Ensuring Safety and Quality of Packaged Food

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Introduction

Food safety is a major concern and critical factor for ensuring food and nutritional security globally. The term 'Quality' is synonym with consumer acceptability and it is true that products with no proven quality find little space in the market. Food safety is not just quality but is a measure of the acceptability in terms of its ability to support both nutrition and health of consumer. The quality products are usually assessed by the end product inspection and with the extent to which that the said product meets the product satisfaction. But in the case of food item, it is much more than the end product acceptability as each and every step in the production process, depending upon the nature and scope of the product contribute to safety and acceptability by the consumer.

The Hazard Analysis Critical Control Point (HACCP) concept has been used in the food industry to control hazards associated with food processing. Recently, HACCP applications to the food packaging is also found to be crucial to ensure food safety starting from manufacturing to the consumption. In many cases, direct food contact packaging itself is considered as a food ingredient. Thus, the principles of HACCP are applied to existing programs in the packaging industry to assure that food safety is maintained throughout the packaging process. The application of HACCP system helps the packaging suppliers to control potential food safety hazards that may contaminate the food product during packaging, and thus helps to ensure customer safety.

HACCP Concepts:

Adoption of good practices and HACCP systems are a tool to assure food safety and quality. Hazard Analysis and Critical Control Point (HACCP) system is an internationally recognized system endorsed by the Codex Alimentarius commission, to systematically identify hazards specific to individual products and processes, describe measures for their control to ensure food safety. It is a dynamic system, capable of accommodating change in the system- changes in equipment design, processing procedures, packaging and technological advancements.

HACCP is defined as a system which identifies, evaluates, and controls hazards which are significant for food safety

HACCP is a structured, systematic approach for the control of food safety throughout the food system, from the farm to fork. It requires a good understanding of the relationship between cause and effect in order to be more pro-active. HACCP is supported by pre-requisite programmes like Good Manufacturing Practice (GMP), Good Hygienic Practices (GHP), SSOP (Sanitation standard operating procedures), Good Agricultural Practices (GAP), and Good Storage Practices (GSP), *etc.*

Pre-requisite programmes

Pre-requisite programs provide a foundation for an effective HACCP system. They are often facility-wide programs rather than process or product specific. They reduce the likelihood of certain hazards. Prerequisite programs set the stage for a HACCP system and

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provide on-going support for the establishment's food safety system. They keep potential hazards from becoming serious enough to adversely impact the safety of foods produced. Without clean working conditions free from microbiological, chemical, and physical contamination from many sources, a HACCP plan cannot be effective.

Prerequisite programmes are practices and conditions needed prior to and during the implementation of HACCP and which are essential for food safety

Some of the prerequisite programmes include GAP, GMP and GHP which must be working effectively within a commodity system before HACCP is applied.

The Good Manufacturing Practices commonly referred as current good manufacturing practices (cGMPs, 21 CFR 110) give details as to what specific procedures must be followed to comply with the regulation. Standard operating procedures (SOPs) are the steps your company takes to assure that the GMPs are met. They include stepwise procedures, employee training, monitoring methods, and records used by your company. Similarly, SSOP covers eight key sanitation conditions as required by USFDA.

Good hygiene practices include all practices regarding the conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain.

Basic principles of HACCP

There are seven discrete activities that are necessary to establish, implement and maintain a HACCP plan, and these are referred to as the 'seven principles' in the Codex Guideline (1997).

The seven Principles of HACCP are

Principle 1: **Conduct a hazard analysis and identify control measures**

Hazard: A biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect, in the absence of its control.

Hazard analysis: The process of collecting and evaluating information on hazards and conditions leading to their presence to decide which are significant for good safety and therefore should be addressed in the HACCP plan.

Principle 2: **Determine the Critical Control Points (CCPs)**

A step at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level.

Common critical control points seen within the packaging industry are

Allergen: Food labels should identify the food source of all major food allergens used to make the food.

Metal: Packaged foods should be screened for metal fragments by passing the cases through a metal detector in order to avoid the risk of metal contaminants

Principle 3: **Establish validated critical limits.**

A criterion which separates acceptability from unacceptability, when monitoring a critical control point.

Principle 4: **Establish a system to monitor control of CCPs**

The act of conducting a planned sequence of observations or measurements of control parameters to assess whether a CCP is under control.

Principle 5: **Establish the Corrective Actions to be taken when monitoring indices, a deviation from a critical limit at a CCP has occurred**

Any action to be taken when the results of monitoring at the CCP indicate a loss of control.

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***Principle 6:* Validate the HACCP plan and then establish procedures for verification to confirm that the HACCP system is working as intended**
The application of methods, procedures, tests and other evaluations, in addition to monitoring to determine compliance with the HACCP plan.

***Principle 7:* Establish documentation concerning all procedures and records appropriate to these principles and their application**

Food packaging manufacturers, suppliers and food processing industries should consider the packaging material itself as an ingredient and a crucial step in the overall process of food manufacturing, so that the potential hazard contamination from packaging materials to food can be effectively controlled through the application of HACCP technique. Identifying and elimination/reduction/control of potential hazards along with the confirmation of all food safety markings, advertised weight, labelling accuracy, consistent equipment performance and confirmation of the product as advertised will help the packaged food manufacturers to ensure safety and quality of the food produced and also to comply with the relevant food safety regulations.

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