

HACCP, GMPs, SSOPs

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HACCP, Pre- and Post-harvest

- Traditionally, the safety of food products, has been controlled (and still is) by inspection of the final product
- Hazard Analysis and Critical Control Points (HACCP) system, the process of food inspection is being modernized

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HACCP, Pre- and Post-harvest

- The emphasis is being directed to detecting food safety hazards upstream in the production or manufacturing process rather than in the finished product.
- HACCP is not a stand-alone system
- It is complemented by other programs such as GMPs, SOPs, and SSOPs

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HACCP history

- HACCP was first developed for NASA's space program in 1959 by Pillsbury. For many years the HACCP was voluntarily used by the food industry
- In 1996, HACCP was mandated by USDA-FSIS in meat and poultry slaughter and/or processing facilities in an attempt to enforce more strict food safety measures

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HACCP history

- Mandated by FDA as a control system for seafood
- Recently, for juices.
- Growing interest in using HACCP to control the safety of live animal production as well as produce production (i.e., pre-harvest food safety).

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HACCP and ISO 9000

- The ISO9000 system is set to provide common standards of quality during production or manufacturing of products (nationally or internationally) agree on quality of the product
- HACCP = Safety

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New Food Safety Management System

- Combines Good Management Practices, Hazard Analysis and Critical Control Point (HACCP) principles and effective supplier verification and validation
- This requires a company policy definition and quality manual, with definition of responsibilities for management and employees, prerequisite programs and HACCP plan implementation

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New food safety management systems

- Preparing SSOP programs and measures for implementing the food safety program
- Preparing the HACCP team and effective recording systems, a combination of self-assessment with application of internal auditing, management review, application of all legal requirements and supplier evaluation, are other concerns in this system.

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ISO 22000

- ISO 22000 includes the completed HACCP program in addition to the harmonized applicable quality management systems and prerequisite programs
- It extends the approach of the ISO 9001:2000 quality management systems standard, which does not specifically address food safety

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HACCP Principles

- **Principle #1: Hazard analysis**
- **Principle #2: Identify the critical control points (CCPs)**
- **Principle #3: Establish critical limits for preventive measures associated with each CCP**
- **Principle #4: Establish procedures to monitor CCPs**
- **Principle #5: Establish corrective actions**
- **Principle #6: Establish record keeping system**
- **Principle #7: Establish verification procedures**

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HACCP Principles

- **Principle #1: Hazard analysis**
- The hazard analysis accomplishes three purposes:
 - (i) Hazards of significance are identified
 - (ii) Likely hazards are selected
 - (iii) Identified hazards can be used for developing preventive measures
- Hazards can be biological, chemical or physical in nature, and the potential risk of each hazard is assessed based on its likelihood of occurrence and its severity

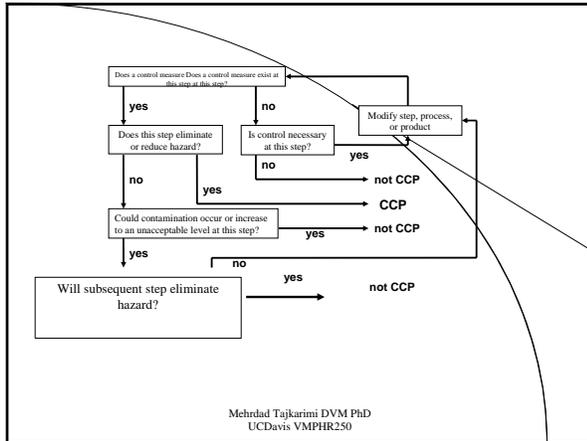
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HACCP Principles

Principle #2: Identify the critical control points (CCPs)

- A CCP is a point, step or procedure at which control can be applied and a food safety hazard can be prevented, eliminated or reduced to acceptable levels
- CCPs can be cooking, chilling, sanitation procedures, product formulation control (pH, salt, water activity), prevention of cross contamination or employee and environmental hygiene
- A CCP *Decision Tree* is helpful in assigning CCPs

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HACCP Principles

- **Principle #3: Establish critical limits for preventive measures associated with each CCP**
- Critical limits are the boundaries for safety for each CCP and may be limits with respect to temperature, time, meat patty thickness, water activity, pH, available chlorine, etc
- Critical limits may be derived from regulatory standards or guidelines, literature, experiments and expert opinion

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HACCP Principles

Principle #4: Establish procedures to monitor CCPs

- Monitoring is a planned sequence of observations and measurements to assess whether a CCP is under control and to produce an accurate record
- This record can be used in case of complaints about the product, and is also used in the verification of HACCP.

