

Introduction to Food Safety Management System (FSMS) – ISO: 22000

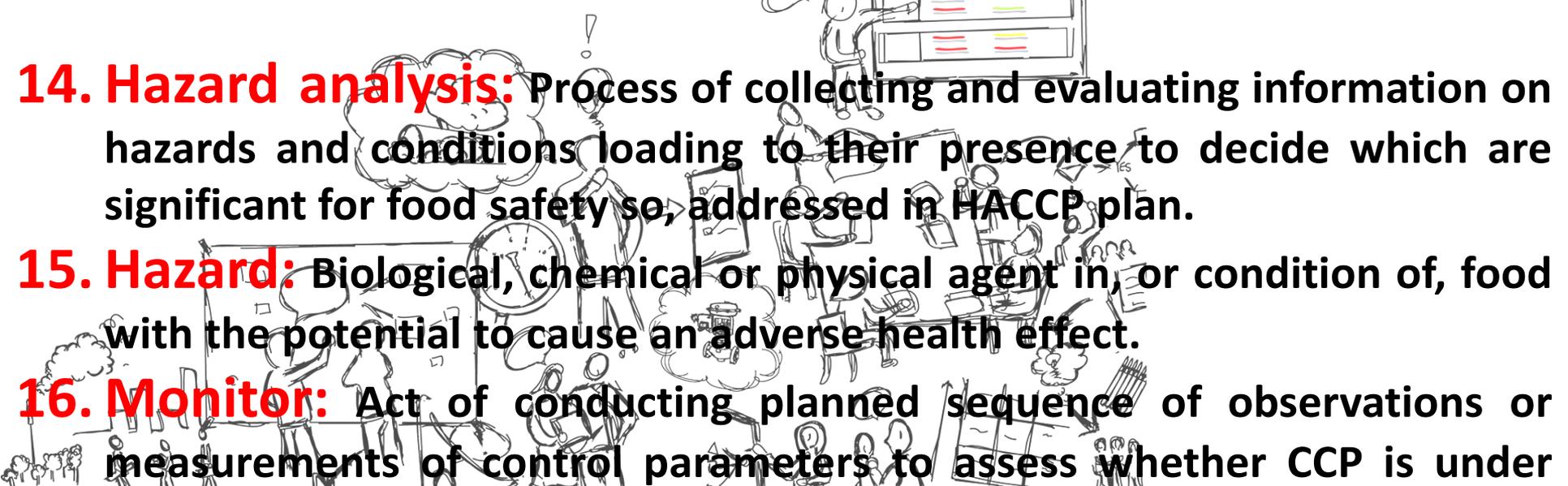


- ✓ **Globalization of food production and procurement makes food chains longer and complex and increases risk of food safety incidents.**
- ✓ **Effective and harmonized food safety systems shall manage and ensure safety and suitability of food in each link of supply chain. So, ISO developed standard for FSMS ISO 22000 which applies to all organizations in food chain ensuring integrity of chain.**
- ✓ **ISO 22000 is a generic food safety management system standard.**
- ✓ **Defines a set of general food safety requirements that apply to all organizations in food chain. If an organization is part of food chain, ISO 22000 wants it to establish a food safety management system (FSMS). It wants it to use this system to ensure that food products do not cause adverse human health effects.**
- ✓ **ISO 22000 can help ensure safety of its food products.**

Definitions

- 1. Control (noun):** To state wherein correct procedures are being followed and criteria are being met.
- 2. Control (verb):** To take all necessary actions to ensure and maintain compliance with criteria established in the HACCP plan.
- 3. Control measure:** Any action and activity that can be used to prevent/eliminate a food safety hazard or reduce it to an acceptable level.
- 4. Corrective action:** Any action to be taken when the results of monitoring at the CCP indicate a loss of control.
- 5. Critical control point (CCP):** Step at which control can be applied and is essential to prevent/eliminate a food safety hazard or reduce it to an acceptable level.
- 6. Critical limit:** Criterion which separates acceptability from unacceptability.

