Strengthening the food supply chain
Making it safe to eat – the ISO 22000 series

by Jacob Færgemand, Convenor of ISO/TC 34/WG 8, Food safety management systems

The safety of feed and food at any point in the chain from producer to consumer is of worldwide concern. Food safety hazards may be introduced at any stage, therefore adequate control throughout the production chain is essential.

Examples of outbreaks of highly contagious diseases in livestock, such as foot and mouth disease, and of microorganisms like salmonella and listeria have highlighted the risks of food contamination.

Unsafe food is a risk for all – consumers can become seriously ill, and the industry can face costly corrective actions. The underlying belief that harmonization is possible across today’s global industry is not enough, nor are sound food safety directives on their own.

Communication and raising awareness of potential hazards throughout the entire food chain – and therefore not restricted to one’s company or department – is crucial. Food safety is a joint responsibility for all of the participating parties.

ISO 22000:2005, Food safety management systems – Requirements for any organization in the food chain, aims to ensure that there are no weak links in the food supply chain. Since its publication in September 2005, the standard has been well received by the food industry and is clearly becoming a global standard to be reckoned with.

Tailor-made approach

ISO 22000 has been designed with flexibility to enable a tailor-made approach to food safety for all segments of the food chain. It does not take a “one
Main Focus

size fits all approach since the standards and procedures required for high risk areas in one food sector may not be appropriate in another. For this reason, unlike other schemes, the standard does not provide a checklist methodology.

If a company seeks certification to ISO 22000, it needs to follow local and export market laws, as well as implementing customers’ requests. ISO 22000 requires that industry targets each specific type of food product adequately according to its needs.

“Unsafe food is a risk for all.”

Effectiveness through communication

Through the development of one system that crosses all food sector branches and national borders, food safety is strengthened by the harmonization of working procedures. This is one of the fundamental rationales behind the ISO 22000 standard.

If everyone uses the same methods and language, the system’s effectiveness improves, increasing food safety, reducing the risk of critical errors and misunderstandings, and maximizing the use of resources.

ISO 22000 can be applied to all types of organization within the food chain, ranging from feed producers, primary producers, food manufacturers, transport and storage operators and subcontractors to retail and food service outlets – together with inter-related organizations, such as producers of equipment, packaging material, cleaning agents, additives and ingredients.

Key elements

ISO 22000 combines generally recognized key elements to ensure food safety along the food chain.

- Interactive communication

Clear communication along the food chain is essential to ensure that all relevant food safety hazards are identified and adequately controlled at each step. This implies communication of an organization’s needs to the other organizations in the framework of a structured management system and incorporated into the overall management activities of the organization. This provides maximum benefit for the organization and interested parties. ISO 22000 is aligned with the requirements of ISO 9001:2000 in order to enhance the compatibility of the two standards, and to ease their integrated implementation.

- Hazard control

ISO 22000 combines the Hazard Analysis and Critical Control Point (HACCP) principles and application steps developed by the Codex Alimentarius, with prerequisite programmes. It uses a hazard analysis to determine the strategy for hazard control.

About ISO 22000

ISO 22000:2005, Food safety management systems – Requirements for any organization in the food chain

ISO 22000 key elements

- Involvement of the management team

Food safety is not just something to be handled by the quality department. It is a top-management issue. ISO 22000 focuses on the involvement of the management team, which has to develop overall policy.

- Communication

As food safety hazards may be introduced at any stage of the food chain, interactive communication both upstream and downstream is essential. In addition, internal communication is a key element to avoiding misunderstandings and minimizing risks. A common vocabulary is a great help in this connection.

- The HACCP (Hazard Analysis & Critical Control Point) principles

ISO 22000 combines the recognized HACCP principles with prerequisite programmes. The hazard analysis determines a strategy and the prerequisite programmes set up an action plan.

- System management

ISO 22000 relies on a structured management system based on relevant parts of ISO 9001. It is possible to integrate them into one management system together with ISO 14001.