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HACCP Principles

Principle #4: Establish procedures to monitor CCPs

- The measurements for monitoring are visual observations, temperature, time, pH, water activity, etc.
- The measurements must be done “on-line”; there is no time to wait for lengthy laboratory tests
- There must be written documentation for who has the responsibility for monitoring

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HACCP Principles

Principle #5: Establish corrective actions

- Corrective actions are taken to get the process under control when monitoring shows a deviation has occurred and a critical limit has been exceeded
- There must be written instructions for actions to be taken (re-process, condemn, etc.) when critical limits have been exceeded

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HACCP Principles

- **Principle #6: Establish record keeping system**
- This system is established to document the HACCP system
- This is necessary for internal audits and for verification of the HACCP system sometimes by third parties
- It is also important in case of consumer complaint

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HACCP Principles

Principle #7: Establish verification procedures

- Verification procedures indicate whether the HACCP system in place is working properly or not.
- Verification is based on the HACCP documentation, and may include internal audits and/or verification done by a third party (e.g., outside consultant).
- Verification may include validation studies (i.e., laboratory testing of samples of food and/or the environment).

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Good Manufacturing Practices (GMPs)

- GMPs are practices and procedures that are conducted by food processors to insure the safety of food for human consumption.
- GMPs take into account personnel, equipment, process or operation, and the environment of food production.
- GMPs fall under the jurisdiction of the Food and Drug Administration (FDA) CFR 21, Part 110, and CFR 21

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Good Manufacturing Practices

1. Personnel:

- Disease Control
- Cleanliness
- Education and Training
- Supervision

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Good Manufacturing Practices

2. Equipment

- Plant equipment and utensils need to be made of adequately cleanable and corrosion-resistant materials
- The design of the equipment should not allow adulteration of food with metal fragments, lubricants, fuel, contaminated water, etc
- Non-food-contact equipment as well as holding, conveying and manufacturing systems should have designs that enable maintenance of proper sanitary conditions

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Good Manufacturing Practices

3. Processing Operations

All food processing operations including receiving, segregating, preparing, manufacturing, packing, inspecting, storing, and transporting should be conducted under adequate and controlled sanitary conditions to ensure that food is fit for human consumption.

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Good Manufacturing Practices

4. Environment (plant and grounds)

- Food plants and the grounds about them should be adequately maintained and kept under conditions that will minimize and protect the contamination of food
- light bulbs, fixtures, and skylights should be adequately installed to prevent food contamination if glass breaks. Additionally, proper lighting and ventilation should be provided in work areas

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Standard Operating Procedures (SOPs)

- Similar to GMPs, standard operating procedures (SOPs) fall under FDA's
- SOPs are plant-specific
- An SOP should define who is doing the job, why this job is done, what it is, the steps involved in completing the job, any critical time limits for the task, and what are the corrective actions that must be taken if the job was performed incorrectly

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Sanitation Standard Operating Procedures (SSOPs)

- Sanitation standard operating procedures (SSOPs) are plant-specific operations
- SSOPs are regulated by the United States Department of Agriculture (USDA)
- Cleaning and maintenance of sanitary conditions are vital for providing consumers with wholesome and safe food.

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Sanitation Standard Operating Procedures (SSOPs)

- Cleaning and sanitizing compounds should be stored away from food; in separate areas.
- To maintain a sanitary water supply, an adequate plumbing system must be in place.
- This should allow sufficient quantities of water to be moved into and throughout the plant as needed with proper drainage, release or discharge of excess or waste water.
- A proper sewage disposal system must be in place.

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Thank you!

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