

FAQs

1. Discuss basic operations involved in food safety tools

Answer: Essentially, the practice of food safety can be distilled down to three basic operations viz.,

- Protection of the food supply from harmful contamination
- Prevention of the development and spread of harmful contamination
- Effective removal of contamination and contaminants.

Most food safety procedures fall into one, or more than one, of these categories. For example, good food-hygiene practice is concerned with the protection of food against contamination, effective temperature control is designed to prevent the development and spread of contamination, and pasteurization is a measure developed to remove contaminants.

2. What is HACCP? Explain its principle.

To standardize this analysis of hazards and risks to food safety, the system Hazards Analysis and Critical Control Points (HACCP) was developed, which is a systematic and scientific system to ensure food safety. It was developed by Pillsbury in the 1960s for the U.S. Army and NASA in an effort to achieve "zero defects" and ensure total food safety for the first U.S. manned space program, and appeared in the last 20 years as the initial approach to ensure the supply of safe food.

A major shift in emphasis from national legislation to international legislation occurred in 1994, when a GATT agreement recommended acceptance of HACCP as the required standard for free international movement of food. The WTO now evaluates both technical barriers to trade and sanitary controls with reference to Codex HACCP standards.

3. Explain Food Safety Management systems

In light of the evolution of the agro-food industrial sector and taking into account the increased perception of the importance of food safety requirements, a number of models have been developed to standardize approaches to food safety management. Standardized models include the International Standard ISO

22000:2005 and several other standards, such as the British Retail Consortium (BRC) standard-food or the IFS model.

The International Standard ISO 22000:2005 is presented as a means to harmonize the requirements for food safety management in food and food-related business on a global level. It applies therefore to all types of organizations in the food chain, from (for example) food producers through to distribution and retail outlets. Specifically, the ISO 22000:2005 standard specifies a number of requirements for operating a food safety management system. It also integrates Good Practices (GMP and GHP) as prerequisites, but without expressing specific requirements in this regard, and incorporates the use of the Hazard Analysis Critical Control Point (HACCP) system to facilitate its implementation. This standard has been developed as an auditable standard. The ISO 22000 standard may be applied in its own right. Nevertheless, its format is aligned with ISO 9001:2000 (quality management) and ISO 14001:2004 (environmental management) to enhance compatibility and foster complementarities.

4. Describe quality management systems

Quality systems cover organizational structure, responsibilities, procedures, processes and the resources needed to implement comprehensive quality management. They apply to, and interact with, all phases of a product cycle. They are intended to cover all quality elements.

A quality system is designed to ensure that all factors affecting the quality of a product will be under control. Such control enables the reduction, elimination and, most importantly, prevention of quality deficiencies. It is intended to perform two basic functions, quality control and quality assurance. Quality control covers the operational techniques and activities that eliminate causes of unsatisfactory performance and also covers the monitoring of processes. Quality assurance provides internal and external confidence that a company or an operational process will fulfill the requirements for quality.

The ISO 9001:2008 standard specifies agreed requirements for quality management systems and serves as a basis for third party audit (EN 45012). This standard and the guidelines on its application to the food and drink industry (ISO

15161) provide organizations with a methodology to initiate, improve or maintain quality management systems.

5. Define risk characterization.

Risk characterization in food industry is the qualitative and/or quantitative estimation including attendant uncertainties, probability of occurrence and severity of known or potential adverse health effects in a given population based on hazard identification, exposure assessment and hazard characterization. It provides an estimate, qualitative and/or quantitative, of the risk. The degree of confidence in the final estimation of risk depends on the variability, uncertainty and assumptions identified in the previous steps.

6. List out few food safety tools employed in food industry?

There are other tools of a more specialized nature which have application in areas of food safety management. These include in particular

- Other Safety and Quality assurance tools:

- Hazard Analysis and Operability Studies (HAZOP)
- Cause-and-effect diagram (fishbone or Ishikawa diagram)
- Event tree analysis
- Fault tree analysis
- Failure Mode and Effect Analysis (FMEA)

- Predictive microbiology tools:

- Predictive mathematical modelling (process modelling, microbial growth, death or survival, etc.), such as:

- The Pathogen Modelling Programme (<http://ars.usda.gov>), which is a tool for estimating the effects of multiple variables on the growth or survival of food borne pathogens

- The ComBase initiative, which includes a database on microbial response to food environments supplemented by a number of predictive models (<http://www.combase.cc>).

- Decision analysis tools:

These include commercial computer software programmes aimed at performing risk analysis, Monte Carlo simulation, sensitivity analysis, creating

decision trees and influence diagrams, fitting data to distributions and solving optimization problems.