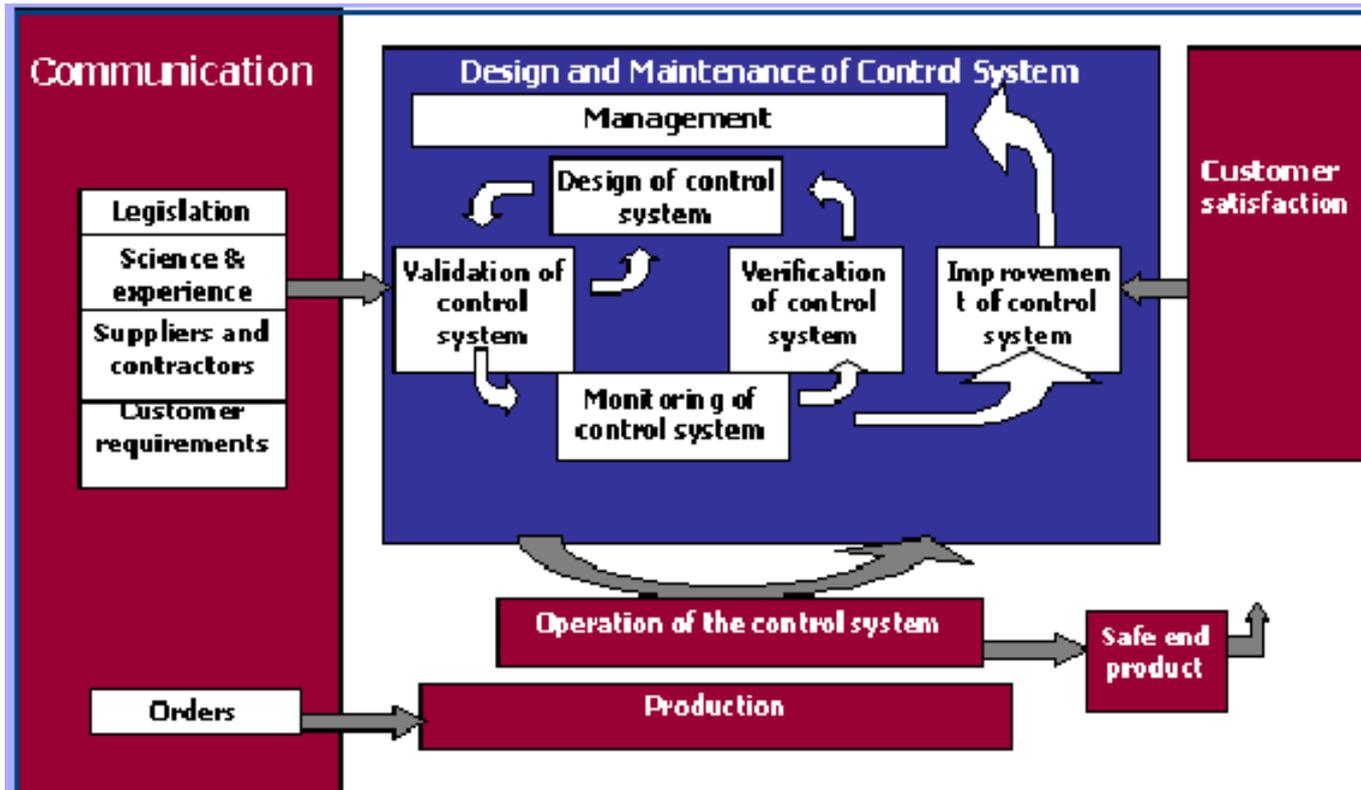
- 7. Deviation:** Failure to meet a critical limit.
- 8. End products:** Product that will undergo no further processing or transformation by the organization.
- 9. Flow diagram:** Systematic representation of sequence of steps used in the production or manufacture of particular food item.
- 10. Food safety hazard:** Biological, chemical or physical agents in food, or condition of food, with potential to cause an adverse health effect.
- 11. Food safety policy:** Overall intentions and direction of an organization related to food safety.
- 12. HACCP plan:** Document prepared in accordance with the principles of HACCP to ensure control of hazards which are significant for food safety in segment of the food chain under consideration.
- 13. HACCP:** System which identifies, evaluates and controls hazards which are significant for food safety.

