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Food Safety Management Programs

Food Safety Management

Learning Objectives

- What is the purpose of a food safety management program?
- What are the steps of an effective HACCP system?
- What are important prerequisite programs for the HACCP system?
- What are critical control points in the flow of food?
- Why is a food recall procedure important?

The Need

- Food safety programs help individual food business effectively prevent foodborne illness from occurring.
- Group of practices and procedures (SOP) intended to prevent foodborne illness
- Controls risk and hazards throughout the food chain

Avoid hazards.

http://www.cfsan.fda.gov/~dms/ret4toc.html
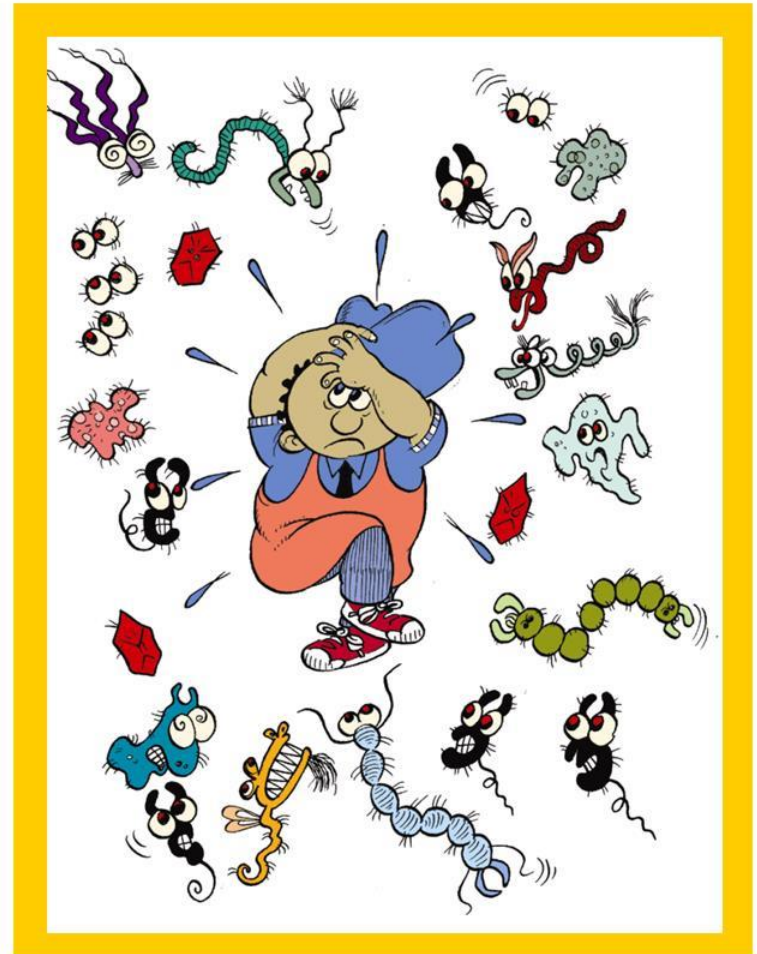
Important Components of Food Safety Management Programs

- (GAPs) Good Agricultural Practices
- (GMPs) Good Manufacturing Practices
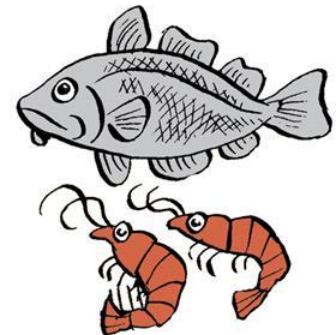- (GRPs) Good Retail Practices.

Good Agricultural Practices (GAPs)

- Used for on-farm production of raw fruit and vegetable products
- Programs that use GAPs focus on farm management programs related to:
  - Personal hygiene practices
  - Use and treatment of water
  - Manure use on farm
  - Cleaning and sanitation procedures for pre-harvest, post-harvest, and transportation
  - Traceability and recall program

Good Manufacturing Practices (GMPs)

- Required for all food-processing industries
- GMPs address issues related to:
  - Personal hygiene practices
  - The condition of the building and facilities
  - The condition and clean ability of the equipment
  - Production and process control.

