking glass.
- Label with the common name.
- Have staff monitor the self-service area.

Bulk- No label for bulk unpackaged food if no claim to nutrients and has been prepared on premises.
Vended food- **7 days**. Must be wrapped. Wrap the Apple.
Off Site- Use ANSI or NSF approved equipment with covers.
Receive, Deliver, Hold, Store: Temperature Danger Zone (Cold **41˚F** or Hot **135˚F**).

CHAPTER 8: FOOD SAFETY MANAGEMENT SYSTEMS

► **ACTIVE MANAGERIAL CONTROL** – Your overall responsibility to actively control risk factors for foodborne illness.

- Identify and document potential risks and ways to control or eliminate them.
- Monitor critical activities.
- Corrective action to fix improper procedures or behaviors.
- Verify that policies, procedures, and corrective actions are followed.
- Training and retraining as needed.
- Periodically assess the system to make sure it is working.

►FOOD SAFETY MANAGEMENT SYSTEMS

Examples of Food Safety Management Systems:

- Personal Hygiene Program
- Pest Control Program
- Cleaning/Sanitizing Program
- Standard Operating Procedures (SOPs)
- Supplier Selection Program
- Food Safety Training Program (ServSafe-This class!)
- 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 -Who to notify/contact.
- HACCP Program (Hazard Analysis Critical Control Point)
  - Based on identifying significant biological, chemical, or physical hazards at specific critical control points within a product's flow.
  - Once identified, the hazards can be prevented, eliminated, or reduced to safe levels.
  - There are **7 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—Record-keeping and documentation.
  - A "variance" is a document from the local regulatory authority that allows a modification of a regulation.
    *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 to alter food to no longer need time and temperature control for safety.
- Curing food.
- Packaging food using a reduced-oxygen packaging (ROP) method including sous vide.
- Sprouting seeds or beans.
- Offering live shellfish from a display tank. Otherwise only for display.
- Custom-processing animals for personal use (dressing a deer.)

CHAPTER 9: SAFE FACILITIES – PEST MANAGEMENT

►SAFE FACILITIES

Standards Organizations

- ANSI sets standards for the food service industry (ServSafe, foodservice equipment, safety equipment.)
- NSF sets standards for foodservice equipment.

Floors, walls, and ceilings (aka Non Food Contact surfaces): Materials must be nonabsorbent, smooth, corrosion resistant, easy to clean, durable, resistant to damage and be regularly maintained.

Floor equipment/storage

- Floor-mounted equipment/storage must be mounted on legs at least **6 inches** high.
- Coving must be installed where floors and walls meet for easier cleaning -corners etc.
- Tabletop/countertop equipment/storage should be mounted on legs at least **4 inches** high.

Handwashing Stations must be used only for handwashing.

- Hot (**100˚F**) and cold water
- Soap
- Single use towels or air dryer
- Garbage Container
- Sign

Water and Plumbing

Potable=Drinkable

Cross-connection: Physical link between safe water and dirty or contaminated water

- Backflow: Reverse flow of contaminants through a cross-connection into the drinkable water supply
- Backsiphonage: A vacuum created in the plumbing that sucks contaminants back into the water supply
- 2 Backflow prevention methods: Vacuum breaker and Air gap. Air gap better!

Grease- Grease traps cleaned regularly by licensed plumber to prevent drain water backup.

Ventilation System- Prevent grease and moisture build up. Prevents long drying times. Gets rid of fumes/heat.

Garbage

Indoor containers must be:

- Leak proof, waterproof, and pest proof, cleanable, covered when not in use.

Outdoor containers must:

- Be placed on a smooth, durable nonabsorbent surface such as asphalt or concrete (no gravel).
- Have tight-fitting lids and be covered at all times. Closed but doesn't have to be enclosed.
- Have the drain plug in place.
- Be cleaned regularly to avoid pests. Does not have to be sanitized.

►PEST MANAGEMENT

Pest Prevention

Deny Access:

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

Deny pests food, water, and shelter: (Harborage)

- Throw out garbage quickly and correctly.
- Keep outdoor containers tightly covered.
- Keep recyclables in clean, pest-proof containers.
- Store food and supplies quickly and correctly (FIFO).

Work with a licensed PCO- Regularly scheduled inspections/treatment with Restricted Use Pesticides.

►IMMINENT HEALTH HAZARD

An Imminent health hazard is a significant threat or danger and requires immediate correction or closure.

Possible imminent health hazards include Electrical power outages, Fire, Flood, Sewage backups.

Contact your local regulatory authority on closure.

Need permission from local regulatory authority to reopen.

CHAPTER 10: CLEANING – SANITIZING – DISHWASHING - CLEANING SUPPLY - CHEMICAL STORAGE

►CLEANING

Master Cleaning Schedule: Who, What, When, How. Mandatory.

Food-contact surfaces and equipment must be cleaned and sanitized:

- Before working with a different type of food.
- Any time a task was interrupted and the items were contaminated.
- After **4 hrs** if the items are in constant use.

Cleaning - removes food and other debris by using cleaners.

4 Main Types of Cleaners

- Detergents - Dishes
- Abrasive cleaners – Dishes, Surfaces, etc.
- Degreaser – Grease buildup
- Delimer – Mineral Buildup

Brushes, thin pads or cloths. No sponges – bacteria.

►SANITIZING - Sanitizing reduces pathogens (Not 100%). There are 2 Methods- Chemical or Heat

- PPM = Parts per Million.
- Use a test kit or test strip to check concentration.
- Hard water makes sanitizers weaker.
- Hot water is more effective.

How to clean and sanitize:

- Scrape, rinse or remove food bits from the surface.
- Wash.
- Rinse.
- Sanitize.
- Allow the surface to air-dry.

Chemical Sanitizer Concentrations

Chlorine	Iodine	Quats
50-99 ppm	12.5-25 ppm	Per Manuf.
7 sec	30 sec	30 sec

*Hot Water (Heat) Sanitizing – 171 ˚F for 30 sec

►DISHWASHING

Machine Dishwashing – Use a maximum registering thermometer.

High-temperature machines: Final heat sanitizing rinse:

- **165˚F** for stationary rack, single-temperature machines.
- **180˚F** automatic dishwashers.

Chemical-sanitizing machines:

Clean and sanitize at much lower temperatures.

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.**
- Fill the second sink with clean water.
- Fill the third sink with water and sanitizer to the correct concentration (or **171**˚F water).
- Provide a clock with a second hand to let food handlers know how long items have been in the sanitizer.

The Process -Steps for Manual Dishwashing:

- Rinse, scrape, or soak items before washing them.
- Wash items in the first sink.
- Rinse items in the second sink.
- Sanitize items in the third sink.
- Air-dry items on a clean and sanitized surface.

Wet wiping cloths must be stored in sanitizer solution between uses.
Dry cloths only for spills.
Non-Food Contact Surfaces (Ceilings, Walls, Floors) Regular cleaning or as needed. No need to sanitize.
Operations must have and post written procedures for cleaning up vomit and diarrhea.

- Specific procedure.
- Training.
- Personal protective equipment.

►CLEANING SUPPLIES/CHEMICAL STORAGE

Chemicals

- Conduct Chemical Hazard Training in case of chemical burns or injuries.
- SDS (Safety Data Sheets) (OSHA) First aid procedures and chemical hazards communication/info.
- Store in original container.
- For smaller/secondary containers, label with common name. “Bleach” not Clorox.

Cleaning/Chemical Storage Area

- Good Lighting.
- Hooks for mops/tools.
- Utility/Service/Mop sink for filling buckets and washing cleaning tools, dumping dirty water.
- Floor drain for dumping dirty water.