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- 14. Hazard analysis:** Process of collecting and evaluating information on hazards and conditions leading to their presence to decide which are significant for food safety so, addressed in HACCP plan.
- 15. Hazard:** Biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect.
- 16. Monitor:** Act of conducting planned sequence of observations or measurements of control parameters to assess whether CCP is under control.
- 17. Operating limits:** Criteria more stringent than critical limits that are used by an operator to reduce risk of contamination, eg., if certain chemical concentration is required to control hazard, operating limit is generally set above minimum concentration needed to ensure effective treatment.
- 18. Operational prerequisite programme (OPRP):** Identified by hazard analysis as essential in order to control likelihood of introducing food safety hazards (and/or contamination/proliferation/food safety hazards in product (s) or in processing environment.

- 19. Prerequisite programme (PRP):** Basic condition and activities that is necessary to maintain hygienic environment throughout food chain suitable for production, handling and provision of safe end products and safe food for human consumption.
- 20. Risk:** An estimate of likely occurrence of a hazard.
- 21. Severity:** Seriousness of hazard (if not properly controlled).
- 22. Step:** Point, procedure, operation/stage in food chain including raw materials, from primary production to final consumption.
- 23. Validation:** Verification focused on collecting and evaluating scientific and technical information to determine if HACCP plan, when properly implemented, will effectively control hazards.
- 24. Verification:** Use of methods, procedures in addition to those used in monitoring, those determine if HACCP system complies with HACCP plan and/ or whether the plan needs modification.

ISO 22000, Food Safety Management Systems – Requirements

- ✓ ISO 22000, Food safety management systems – Requirements for any organization in the food chain, was first published in 2005.
- ✓ The standard provides international harmonization in field of food safety standards, offering a tool to implement HACCP throughout food supply chain.



Process module of the standard ISO 22000:2005

Goal of ISO 22000

Goal of ISO 22000 is to control and reduce to an acceptable level, any safety hazards identified for end products delivered to next step of food chain. An end product is defined as product that will not undergo any further processing or transformation by the organization.





ISO 22000:2005 specifies requirements for food safety management system where an organization in food chain needs to demonstrate its ability to control food safety hazards in order to ensure that food is safe at time of human consumption. Applicable to all organizations, regardless of size, which are involved in any aspect of food chain and want to implement systems that consistently provide safe products.

ISO 22000: 2005 specifies requirements to enable an organization:



To plan, implement, operate, maintain and update a food safety management system aimed at providing products according to their intended use, are safe for consumer

To demonstrate compliance with applicable statutory and regulatory food safety requirements

To evaluate and assess customer requirements and demonstrate conformity with those mutually agreed customer requirements that relate to food safety in order to enhance customer satisfaction

To effectively communicate food safety issues to their suppliers, customers and relevant interested parties in food chain

To ensure that organization conforms to its stated food safety policy

To demonstrate such conformity to relevant interested parties

To seek certification or registration of its food safety management system by an external organization

ISO 22000:2005 is compatible with ISO 9001:2000, so it is suitable for development of fully integrated, risk-based management system. ISO 22000 was first in new family of standards related to food safety:

**ISO/ TS 22004:2005
provides guidance on
application of ISO
22000:2005**

**ISO 22005:2007 provides
requirements for design
and implementation of
feed and food
traceability system**

**ISO/ TS 22003:2007 set
requirements for bodies
providing audit and
certification of ISO 22000**

Use of FSMS (ISO 22000)

- ✓ **Primary producers: Dairy Farms, Ranches, Fisheries, Dairies**
- ✓ **Processors: Dairy, Fish, Meat, Poultry, Feed**
- ✓ **Manufacturers of Soups, Snacks, Breads, Cereals, Dressings, Beverages, Seasonings, Packaging, Frozen food, Canned food, Confectionery, Dietary supplements**
- ✓ **Food service providers: Grocery stores, Restaurants, Cafeterias, Hospitals, Hotels, Resorts, Airlines, Cruise ships, Seniors lodges, Nursing homes**
- ✓ **Other service providers for Storage service providers, Catering service providers, Logistics service providers, Transportation, Distribution, Sanitation, Cleaning**
- ✓ **Product suppliers: Suppliers of tools, utensils, equipment, additives, ingredients, raw materials, cleaning agents, sanitizing agents, packaging materials**

Methodology for Developing an ISO 22000 and HACCP

ISO 22000 uses HACCP (a methodology and a management system used to identify, prevent and control food safety hazards.