Good Retail Practices (GRPs)

- Used in retail food preparation and distribution
- GRPs focus on food safety practices for retail food distribution, preparation, display and sale
- GRP guidelines are written for:

  - Receiving
  - Storage
  - Preparation
  - Packaging and labeling
  - Display

  - Personal health and hygiene
  - Employee and customer education
  - Record keeping.

Food Safety Foundations include...

- Personal hygiene program
- Food safety training
- Supplier selection and specifications
- Cleaning and sanitation
- Pest control
- Facility design and operation
- Standard operating procedures (SOP)
- Quality control and assurance

All food safety systems must have

- A traceability program
  - Be able to trace the income material and where does it goes
- Recall program
  - What to do if a food produced in the establishment or item purchased is recalled

Food Recall Procedures

Types of food recalls:

- Class I
  - Foods that may cause serious adverse health consequences
- Class II
  - Foods that would result in a temporary or reversible health problem
- Class III
  - Foods that are not likely to cause danger to health.

Product Coding

Use product coding to track:

- Stock rotation
- Shelf life

Product coding is customized to the operation.

Is linked to the traceability and recall program

Food Service
Food Safety Programs (FSP)

Two ways to deal with it in Food Services Operations

- Active Managerial Control of Foodborne Illness Risk Factors

- Hazard Analysis and Critical Control Points - HACCP

Active managerial control

- Main focus is control the risk factors in five broad categories
  - Food from Unsafe Source
  - Inadequate cooking
  - Improper Holding Temperatures
  - Contaminated equipment
  - Poor personal hygiene

Food Safety Management Programs at retail focus on:

- Controlling time and temperature
- Practicing good hygiene
- Preventing cross contamination
- Cleaning and sanitizing properly.
- Approve supplier

TIME & TEMPERATURE
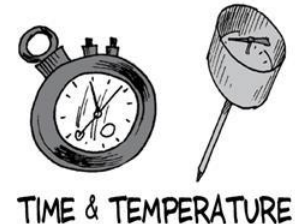
GOOD HYGIENE

CLEANING AND SANITIZING

PREVENTING CROSS CONTAMINATION

Active Managerial Control (AMC)

Ways to achieve AMC

- Certified food protection manager who has approved proficiency by passing a test from an accredited program
- Manager and employees continuous training
- Manager supervision
- Using Standard operating procedures SOP for critical operations in the operation such as cooling steps
- Recipe that contains specific steps for preparing a food item, specific critical limits, such as cooking temperature

Active Managerial Control (AMC)

Ways to achieve AMC

- Purchase specifications
- Design and maintenance of equipment and utensils
- Employee health policy for restricting or excluding ill employees
- On going quality control and assurance
- Monitoring and recordkeeping
- Risk Control Plans

Active Managerial Control (AMC)

Is critical to the success of the system

- Introduce monitoring critical steps in the operation
- Taking corrective actions when needed
- Verifying that actions taken controls the risk factors already described
- Documents

Food Code 2013- FDA

- Food Code provide recommendations on how to control the risk factors
  - Demonstration of knowledge
  - Employee health controls
  - Control of hands as a vehicle of contamination
  - Time and temperature parameters
  - Consumer advisories
- SOP should be written to indicate how to apply these parameters based in the FC2013

"A Food Safety Management System based on HACCP provides a comprehensive framework by which operators can control Foodborne Illness Risk Factors." FC 2013

Food Safety Program

- Develop a written plan
- Implement in each individual establishment
- Based on principles outlined in the guidance

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USDA Guidance

Guidance for School Food Authorities: Developing a School Food Service Program Based on the Process Approach to HACCP Principles

http://www.fns.usda.gov/cnd/lunch/Downloadable/HACCPGuidance.pdf

FDA Guidance

- Managing Food Safety: A Manual for the Voluntary Use of HACCP Principles for Operators of Food Service and Retail Establishments

HACCP – Goals

The HACCP system can control hazards that are common causes of foodborne illness including:

- Biological hazards

- Chemical hazards

- Physical hazards.
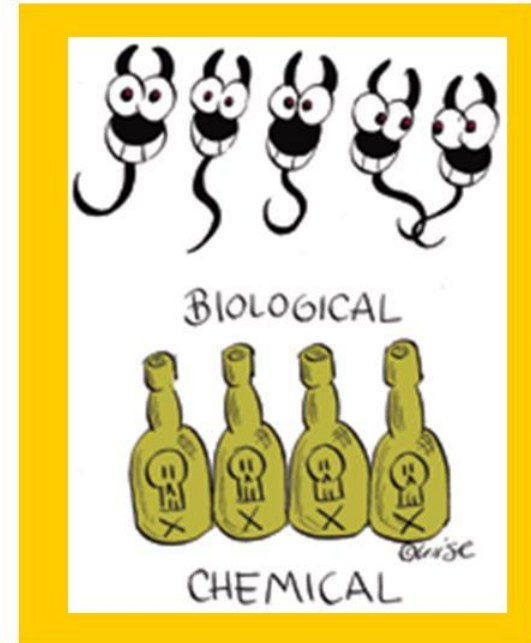
HACCP – History

Hazard
Analysis
Critical
Control
Point

Inspector Harry HACCP

Describe the Foodservice Operation

- Types of facilities
- Number of employees at each site
- Types of equipment
- Processes for food preparation
- Current SOPs or food safety practices

Key terms

- Critical Control Point (CCP) - a point at which loss of control may result in an unacceptable health risk.

- Critical limit - means the physical, biological or chemical limits that must be met at a critical control point to decrease the risk that an identified food safety hazard may occur. Temperature, time, water activity, and pH are the most frequently utilized critical limits.

Key terms

- HACCP plan - is a written document that outlines the formal procedures for following the HACCP principles developed by The National Advisory Committee on Microbiological Criteria for Foods.

- Hazard Analysis Critical Control Point (HACCP) system - a prevention-based food safety program.

Key terms

- Hazard - any biological, chemical, or physical property that may cause an unacceptable consumer risk.

- Hazard analysis - identify hazards (problems) that might be introduced into food by practices or the intended use of the product.

Key terms

- Monitoring - a planned sequence of observations or measurements or critical limits designed to produce an accurate record and intended to ensure that the critical limit maintains product safety.

- Risk - the probability that a condition or conditions will lead to a hazard.

Key term

- Verification - methods, procedures, and tests used to determine if the HACCP system is in compliance with the HACCP plan.

- Critical Limits – A prescribe parameter

  (maximum or minimum) that must be met to ensure food safety hazards are controlled at each CCP

- Critical Control Point (CCP)– Means a point or procedure in a specific food system where loss of control may result in an unacceptable health risk.

Key Terms

- Process Approach
- Control measures
- Standard operating procedures (SOPs)

Pre-requisite programs

- In order for a HACCP plan to be effective, there are some strong procedures and programs that must be developed and implemented to:

- Protect Products from contamination by biological, chemical, and physical hazards

- Control bacterial growth

- Maintain equipment

Pre-requisite Programs, examples:

- Vendor certification program
- Training programs
- Allergen Management
- Buyer specification
- Recipe process control
- FIFI procedures

The Process Approach

- HACCP principles are built into the Process Approach

Getting Started

- What is the Process Approach?
- How to apply the Process Approach to your facility
- Food Safety Practices that support your food safety program

Control measures

Regardless of the food preparation process used:

- No bare hand contact with ready-to-eat foods (or use of an approved, alternative procedure) to help prevent the transfer of viruses, bacteria, or parasites from hands

- Proper handwashing to help prevent the transfer of viruses, bacteria, or parasites from hands to food

- Restriction or exclusion of ill employees to help prevent the transfer of viruses, bacteria, or parasites from hands to food

- Prevention of cross-contamination of ready-to-eat food or clean and sanitized food-contact surfaces with soiled cutting boards, utensils, aprons etc. or raw animal food

Best Practices & SOPs

Best Practices & Standard Operating Procedures (SOPs)

- Terms commonly used to describe written procedures on how to perform a job

- They must be written clearly, explained to employees, and performed correctly.

