

# ROLE OF HACCP APPROACH IN FOOD SAFETY AND HYGINE

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## Abstract

With globalizing food marketing and increasing demand for all ranges of food starting from fresh, ready-to-eat, processes and semi-processed foods, safety issues have become the larger concern. Companies dealing with food sector have undertaken various measures, principles and practices to maintain food safety, sanitation and hygiene. In addition to this, demands on the food industry have changed its target to increasing the shelf life of the products through advanced techniques of bioengineering and food technology. The role of HACCP extends to identify, correct, and prevent hazards throughout the production process. It remediates physical, chemical, and biological hazards making the products safe and sound for consumption. Basic activities such as supply management, sanitation, operation guidelines, transportation, environmental and personal hygiene, pest control, staff training and management can offer effective results. The HACCP procedures can be applied effectively to inspect, upgrade and promote healthy international trade of good quality and safety. So the HACCP system has to be successfully applied in the food industry and the system fits in well with the modern quality and the management techniques.

**Key words:** HACCP, food safety, food production, marketing, supply management.

## I. INTRODUCTION

The HACCP is the most mandatory and sustainable method to prevent the simplest to complex food hygiene practices that have to be followed by food establishments at every stage. This has become the strongest essentials of food and beverage industries. With globalization of food distribution, increased consumer demand for fresh, ready-to-eat, safe and high quality foods are available year-round. Companies dealing with food sector have undertaken different science-based measures, principles and practices to maintain food safety, sanitation and hygiene. The Hazard Analysis & Critical Control Points (HACCP) systems and different food regulatory bodies such as the ISI, AGMARK and FSSAI are working to meet today's food safety challenges faced by the food industries. Amidst a wide range of technical and technological issues, the identification, prevention, control and monitoring of food borne pathogens remains one of the most pressing problems faced by food industries today. Estimation studies conducted all over the world in the recent year's project food borne pathogen attacks to be the greatest threats faced by food industries today. The harder truth remains that this shall only become more pronounced and reach glaring numbers in the future unless some key revolutionary measures are taken. Familiar pathogens, such as *Salmonella*, *E. coli* O157:H7, *Campylobacter*, *Listeria monocytogenes*, *Shigella*, *Vibrio*, *Toxoplasma gondii*, *Yersinia enterocolitica* and *Staphylococcus aureus* fall in the list and newer species are also threatening to share the stage with more drug resistant varieties. Adding to this, demands on the food industry now lies in the extension of shelf life of the products through advanced techniques of bioengineering and food technology.

## II. SCOPE OF THE STUDY

The HACCP procedures have become one fool proof method for safe and hygienic food if and when handled with care and concern. The present study evaluates the need of HACCP, its methods along with the recommendations for the effective manipulation of procedures for success in both production level and consumption level.

## III. STEPS FOR SAFE FOOD

Food safety rigorous control measures and safe practices right from end to end at all times with stringent measures to correct and modify wherever needed. The HACCP method which stands for hazard analysis critical control points originally developed by NASA to make sure the food on their space flights was safe to eat. The popularity of HACCP lies in its simplicity, the first step is to identify the steps in the manufacturing process. The next step is to look for possible sources of contamination, and then find ways to control these sources.

### 3.1 The HACCP approach

HACCP is a systematic preventive method recommended by the Codex Alimentarius Commission, the United Nations international standards organization for food safety. HACCP is used by most countries around the world since 1960. Apart from inspecting finished food products the role of HACCP extends to identify, correct, and prevent hazards throughout the production process. It remediates physical, chemical, and biological hazards making the products safe and sound for consumption.

### 3.2 The HACCP principles

Principle 1: Hazard analysis. This step involves laying out of a plan to point out all food safety hazards which can contaminate or retard the safety of food making it unfit for human consumption and further highlight methods of controlling the hazards.

Principle 2: Identification of critical control points. Different points or steps in the process that is needed to be modified to control, food safety hazards are identified.

Principle 3: Establishment of critical limits. A critical limit is the level to which the hazard does not affect the safety of the food product. These limits are established for each critical control point.

Principle 4: Establishment of monitoring procedures for critical control points. Step by step procedures are established to monitor each stage of food production to maintain safety standards and maintain the critical limits below the permissible levels at each step.

