Intelligence
Intelligence

# ISO 22000:2005 food safety system integrates HACCP

Responsible Seafood Advocate logo
1 June 2006 George J. Flick, Jr., Ph.D.

## Standard will simplify implementation of Codex HACCP system for food hygiene

As the seafood supply chain becomes more global, concern for the impacts of food quality and safety are increasingly important if firms wish to meet customer specifications, adhere to regulatory requirements, and bring safe, high-quality products to market.

While many fish and shellfish aquaculture firms have not implemented a standard of the International Organization for Standardization (ISO), ISO 22000:2005 may soon be required for international commerce. Following a series of earlier ISO standards, it incorporates a system of “internationally harmonized” requirements for global quality evaluation.

## Harmonizing standards

Founded in 1946, the International Organization for Standardization (ISO) has participation from nearly 100 countries. In order to initially harmonize the large number of national and international standards for quality assurance, a worldwide delegation known as the ISO/Technical Committee 176 initially produced five international documents:

- ISO 9000 Quality Management and Quality Assurance Standards
- ISO 9001 Quality Systems: Model for Quality Assurance in Design/Development, Production, Installation, and Servicing
- ISO 9002 Quality Systems: Model for Quality Assurance in Production and Installation
- ISO 9003 Quality Systems: Model for Quality Assurance in Final Inspection and Test
- ISO 9004 Quality Management and Quality System Elements and Guidelines

The ISO 9000-9004 series of standards is not technical in content. The standards do not specify criteria for products, such as bones in fish, microbiological composition, chemical residues, or physical properties. Rather, each standard addresses the documentation of the operational and management activities required to fulfill customer expectations and requirements.

# ISO 9001

Many seafood businesses may choose to smoothly step up from ISO 9001 to the ISO 22000 standard.

ISO 9001 is a quality system standard fish and shellfish firms would implement, since it is to be used “when conformance to specified requirements is to be assured by the supplier during several stages which may include design/development, production, installation, and servicing.”

While many fish and shellfish firms considered implementation of ISO 9001, another related concept was introduced to address product safety with respect to chemical, biological, and physical hazards. That “hazard analysis and critical control points” (HACCP) concept quickly became an international standard. HACCP found significant support when in 1998, the United Nations Food and Agricultural Organization (FAO) and World Health Organization (WHO) published guidance documents for regulatory assessment of HACCP.

The ISO standards lacked one important criterion for fish and shellfish and their products: safety. While quality is an important product attribute, safety quickly emerged as the major concern for domestic and international commerce. By addressing product safety directly, HACCP became the quality standard and ISO was never given serious consideration for implementation.

# ISO 22000:2005

On September 1, 2005, ISO 22000:2005 (Food Safety Management Systems – Requirements for Any Organization in the Food Chain) was published as a new international standard designed to ensure safe food supply chains worldwide. According to ISO’s September press release, the standard “provides a framework of internationally harmonized requirements for the global approach that is needed.”

The standard was developed within ISO by experts from the food industry, along with representatives of specialized international organizations in close cooperation with the Codex Alimentarius Commission, the body jointly established by FAO and WHO to develop food standards. A major resulting benefit was that ISO 22000 will make it easier for organizations worldwide to implement the Codex HACCP system for food hygiene in a harmonized way that does not vary depending on the country or food product concerned.

ISO said one of the major reasons for developing the standard was that food reaches consumers via supply chains that can link different types of organizations that stretch across multiple borders. One weak link can result in a situation that is dangerous to health. When this happens, the hazards to consumers can be serious and the cost to food chain suppliers substantial.

As food safety hazards can enter the food chain at any stage, adequate safety control throughout is essential. Food safety is a joint responsibility through all sectors of the food chain that requires a combined effort.

## Integrated food safety management

HACCP plans will become integral parts of tilapia processors' ISO programs if the operations adopt ISO 22000. Photo by Eric Pinon.

ISO 22000 is designed to permit all types of companies in the fish and shellfish chain to implement an integrated food safety management system. These include feed manufacturers, primary producers, further processors, retailers, and transportation, storage, and food services. It will also pertain to equipment manufacturers and those who provide packaging materials, cleaners and sanitizers, and ingredients.

Because of the number of reported illnesses from the consumption of fish and shellfish, and consumer demands for improved product safety, a number of countries have developed national standards to guarantee a safer food supply. Also, individual companies have internal standards or programs for auditing seafood suppliers. This situation resulted in a substantial number of different standards, regulations, and guidelines, which multiplied the risk of inconsistent levels of food safety, confusion over requirements, and increased costs for suppliers to comply with the multiple programs.

ISO 22000, which is supported by international consensus, harmonizes the requirements for systematically managing safety in food supply chains and offers an acceptable solution for international good practices. Food supplier management systems that conform to ISO 22000 can be certified, although the standard can also be implemented without certification.

Unlike ISO 9001, ISO 22000 incorporates the principles of HACCP and covers the requirement that standards be developed by various global food retailers. While ISO 22000 can be implemented independently, it was designed to be fully compatible with ISO 9001:2000, so companies with ISO 9001 will find it easy to extend to ISO 22000.