SOPs include…

Standard Operating Procedures

- Title of task to be completed
- Date the SOP was issued
- Area or department to use the SOP
- Detailed actions to take to complete the task
- Documentation to verify the task was done
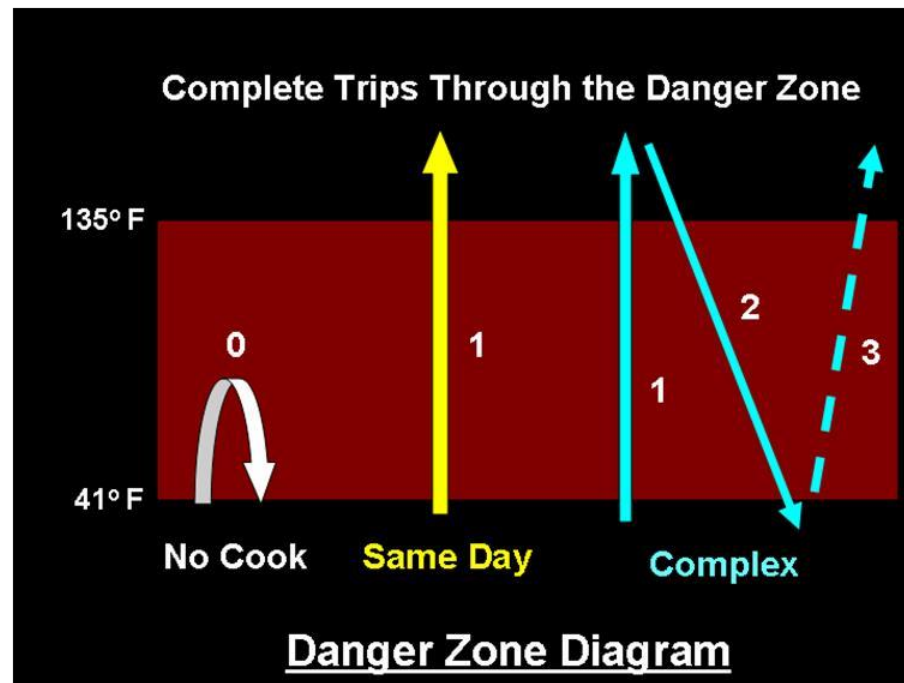- Approval signature.

Food Process Categories

1. No Cook Process
2. Same Day Service Process
3. Complex Food Process

Temperature Danger Zone

- Identify the number of times each menu item goes up (heating) or comes down (cooling) through the danger zone (41 °F to 135 °F)

- Source: FDA, 2013.

Temperature Danger Zone

Temperature Danger Zone

- Most food items produced in a retail or food service establishment can be categorized into one of three preparation processes based on the number of times the food passes through the temperature danger zone between 41°F and 135°F:

- Process 1: Food Preparation with No Cook Step
- Example flow: Receive – Store – Prepare – Hold – Serve
- (other food flows are included in this process, but there is no cook step to destroy pathogens)

Temperature Danger Zone

- 2: Preparation for Same Day Service Example flow: Receive – Store – Prepare – Cook – Hold – Serve (other food flows are included in this process, but there is only one trip through the temperature danger zone)

- Process 3: Complex Food Preparation Example flow: Receive – Store – Prepare – Cook – Cool – Reheat – Hot Hold – Serve (other food flows are included in this process, but there are always two or more complete trips through the temperature danger zone)
- A summary of the three food preparation processes in terms of number of time

Review Menu Items

- ❑ Kept cold from preparation through service

- ❑ Prepared hot and served the same day

- ❑ Prepared hot and served cooled, or possibly reheated

Process #1

- Food Preparation Process 1 –
  - Food Preparation with No Cook Step
  - Example Flow:

  RECEIVE - STORE - PREPARE - HOLD - SERVE

Process #1

- All the foods in this category lack a kill (cook) step *while at the retail or food service establishment*. In other words, there is no complete trip made through the danger zone for the purpose of destroying pathogens. You can ensure that the food received in your establishment is as safe as possible by requiring purchase specifications. Without a kill step to destroy pathogens, your primary responsibility will be to prevent further contamination by ensuring that your employees follow good hygienic practices.

