ABSTRACT

HACCP is a systematic process that prevents food safety incidents by building food safety controls into the food manufacturing process. Since the development of HACCP in the late 1950s, HACCP has continuously evolved to improve the system’s effectiveness. ISO 22000:2005 is the latest step in this evolution. This standard defines all of the requirements of a state of the art food safety management system and is fully compatible with ISO 9001:2000.

ISO 22000 and ISO 9001 provide mechanisms for food processors wishing to make their food safety and quality management systems more robust. These standards ensure the development of a management system that uses both a systems and a process approach.

TEXT

HACCP is the internationally recognized food safety system to ensure the production of safe food. Over the last 50 years, HACCP evolved from three principles to five preliminary steps, seven principles that are supported by prerequisite programmes. During this time, the basic concept of HACCP has remained unchanged. Food safety cannot be inspected into the product. Food safety must be build into the product.

In 1989, the United States National Advisory Committee on Microbiological Criteria for Foods (NACMCF) published HACCP guidelines in the United States. These guidelines became the U.S. de-facto HACCP standard. These guidelines were revised in 1993 and 1997. The first international HACCP standard was published by the Codex Alimentarius Commission (Codex) published HACCP as an annex to the Basic Text on Food Hygiene. Both of these documents are equivalent and written in guidance format thus providing assistance to food processors in implementing HACCP programmes.

As consumers around the world demanded safer food, HACCP requirements were incorporated into both the regulations that govern food processing and into customer purchasing requirements. As a result, customer sanitation audits were expanded to address HACCP requirements.

Food Safety audits are expensive and time consuming for both the customer and the supplier. There has been a movement to require suppliers to obtain third party certification of the quality and food safety management systems. Examples of third party audits and certifications include:

- Food Marketing Institute and SQF programme
- Food Products Association and FPA-Safe Food Audit
- British Retail Consortium and the BRC Global Standard
- CIES - The Food Business Forum and the Global Food Safety initiative

International Standards

International food standards are critical to facilitate global trade. The standards provide a common definition for products and processes. This reduces misinterpretation of customer requirements across national and language borders.

International standards for food products are developed by two standard organisations. Codex publishes international standards that can be used to develop national laws and regulations. These standards typically have a long time frame between reviews.

The International Organization for Standardization (ISO) develops standards that are driven by marketplace needs. The ISO standards describe the state of the art for products, services, process, materials and systems, and conformity assessment. As a result, the standards are developed in a relatively short time frame. In addition, the standards are required to be reviewed every five years. As part of the review process, a recommendation must be made to renew, revise or withdraw the standard. This process ensures the standard does not become a technical barrier to trade.
In 2001, Working Group 8 of ISO Technical Committee 34 undertook a project to define the requirements for a food safety management system. The standard has the following characteristics:

- Focus only on a food safety management system (quality management systems are addressed in ISO 9001).
- Useable by all organisations in the food chain.
- Combine the recognized food safety system elements as defined by Codex.
- Provide an auditable standard that can be used as part of third party certification. (The standard can also be used by a food processor to develop a food safety management system).
- Allow food safety control to be achieved through either the HACCP plan or through operational prerequisite programmes.
- Ensure that the process used to control food safety is validated, verified, implemented, monitored and managed.

In September, 2005, ISO published ISO 22000 (Food safety management systems -- Requirements for any organization in the food chain).

ISO 22000 structure

ISO 22000 is written as a management system standard. As a result, the standard addresses the following elements:

- Policy.
- Planning.
- Implementation and operations.
- Performance assessment.
- Improvement.
- Management review.

The ISO 22000 framework focuses on three major issues:

- Incorporates Codex HACCP.
- Strengthens the linkage of prerequisite programmes (PRPs) to the food safety management system.
- Defines management activities to ensure a vibrant management system.

ISO 22000 incorporates the five preliminary steps and the seven principles of Codex HACCP. Thus, any organisation that is certified to ISO 22000 has met all of the requirements of Codex HACCP.