ISO 22000:2005 is the first in a family of documents that will address guidelines for the standard, requirements for the accreditation of ISO certification bodies, and traceability in the feed and food chain.

## Management system standard

According to Dr. John G. Surak, professor of agricultural economics and food science at Clemson University in South Carolina, USA, ISO 22000 was written as a management system standard. As a result, the standard addresses policies, planning, implementation and operations, performance assessment, improvement, and management review. ISO provides a useful model for business improvement in the fish and shellfish industry based on the process approach, with the management of food safety risk at its core.

ISO 22000 requires prerequisite programs that support the HACCP plan. Although there is no definition of what constitutes a prerequisite program, such programs should cover food safety, address indirect food safety issues, and be applicable to multiple production lines. Momentary failure to meet a prerequisite program seldom results in a food safety hazard.

Table 1 lists the minimum documents and records required for ISO 22000. Firms may develop additional documentation to ensure effective product safety.

## Flick, Minimum documents required, Table 1

- Management of the prerequisite programs
- Characteristics and intended uses of the end product
- HACCP plan
- Product/process flow diagram
- Hazard identification
- Hazard analysis
- Selection of control measures
- Critical limits
- Corrective action records
- Internal audit records
- Calibration records
- Traceability records
- Raw materials and ingredient records
- Evaluation and handling of potentially unsafe product or nonconforming product
- Internal and external communications
- Management reviews
- Monitoring records for operational prerequisite programs and HACCP plan
- Product withdrawal records
- Verification
- Training and knowledge records
- Agreements with external food safety experts

Table 1. Minimum documents required for ISO 22000.

*(Editor's Note: This article was originally published in the June 2006 print edition of the* Global Aquaculture Advocate.*)*

# Now that you've finished reading the article ...

… we hope you'll consider supporting our mission to document the evolution of the global aquaculture industry and share our vast network of contributors' expansive knowledge every week.

By becoming a Global Seafood Alliance member, you're ensuring that all of the pre-competitive work we do through member benefits, resources and events can continue. Individual membership costs just $50 a year.

**Not a GSA member? Join us.**

Support GSA and Become a Member

**Author**

George J. Flick, Jr., Ph.D.

Food Science and Technology Department
Virginia Tech/Virginia Sea Grant (0418)
Blacksburg, Virginia 24061 USA

[117,100,101,46,116,118,64,103,107,99,105,108,102]

**Share**

- Share via Email
- Share on Twitter
- Share on Facebook
- Share on LinkedIn

**Tagged With**

food safety HACCP George J. Flick ISO 22000

**Related Posts**

Intelligence

## A brief look at genetically modified salmon

If approved by FDA, fast-growing genetically modified salmon will provide a safe and nutritious product similar to other farmed Atlantic salmon.

Intelligence

## Off the Knife with Rolf Knecht, Grand Hyatt Shanghai

Ten years in China's largest city have given Chef Rolf Knecht a solid perspective on the nation's rapidly changing economy and the impacts on consumer food purchases. Knecht, who will speak during the GOAL marketplace roundtables, fields questions about seafood trends, certification and food safety.

Responsibility

## Addressing safety in Latin America's tilapia supply chain

Over the last decade, the experience gained by many tilapia farmers combined with proficient programs implemented by local governments have significantly improved tilapia production in various Latin American countries like Colombia, Mexico, Ecuador and other important tilapia producers in the region.

Responsibility

## Are seafood safety requirements pointing to vertical integration?

Vertical integration to control the product from the first stages of production through packaging is an excellent way to minimize preventable risks.

**About The Advocate**

The Responsible Seafood Advocate supports the Global Seafood Alliance's (GSA) mission to advance responsible seafood practices through education, advocacy and third-party assurances.

Learn More

Search Responsible Seafood Advocate Search Search


**Advertising Opportunities**

2022 Media & Events Kit

**Categories**

Aquafeeds Health & Welfare From Our Sponsors Innovation & Investment Intelligence Intelligence Responsibility Fisheries Artículos en Español

**Don't Miss an Article**

**Featured**

- Health & Welfare An update on vibriosis, the major bacterial disease shrimp farmers face
- Uncategorized A seat at the table: Fed By Blue team says aquaculture needs a stronger voice
- Responsibility Quantifying habitat provisioning at macroalgae cultivation locations

**Popular Tags**

All Tags

### Recent

- Fisheries Second Test: Another filler for the fisheries category
- Fisheries Test: This is filler for the fisheries Category
- Aquafeeds Test Article
- Responsibility Study: Climate change will shuffle marine ecosystems in unexpected ways as ocean temperature warms
- Health & Welfare Indian shrimp researchers earn a patent for WSSV diagnostic tool



- About
- Membership
- Resources
- Best Aquaculture Practices (BAP)
- Best Seafood Practices (BSP)
- GOAL Events
- Advocate Magazine
- Aquademia Podcast
- Blog
- Contact


### Stay up to date with GSA