Process #1

- Cross-contamination must be prevented by properly storing your products away from raw animal foods and soiled equipment and utensils.

- Foodborne illness may result from ready-to-eat food being held at unsafe temperatures for long periods of time due to the outgrowth

Control measures – Process #1

- Cold holding or using time alone to inhibit bacterial growth and toxin production
- Food source (especially for shellfish due to concerns with viruses, natural toxins, and *Vibrio* and for certain marine finfish intended for raw consumption due to concerns with ciguatera toxin)
- Receiving temperatures (especially certain species of marine finfish due to concerns with scombrotoxin)
- Date marking of ready-to-eat PHF held for more than 24 hours to control the growth of *Listeria monocytogenes*
- Freezing certain species of fish intended for raw consumption due to parasite concerns
- Cooling from ambient temperature to prevent the outgrowth of spore-forming or toxin-forming bacteria

Process # 1
No Cook Preparation

Measure to assure safety of foods:

- Temperature control
- Handwashing
- Employee health policy
- Proper receiving and storage procedures

Process #2

- Food Preparation Process 2 - Preparation for Same Day Service
- Example Flow:

RECEIVE - STORE - PREPARE - COOK - HOLD – SERVE

- In this food preparation process, food passes through the danger zone only once in the retail or food service establishment before it is served or sold to the consumer.
- Food is usually cooked and held hot until served, i.e. fried chicken, but can also be cooked and served immediately.

Process # 2
Same Day Service Preparation

Measure to assure safety of foods:

- Temperature control
- Cooking foods
- Handwashing
- Employee health policy
- Proper receiving and storage procedures

Food Preparation Process 3 - Complex Food Preparation

- Example Flow:

RECEIVE - STORE - PREPARE - COOK - COOL – REHEAT - HOT HOLD - SERVE

- Foods prepared in large volumes or in advance for next day service usually follow an extended process flow. These foods pass through the temperature danger zone more than one time; thus, the potential for the growth of spore-forming or toxigenic bacteria is greater in this process. Failure to adequately control food product temperatures is one of the most frequently encountered risk factors contributing to foodborne illness.

- In addition, foods in this category have the potential to be recontaminated with *L. monocytogenes*, which could grow during refrigerated storage. FDA recommends that food handlers minimize the time foods are at unsafe temperatures.

Process # 3
Complex Food Preparation

Measure to assure safety of foods:
- Temperature control
- Cooking foods
- Cooling foods
- Reheating foods
- Handwashing
- Employee health policy
- Proper receiving and storage procedures

The Seven Principles of HACCP

1. Hazard analysis.

2. Identify the Critical Control Points (CCPs).

3. Establish critical limits (thresholds) which must be met at each identified CCP.

4. Establish procedures to monitor CCPs.

5. Establish corrective actions to be taken when a critical limit has been exceeded.

6. Establish procedures to verify the HACCP system is working.

7. Establish effective record keeping that will document the HACCP system.

Principle 1: Hazard Analysis
Hazard Identification

The first step is to identify the potential hazards. Where are they and what are they?
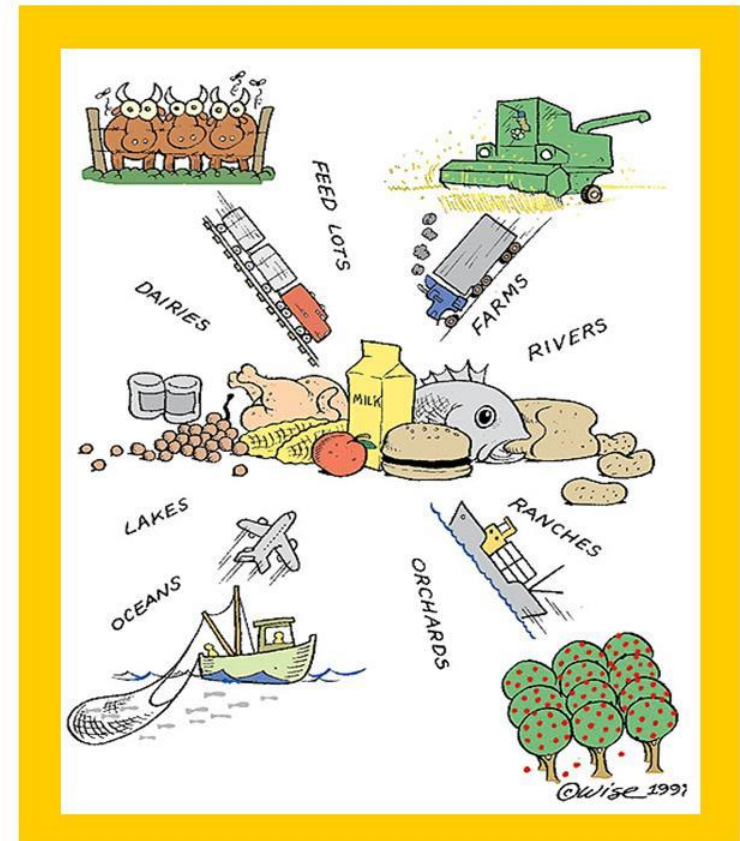
Hazards can come from anywhere!