- Conducting a food safety hazard analysis.
- Identifying your critical control points (CCP's).
- Establishing critical limits for each critical control point.
- Developing procedures to monitor critical control points.
- Designing corrective actions to handle critical limit violations.
- Creating a food safety record keeping system.
- Validating and verifying the system.



HACCP plan is a document that describes how an organization plans to manage and control its food safety hazards. An HACCP plan contains at least the following information:

**Critical control points
(CCP's)**

**Hazards that will be
controlled at each
CCP**

**Control measures
that will be used at
each CCP**

**Critical limits that will
be applied at each
CCP**

**Procedures that will
be used to monitor
CCPs**

**Actions that will be
taken when limits are
violated**

Prerequisite programs (PRPs):

- There are the conditions that must be established throughout the food chain and activities and practices that must be performed in order to establish and maintain a hygienic environment.**
- PRPs must be suitable and be capable of providing food that is safe for human consumption.**
- PRPs are also referred to as good hygienic practices, good agricultural practices, good production practices, good manufacturing practices, good distribution practices and good trading practices.**

Operational pre-requisite programs (OPRPs):

- These are pre-requisite programs (PRPs) that are essential.**
- Essential because a hazard analysis has shown that they are necessary in order to control specific food safety hazards.**
- OPRPs are used to reduce likelihood that products will be exposed to hazards, that they will be contaminated and that hazards will proliferate.**
- PRPs are also used to reduce likelihood that the processing environment will be exposed to hazards.**

Comparison of ISO 22000 with HACCP and ISO 9000:2000

- ❑ Developed with participation of food sector experts, ISO 22000 incorporates principles of HACCP and covers requirements of key standards developed by various global food retailer syndicates, in a single document.**
- ❑ Prerequisite programmes (PRPs) are main difference between ISO 22000 and HACCP.**
- ❑ Incorporation of PRPs in ISO 22000 made system more flexible as a smaller number of CCPs was introduced.**
- ❑ A management standard, so, shares following common elements with other management system standards:**
 - ❖ Policy**
 - ❖ Planning**
 - ❖ Implementation and operation**
 - ❖ Performance assessment**
 - ❖ Improvement**
 - ❖ Management review**

Main changes of ISO 22000 compared with HACCP are the following:

- ❖ Extension of the scope to include all the food businesses from feed and primary production as well as organizations indirectly involved in the food chain.**
- ❖ Hazards that require control are those managed not only by CCPs but also through prerequisite programmes (PRPs).**
- ❖ There is provision of crisis management procedures in the case that external dangers turn up.**
- ❖ Exist additional requirements for external communication between food organizations and relevant authorities involved in food safety beyond the internal communication requirements.**
- ❖ ISO 22000 uses systems approach to prevent new hazards from occurring in food products and recognize new technologies to control food safety hazards.**

- ❖ ISO 22000 strengthens HACCP by linking plan to PRPs and defining management's responsibilities.
- ❖ ISO 22000 is implemented through the whole supply chain and not only in this final stage.
- ❖ ISO 22000 standard is fully compatible with other ISO management system standards such as ISO 9001.
- ❖ **Focus of ISO 9001 is quality while the focus of ISO 22000 is food safety.**
- ❖ ISO 22000 extends successful management system approach of ISO 9001:2000 quality management system standard which is widely implemented in all sectors.
- ❖ Standard ISO 22000 can be applied on its own, or in combination with other management system standards such as ISO 9001:2000 with or without independent (third party) certification of conformity.
- ❖ Companies already certified to ISO 9001 will find it easy to extend this to certification to ISO 22000.