Principle 5: Establishment of corrective actions. The action plan is formulated and implemented to keep each step in check and identify the deviations in critical limits. Identification at each stage improves the grade as well as minimises wastage and cost.

Principle 6: Establishment of verification procedures. The verification process ensures that the methods and procedures applied have been effective enough in maintaining the critical standards under check. The step also ensures proper implementation of corrective measures after the identification of such critical limits.

Principle 7: Maintenance of records. Each step and corrective measures that have been taken under each of the above points must be recorded and documented carefully for future verifications and surveillance. This can also serve as a guide for future and provide means to rule out future chances of safety breaches.

These steps ensure cleanliness and hygiene at every step for product control and safety at each stage along the food chain from primary production through to the final consumer, to enhance food safety.

Food safety helps to assess the aspect of overall food quality, and HACCP is a mechanism for controlling food safety. It is a component of overall food quality control programmes, The HACCP approach is internationally recognized as essential to ensuring the safety and suitability of food for human consumption, and it enhances the potential for international trade.

#### IV. ROLE OF HACCP IN FOOD MARKETING

Advancements in HACCP procedures demand the national and local governments to play a significant role. There is a need for setting up and implementation of different policies to facilitate and mandate HACCP process at all levels. The success of the HACCP procedures can be felt in the current scenario that many export and import transactions have HACCP reports as a mandatory requirement before transactions. This shall set up barriers in the trade and marketing of food which shall be difficult to meet by many nations. These have to be recognised and rectified in order to guard the concerns of food safety and personal hygiene which cannot be compromised under any circumstance. Segments of the food chain and the impact of this application on small and medium-sized food industries should be addressed to meet the critical demands.

The HACCP provides a systematic solution to identify and check safety hazards in food manufacturing at its origin and evaluates measures to correct them critically at each stage of production. This method is therefore fool proof and cost effective.

HACCP practices:

- 3 Sink System
- Maintaining proper fridge temperatures. e.g., walk in fridges, deep freezer.
- In the fridge, always store cooked food items on top followed by vegetables, fish, poultry, red meat and then forced/minced meat.
- Cook poultry at least up to 63 degree Celsius.
- Hot food should be served hot i.e., at at least 60 degree Celsius.
- Maintain proper sanitizing sinks.
- Using proper chopping boards.

HACCP principles:

- Establish monitoring procedures for critical control points
- Establish corrective actions
- Establish verification procedures
- Establish a record system.

In order to enhance food safety, scrupulous monitoring needs to be carried out at each stage not excluding purchasing, receiving, transportation, storage, preparation, handling, cooking to serving.

##### 4.1 From Farm to Fork

On the farm, action must be taken to prevent contamination by monitoring feed, maintaining farm sanitation, and practicing good animal health management practices. Contamination must be controlled in the slaughter house itself to prevent it from spreading on to the production unit.

In retail markets, sanitation, refrigeration, storage and handling practices must be carried out. During service of food, foods must be handled with care to prevent contamination.

Federal standards for safe handling of food during transportation, distribution and storage must be set up prior to delivery to retail stores. Food safety guidance and principles must be provided to retail stores which must be monitored and updated periodically. Proper sanitation and handling guidelines must be ensured to avoid further contamination and cross contamination. Apart from maintaining hygiene at the manufacturing level, it is also mandatory that hygiene levels are maintained in home levels, supermarkets, retail markets and food distribution houses. Proper storage practices, separating cooked and raw foods, thorough cooking, and cleaning and waste disposal procedures must be ensured at all stages from cultivation to consumption.

Hygiene standards at various stages of food processing and handling including cultivation, processing, production, handling, storage, transport and handling of food can be effectively maintained with HACCP. The method effectively identifies the hazards and prevents their spread right from their source to

#### 4.2 Initial steps

Good Manufacturing Practices (GMP), Good Hygiene Practices (GHP) and Sanitation Standard Operating Procedures (SSOP) are the initial steps in following HACCP in any stage. Basic activities such as supply management, sanitation, operation guidelines, transportation, environmental and personal hygiene, pest control, staff training and management can offer effective results.

#### V. CONCLUSION

Scientific evidence of the risk of human health must be analysed and concurred with the HACCP principles in order to be effectively implemented. These procedures can help to reduce risk at various levels in food production. So the HACCP system has to be successfully applied in the food industry and the system fits in well with the modern quality and the management techniques.

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