The development team

ISO 22000 was developed by food safety experts from Australia, Belgium, Canada, Denmark, France, Germany, Greece, Ireland, Japan, the Netherlands, Poland, Sweden, Switzerland, Thailand, United Kingdom, USA, Venezuela, Vietnam, and liaison bodies such as the Confederation of Food and Drink Industries of the European Union (CIAA), amongst others.

“ISO 22000 can be applied to all types of organization within the food chain.”

ISO 22000:2005, Food safety management systems – Requirements for any organization in the food chain

ISO 22000 key elements

- Involvement of the management team

Food safety is not just something to be handled by the quality department. It is a top-management issue. ISO 22000 focuses on the involvement of the management team, which has to develop overall policy.

- Communication

As food safety hazards may be introduced at any stage of the food chain, interactive communication both upstream and downstream is essential. In addition, internal communication is a key element to avoiding misunderstandings and minimizing risks. A common vocabulary is a great help in this connection.

- The HACCP (Hazard Analysis & Critical Control Point) principles

ISO 22000 combines the recognized HACCP principles with prerequisite programmes. The hazard analysis determines a strategy and the prerequisite programmes set up an action plan.

- System management

ISO 22000 relies on a structured management system based on relevant parts of ISO 9001. It is possible to integrate them into one management system together with ISO 14001.

The development team

ISO 22000 was developed by food safety experts from Australia, Belgium, Canada, Denmark, France, Germany, Greece, Ireland, Japan, the Netherlands, Poland, Sweden, Switzerland, Thailand, United Kingdom, USA, Venezuela, Vietnam, and liaison bodies such as the Confederation of Food and Drink Industries of the European Union (CIAA), amongst others.

“ISO 22000 can be applied to all types of organization within the food chain.”

In the framework of a structured management system and incorporated into the overall management activities of the organization. This provides maximum benefit for the organization and interested parties. ISO 22000 is aligned with the requirements of ISO 9001:2000 in order to enhance the compatibility of the two standards, and to ease their integrated implementation.

- Hazard control

ISO 22000 combines the Hazard Analysis and Critical Control Point (HACCP) principles and application steps developed by the Codex Alimentarius, with prerequisite programmes. It uses a hazard analysis to determine the strategy for hazard control.
Advantages for the industry

Organizations implementing the standard will benefit from:

• organized and targeted communication among trade partners;
• optimization of resources (internally and along the food chain);
• improved documentation;
• better planning, less post-process verification;
• more efficient and dynamic control of food safety hazards;
• all control measures subjected to hazard analysis;
• systematic management of prerequisite programmes;
• wide application because it is focused on end results;
• valid basis for taking decisions;
• control focused on what is necessary;
• saving resources by reducing overlapping system audits.

Food you can trust

Other stakeholders will benefit from:

• confidence that the organizations implementing ISO 22000 have the ability to identify and control food safety hazards.

The standard adds value because it:

• is an auditable standard with clear requirements
• is internationally accepted
• is a publicly available scheme, not a proprietary one, that can be used by all;
• integrates and harmonizes various existing national and industry-based certification schemes;
• addresses a desire for harmonization from the food processing industries concerning food safety;
• is aligned with ISO 9001:2000, Quality management systems – Requirements, and ISO 14001:2004, Environmental management systems – Requirements with guidance for use, and the Occupation Health and Safety Assessment Series (OHSAS) and can also incorporate retailers’ standards;
• contributes to a better understanding and further development of HACCP.

A complete menu of standards

ISO 22000 is supported by a complete set of standards that reinforce its implementation.

• Audit and certification

To increase the acceptance of ISO 22000 and ensure that accredited certification programmes are implemented in a professional and trustworthy manner, the technical specification ISO/TS 22003, Food safety management systems – Requirements for bodies providing audit and certification of food safety management systems, was published in 2007.

It provides the necessary information and confidence on how the certification of an organization’s food safety management system has been conducted. This technical specification offers harmonized guidance for the accreditation of certification bodies, and defines the applicable rules for the audit of a food safety management system compliant with ISO 22000.

• Applying food safety


• Tracing the feed and food chain

A new standard was published in June 2007 on traceability: ISO 22005:2007, Traceability in the feed and food chain – General principles and basic requirements for system design and implementation. It is a useful amplification of the reference in ISO 22000 to traceability as an important component of food safety.