ISO 22000 clarifies the role of prerequisite programmes in the food safety management system. The prerequisite programmes support and ensure the effectiveness of the HACCP plan. Food safety professionals do not agree on a standard list of prerequisite programmes. However, all of the prerequisite programmes have four things in common:

- They address indirect food safety issues
- They cover general programmes related to food safety
- They can be applied to multiple production lines
- Momentary failure to meet a prerequisite programme seldom results in a food safety hazard.

The critical aspect is that frequent and/or sustained breakdown of a prerequisite programme may result in a food safety hazard. From a management standards perspective, prerequisite programmes cover a wide variety of elements of the food safety management system including: facilities, training, good manufacturing practices. As a result, the prerequisite programmes must be properly designed, implemented verified and/or monitored for continued effectiveness. However, many of the prerequisite programmes do not lend themselves to the traditional form of validation, verification and monitoring. The PRPs describe the environment that allow a food safety management system to function properly.

ISO 22000 defines the management activities needed to achieve a food safety management system. The standard requires the documentation of a quality policy with measurable objectives. Examples of measurable objectives could include: objectives to reduce the amount of foreign matter complaints by 20% or improve third party audit scores by 10%.

Management review ensures the continued effectiveness of the food safety management system. The review goes beyond verification of the efficiency of the management system.
provides top management with a system to exchange of new ideas regarding food safety and generates open discussion and evaluation of the food safety management system. The output of management review should provide the data for planning performance improvements of the food safety management system, and performance objectives for products and processes. In addition, management review generates recommendations for improvement in the structure of the food safety management system, allocation of resources, mitigation of plans for identified risks, and strategic planning for future needs of the organisation with respect to food safety requirements.

The responsibilities of the food safety team leader go beyond managing the food safety team. The team leader is responsible for ensuring the relevant training and education of the food safety team members and for ensuring that the food safety management system is established, implemented, maintained and updated. This individual reports to top management on the effectiveness and suitability of the food safety management system regardless of other assigned duties.

**Integrating quality management systems and food safety management systems**

The scope of ISO 22000 is food safety, while the scope of ISO 9001 is food quality. ISO 22000 can be used in two ways:
- It can be used as a stand alone standard for an organisation that wants to develop a state of the art food safety management system.
- It can be used with ISO 9001 to develop a management system that addresses both food safety and quality issues.

There are several major differences between ISO 22000 and ISO 9001.
- ISO 22000 does not permit exclusions of any element.
- ISO 9001 is a general standard that can be applied to any organisation. ISO 22000 is a sector specific standard that describes a specific process to develop a food safety management system.
- ISO 22000 assumes that the organisation developed the product concept and subsequent manufacturing process.
- ISO 22000 assumes that the organisation has selected suppliers and the suppliers are capable of meeting quality requirements.
- ISO 22000 assumes that both a verification plan, and a control plan has been established that will meet customer requirements.
- ISO 22000 assumes that existing processes have been validated with respect to meeting quality requirements.

In implementing both ISO 9001 and ISO 22000, food processors must determine the extent of integration between the two management systems. Options include:
- Development of two independent but parallel management systems.
- Development of two separate systems that share common processes.
- Development of a single fully integrated management system.

The structure chosen depends on a number of factors including the following:
- The extent of corporate culture and politics that support integration of multiple management systems.
- The extent of incorporating food safety management system requirements into the existing quality management system.
- The level of competency needed to implement and maintain an integrated quality and food safety management system.
- Any implications with regard to legal and regulatory concerns.

**SUMMARY**

ISO 22000 provides a number of advantages to food processors that would like to improve their food safety management system. The standard ensures that the food safety management system uses a systems approach to the management of food safety. In addition, the standard is fully compatible with an ISO 9001 based quality management system. ISO 22000 provides a better understanding Codex
HACCP. The auditable form allows a food processor to easily determine if there are deficiencies in an existing food safety management system

REFERENCES