Principle 1: Hazard Analysis *Hazards*
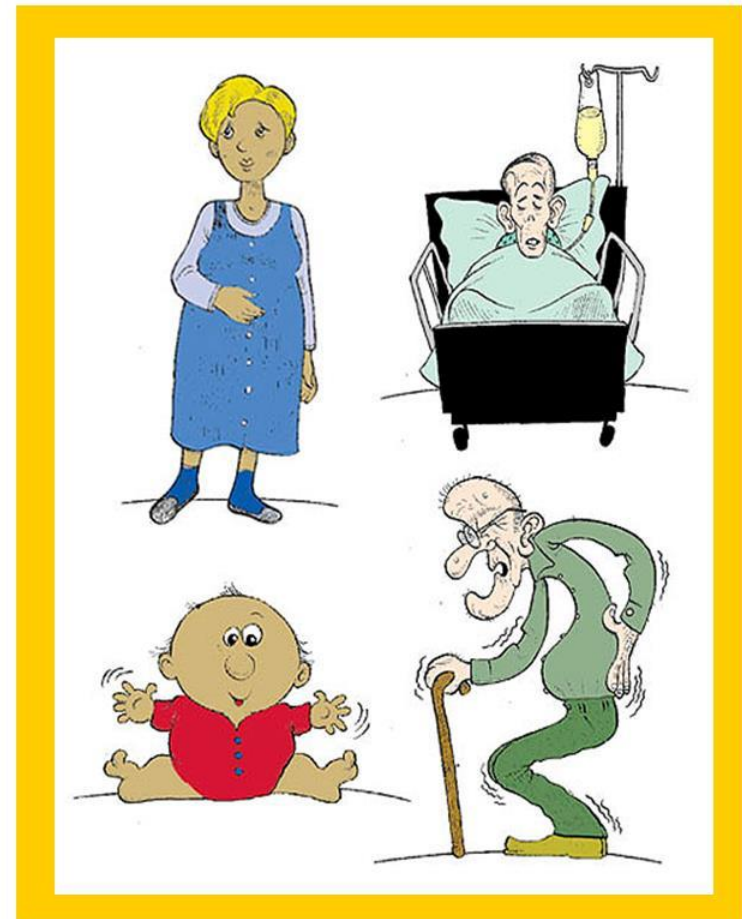

Potential hazards

Hazards can be:

- Biological
- Chemical
- Physical.

Principle 1: Hazard Analysis *Risk and Severity*

Risk is influenced by:

- Type of customers served
- Types of foods on menu
- Characteristics of organisms
- Type and frequency of past foodborne outbreaks
- Type and size of food establishment
- Extent of employee training.

Highly susceptible populations

Principle 1: Hazard Analysis *Preventive Measures*

Preventing hazards

Preventive measures most often include:

- Controlling the temperature of foods
- Controlling cross contamination
- Practicing good personal hygiene
- Practicing proper hand washing
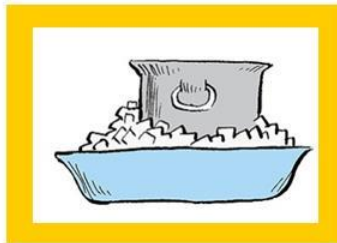- Controlling the time foods are held in the temperature danger zone.