ISO 22005 is intended for organizations operating or cooperating at any point in the feed and food chain. It does not contain any reference to certification, nor is it combined with other standards. Instead, the possibility of certification is left to the user’s discretion. However, the standard requires that organizations carry out monitoring, internal audit and reviews to assess the effectiveness of the system.
Main Focus

Other standards in the ISO 22000 family are being developed. They include a project for quality management for farmers, and a standard dealing with irradiation of foods. More information can be obtained by contacting the ISO/TC 34 secretariat: uari@afnor.org.

Benefits of building food safety

Food producers in all parts of the food chain around the world have adopted ISO 22000 as a new global food safety standard. Still, many small and medium-sized companies are waiting for the position of the three main market drivers: multinational food companies, authorities and retailers.

Some of the largest multinational food companies have been very positive about implementing the standard for themselves and their suppliers. Authorities in some countries plan to let certified companies benefit from less frequent controls, and perhaps consider an outsourcing of public control. The front runners in the work are authorities in Denmark and France. Retailers in Belgium and Denmark are already certified with ISO 22000, but greater communication on the benefits for retailers is still needed.

Driving forces for the future

It is important to create a common understanding of the benefits of building a food safety management system based on ISO 22000, for both manufacturing companies and retailers. This is being addressed by ISO/TC 34, Food products, and food sector organizations for retailers, food producing companies and international certification bodies, among whom a bridging process has been initiated.

"Food safety hazards may be introduced at any stage, therefore adequate control throughout the production chain is essential."

The driving forces for the future development of ISO 22000’s implementation are, to a large extent, retailers, important food producers and national authorities. Future dialogue among them is needed. Authorities have to define food safety objectives for hazards like salmonella, coli bacteria and campylobacter, and companies need to incorporate control measures that ensure these acceptable levels are met.

Another challenge for the food industry is to manoeuvre between authorities, clients and internal company demands on how to make safe foods. ISO 22000 provides guidance on this never-ending question and now the ISO 22000 series provides a set of tools for use by all interested parties. These include consultants, certification bodies, accreditation bodies, public authorities and all players in the food supply chain, from farmer to retailer.

New developments

In November 2008, ISO members approved the establishment of an ISO subcommittee on management systems for food safety and quality reporting to ISO/TC 34. The new subcommittee will address standardization in the field of food safety and quality management, covering the food supply chain from primary production to consumption, including both human and animal foodstuffs, as well as animal and vegetable propagation materials.

To maintain the global prevalence of the ISO 22000 series, it will be necessary to continually update the standards already published, as well as to develop new standards and technical specifications as needed – for instance, to focus on a specific trade or to elaborate and clarify specific subjects in the standards.

As organizations begin to adopt ISO 22000 in continuously increasing numbers, it becomes necessary to clarify and respond to issues raised by the users of the standards and the technical specifications. By establishing a new subcommittee responsible for the entire ISO 22000 family, it will be possible to gather all the experts’ knowledge in one place, making it easier to respond to issues and requests whenever necessary.

The secretariat of the new subcommittee will be held by Danish Standards, the ISO member for Denmark, and by Mr. Jacob Færgemand (see About the author) as Chair. The first meeting of the new subcommittee will take place during the first semester of 2009.

The ultimate objective is to put safe food on the tables of the consumer – you and me. Bon appétit!

About the author

Dr. Jacob Færgemand is Convenor of ISO/TC 34, Food products, WG 8, Food safety management systems and WG 11 on food safety management systems and related conformity assessment issues. Since 1994 he has worked with the certification body, Bureau Veritas Certification Denmark, as lead auditor for ISO 9000 and HACCP, and as hygiene inspector for the British Retail Consortium and ISO 22000 certification.

In 1996, he became Food Sector Manager, and in 2002 Sales Director. He now has a position as Business Development Director Food for the Benelux and Nordic Region. He holds a seat on the food committee of Global Food Safety Initiative (GFSI).

E-mail jacob.faergemand@dk.bureauveritas.com
Web www.certification.bureauveritas.com