Food safety through HACCP

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Hazards and risks that may adversely affect the health of people are inherent in all human activities. Aquaculture is no exception to this general rule. As aquaculture assumes an expanding role in meeting consumer demand for fishery products, it is only natural that the quality and safety of its products come under the scrutiny of national and international organizations responsible for food safety. These products can be exposed to a range of hazards from the water to the table. Some of these hazards are natural to aquaculture's environment; others are introduced by humans.

Traditionally, industry and regulators have depended on spot-checks of manufacturing conditions and random sampling of final products to ensure safe food. This approach, however, tends to be reactive, rather than preventive.

The Hazard Analysis Critical Control Point or HACCP system is gaining momentum as the best approach to assuring the highest degree of food safety. The HACCP system, which was first outlined in 1971 in the USA, has now been widely accepted internationally. USFDA (United States Food and Drug Administration) made HACCP regulation mandatory by 1997 while the European Economic Communities (EEC) prescribed their requirements for fish products entering the European market in its Council Directives.

What is HACCP?

HACCP is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product.

The HACCP approach is unique for every product and for every production unit: in each case, a detailed study of the fish farming methods, inputs and production conditions is required, and the sequential flow is necessary to identify hazards and the critical control points.

Another important feature of HACCP is that it provides the basis for clearly defining and modernizing the roles industry and government must play to ensure the safety of food. The government does not produce food. Thus, government action alone cannot make it safe. At the point of production and processing, only food companies have the capability and responsibility to make food safe. Maintaining food safety also requires responsible private action at each step of distribution, retail preparation and sale, and subsequent handling by consumers. The government's core regulatory role, which HACCP can facilitate, should be to verify that companies are meeting their responsibility. The government should define in law the companies' basic food safety obligation and provide accountability for businesses to meet those standards through appropriate oversight and enforcement.

For successful implementation of a HACCP plan, a company must be strongly committed to the HACCP concept. A firm commitment to HACCP by top management provides company employees with a sense of the importance of producing safe food.

In the development of a HACCP plan, five preliminary tasks need to be accomplished before the application of the HACCP principles to a specific product and process.

- Assemble the HACCP team
- Describe the food and its distribution
- Describe the intended use and consumers of the food
- Develop a flow diagram which describes the process
- Verify the flow diagram

On the other hand, the seven principles of HACCP have been universally accepted by government agencies, trade associations, and the food industry around the world. These are:

Analyze hazards. Identify potential hazards associated with a food and measures to control it. The hazard could be biological, such as a microbe; chemical, such as a toxin; or physical, such as ground glass or metal fragments

Identify critical control points. These are points in a food's production—from its raw state through processing and shipping to consumption by the consumer—at which the potential hazard can be controlled or eliminated. Examples are cooking, cooling, packaging, and metal detection

Establish preventive measures with critical limits for each control point. For a cooked food, for example, this might include setting the minimum cooking temperature and time required to ensure the elimination of any harmful microbes

Establish procedures to monitor the critical control points. Such procedures might include determining how and by whom cooking time and temperature should be monitored

Establish corrective actions to be taken when monitoring shows that a critical limit has not been met—for example, reprocessing or disposing of food if the minimum cooking temperature is not met

Establish procedures to verify that the system is working properly—for example, testing time-and-temperature recording devices to verify that a cooking unit is working properly

Establish effective record keeping to document the HACCP system. This would include records of hazards and their control methods, the monitoring of safety requirements and ac

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tion taken to correct potential problems. Each of these principles must be backed by sound scientific knowledge: for example, published microbiological studies on time and temperature factors for controlling foodborne pathogens

How does HACCP influence importers?

While importers have always been responsible for compliance with FDA regulations that prevent the entry and commerce of adulterated foods, previous practice depended solely on regulatory surveillance. The new mandatory HACCP regulations include requirements for importers to become more proactive in ensuring the safety of the imported seafoods and aquaculture products. In addition to traditional import surveillance and periodic inspections, FDA will now require certain HACCP controls.

Who must comply?

Importers -- U.S. owners or consignee at the time of entry into the United States, or the U.S. agent or representative of the foreign owner at time of entry. Foreign processors will be influenced indirectly through requirements for U.S. importers to ensure their suppliers comply with HACCP programs equivalent to that for domestic processors

Processors -- firms either in the United States or in a foreign country, engaged in handling, storing, preparing, heading, eviscerating, shucking, freezing, changing into different market forms, manufacturing, preserving, packing, labeling, dockside unloading, or holding fish and fishery products

The products involved are: fresh or saltwater fish, crustaceans, all molluscs, alligators, frogs, aquatic turtles, jellyfish, sea cucumbers, sea urchins, other aquatic animal life except mammals and birds, and the roe from these animals, if intended for human consumption; fishery products with fish as the characterizing ingredient.

Products exempted from HACCP are those that are harvested or transported without processing. These include retail operations and practices such as heading, eviscerating, or freezing intended solely to prepare the involved products for holding onboard a harvest vessel. Note, harvesters and transporters can be influenced indirectly through a processors' product and shipping specifications as related to their HACCP Plans.

Over the last thirty years, HACCP has evolved from a simple method of ensuring food safety to an adaptable framework that can respond to change while identifying opportunities for improvement. The public health interest of the consuming public as always is placed first in its priority.

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The large number of middlemen seemed to be needed because of: (1) physical distance between producers and consumers; (2) variety of fish landed is such that the labor is needed for sorting, assembling, etc; (3) where the fish caught by large fishing vessels require bulk-breaking since no one trader can buy the whole lot especially in the Navotas fish landing; and (4) with processing, storage and transport activities, there is a need to introduce other intermediaries into the distribution system.

Therefore, it becomes extremely difficult to shorten the trade channels in addition to the fact that brokers have a hold on the fishermen in more ways than one.

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