Principle 2: Identify Critical Control Points

COOKING

COOLING

REHEATING

The most commonly used critical control points involve control of time and temperature, including the following steps in the flow of food:

- Cooking
- Cooling
- Reheating
- Hot-holding
- Cold-holding.

HOT-HOLDING

COLD-HOLDING

Principle 3: Establish Critical Limits for Each CCP

Critical limits:

- Are the upper and lower boundaries of food safety
- Are set to prevent or eliminate hazards
- Usually involve a combination of Time and Temperature controls
- Should be very specific [i.e., cook ground beef to 155°F (68°C) for 15 seconds].

Time as a Public Health Control

- Controlling the temperature of food products throughout the flow of food is the most essential preventative measure for ensuring a safe food. However, time can also be used as an important measure. It commonly takes 4 hours or more in the temperature danger zone for bacteria to multiply to levels where they will cause foodborne illness. There are situations during food preparation and service where foods will be allowed to enter the temperature danger zone.

Critical Control Point - CCP

- The Food Code recognizes handwashing as a CCP where ready-to-eat foods are handled without further cooking. Introduction of pathogens is a significant hazard when foods are handled with bare hands and no further step is available to reduce contamination to a safe level. The running argument among food safety experts revolves around whether the critical limits could be validated; what standards must be applied to insure that pathogens are reduced to safe levels; and how is effective monitoring accomplished to insure that such standards are in effect. There are automatic hands free faucets that count usage, there is even an automatic soap dispenser. There aren't any insurmountable impediments for insuring decontamination of hands and fingertips.

Principle 4: Establish Monitoring Procedures

Temperature Log

Monitoring critical limits:

- Should include documentation of findings
- Should only be performed by employees trained on monitoring procedures
- Must be realistic in nature, or "doable."

Principle 5: Establish Corrective Action

Step 1:

Determine what went wrong.

Step 2:

Choose appropriate corrective action to ensure the food will be safe.

Step 3:

Apply corrective action to the flow of food.

Step 4:

Record corrective action steps taken.

Principle 6: Verification Procedures

The **verification** process consists of two phases:

- **Phase 1**
  - Verify established critical limits for CCPs will:
    - Prevent a hazard
    - Eliminate a hazard
    - Reduce a hazard to acceptable levels
- **Phase 2**
  - Verify the overall HACCP plan is working effectively
  - Frequently review food flow plans and records.

Principle 7:
Maintain Accurate Records

Records are the only proof you have that the process is in control and the retail food establishment is complying with its HACCP plan.

HACCP: A Process Approach

Principle	Process Step Quick Chill	Process Step Reheating
1. Hazard Analysis	Bacteria	Bacteria
2. Identify CCP	Yes	Yes
3. Critical Limit	70°F within 2 hours or less 41°F within 6 hours or less	165°F within 2 hours
4. Monitoring	Temp. every hour	Temp. every 30 min.
5. Corrective Action	Discard if CCP not met	Discard if CCP not met
6. Verification	Food manager	Food manager
7. HACCP Records	Time/temp chart	Time/temp chart

Processing methods that require a variance and 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

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

- ## Focus on risk:
  - Inspection procedures and audits should focus directly on controlling risk factors that affect food safety.

- ## Make it manageable:
  - The food management program needs to be user friendly.
  - It should be flexible and easy to implement and manage.

- ## Educate and train employees:
  - Provide good training on any food safety management systems.

"Concepts to remember"

- When a food safety management system is properly followed, it protects against many types of mishandling.

- Food safety management systems are designed to prevent foodborne illness.

- Critical limits set the range of safety for certain conditions, like time and temperature, for handling potentially hazardous products.

"Concepts to remember!"

- Teach employees how to use the system and then monitor the application to ensure food safety.

- Encourage employees to contact their supervisor if they discover the prescribed critical limit is not being met.

- Management must then take the steps needed to correct the problem and bring the production process under control.