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THE APPLICATION OF HACCP IN A GOVERNMENT FOOD INSPECTION PROGRAM

by

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Introduction

The acronym, <u>HACCP</u>, (Hazard Analysis and Critical Control Point) has come to mean food safety in the food industry throughout the world. Although HACCP has been applied by the food canning industry for nearly 20 years, government food inspection agencies have just recently started to promote it as an effective tool in ensuring food safety. Many countries have, or are in the process of, adopting HACCP principles as part of their food inspection programs. These new requirements will not only impact their domestic food processing industry, but also the food processors that export food products to these countries.

The Canadian Department of Fisheries and Oceans was one of the first government food inspection agencies to implement a mandatory HACCP program. The program is referred to as the <u>Quality Management Program</u> (QMP), and requires that all fish processing plants operate under HACCP type controls.

This paper will discuss the basic principles of HACCP and their importance in achieving safe food, the impacts that HACCP is having on international trade, Government's and Industry's role in implementing HACCP and how the Canadian Department of Fisheries and Oceans adopted these principles in the development and application of the <u>Quality Management Program</u>.

HACCP Concepts and Principles

HACCP was developed in the 1960s by the combined efforts of the NASA (the U.S. space agency), the U.S. Army and the Pillsbury Company to ensure that the food provided to the astronauts during their missions was safe and did not pose a safety risk. The traditional inspection approach of "snapshot" plant inspections and end-product testing did not provide the assurances required by the space program. The assurances provided by the HACCP system did meet their requirements.

The power of HACCP is realised through the combination of analysis, control and prevention. Food processing operations are analysed to identify where potential hazards exist and control measures are implemented at critical stages of the process to prevent the hazards from occurring. The HACCP system is versatile and can be adapted to all stages of production, processing, distribution and preparation of different food types to prevent problems.

Implementing HACCP involves applying seven basic principles:

- 1. Analysing the food production, processing, distribution and preparation to identify the potential hazards (biological, chemical, physical).
- 2. Determining the <u>Critical Control Points</u> in the process where those hazards can be controlled.
- 3. Determining the <u>Critical Limits</u> that must be met at each Critical Control Point.
- 4. Establishing the monitoring procedures at each Critical Control Point.
- 5. Establishing <u>Corrective Actions</u> to be taken when problems are identified through monitoring.
- 6. Establishing verification procedures to ensure the control measures are effective.
- 7. Establishing effective record-keeping systems.

The costs associated with implementing a HACCP system include; the costs of developing a HACCP program unique to the product, the training costs for personnel, monitoring and record-keeping costs and the costs of management overseeing HACCP implementation and operation. However, it is important to point out that the lack of a HACCP system may also cost a processor by; production inefficiencies, low value product, recalls and the loss of market opportunities.

The potential benefits of a processor implementing a HACCP system include reductions of product risk, increased product quality, savings in production costs, reduction in product recalls and increased marketability of products.

Properly applied there is no other system or method which can provide the same degree of safety and assurances of quality, and the daily operating costs of a HACCP-based system is small compared with a large sampling programme¹. Under a HACCP system industry can better ensure the food it sells is safe. Companies can more easily detect potential problems and quickly react to them early in process before the product has reached the market.

Although HACCP was originally designed for application by a specific food processing operation to control hazards inherent in the product and process, government food inspection agencies are beginning to apply the principles to enhance their food safety and inspection programs. Countries such as Canada, Australia, Brazil, Uruguay, the European Community and

¹ Huss. H.H. (1994) Assurances of seafood quality. FAO Fisheries Technical Paper No. 334: 169p.

Thailand have already integrated HACCP into the food inspection programs and supported it through regulation².

The scope of HACCP has also been expanded by some of these countries. A pure HACCP system focuses only on the health and safety aspects of the product. Under Canada's Quality Management Program, HACCP type controls have been expanded, to not only control the hazards related to fish products, but also to control decomposition, economic fraud and misrepresentation factors.

HACCP Impacts on International Trade

The international body, the Codex Alimentarius Commission, has advocated the use of a HACCP based approach and is incorporating HACCP principles into the Codex Codes of Practice. These Codes of Practice will play an important role in international standard setting under the World Trade Organization. Also, the European Union and the United States have commenced the process of implementing HACCP for its food industries and these new requirements will be extended to imported foods.

The U.S. Food Drug Administration's regulatory proposal requires that all sectors of the seafood processing industry including processors, packers, warehouses and importers implement HACCP principles. The HACCP system must entail a science-based analysis of potential hazards, determination of where the hazards can occur in processing and the implementation of measures to prevent problems. Corrective action systems and record keeping systems must also be developed and implemented.

The EU has also implemented a number of measures in efforts to harmonise HACCP implementation in their member states. These measures are extended to recognising the equivalency of inspection systems in third countries and are based on HACCP principles.

The impact on importers and exporting countries of mandatory HACCP may be severe if they do not have a HACCP system in place. The failure to comply may result in products being denied access or subject to regulatory action. Alternatives should be provided to allow the entry products from developing countries that have not yet had the opportunities or mechanisms to develop and implement a national HACCP system³.

The Canadian Department of Fisheries and Oceans is currently developing a new method of inspecting imported fish products based on HACCP principles. The program is referred to as the <u>Quality Management Program for Importers</u>. The approach taken by the DFO is to use the

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Lima dos Santos, C.A. (1995). Impact of HACCP on International Seafood Production and Trade. 1995 International Boston Seafood Show Conference, Session 202.

Mills. R. (1994). The Impact of HACCP-Based Requirements on International Trade and the Effect on Developing Countries FAO Expert Technical Meeting. The Use of HACCP Principles In Food Control. Vancouver Canada, 12-16 December 1994.

information gained by HACCP systems to direct inspection resources. Fish products imported into Canada that have been processed under a HACCP regime will receive facilitated access to the Canadian market. Importers will be encouraged to require HACCP controls as part of their purchasing conditions. The lack of HACCP controls during production would not automatically restrict the product from entry but those fish products that were not produced under HACCP controls would be subject to a higher level of inspection than those processed under HACCP controls.

The application of HACCP systems by exporters of food products will provide the importing countries with more knowledge and confidence that the food products were processed under safe controls. As result the products will enjoy a reduced inspection level and facilitated access to the marketplace. In the final analysis HACCP type controls will be required by exporting food processors to maintain open and ready access to the large markets such as the U.S. and E.U.

The Role of Government and Industry in HACCP Implementation

The role of government in the implementation of HACCP is to show leadership in the implementation of HACCP and provide the infrastructure which includes regulations, training, inspection/compliance and industry guidelines that ensure its uniform application. Government must define and establish acceptable levels of food safety risk; establish HACCP implementation priorities relating to food types, facilities and processes; and integrate HACCP throughout the food chain. Food safety policies and programs should be developed using risk analysis to focus inspection resources and should be implemented and managed through national strategic plans.

The role of industry is to learn about and understand HACCP, implement its principles in cooperation with the food inspection agencies and ensure that its members are committed to its application in all levels of food production⁴.

DFO's Quality Management Program

Although HACCP has been described as overly complicated and detailed for many of the fish industry sectors, the Canadian Department of Fisheries and Oceans has developed a practical and logical approach to implement a HACCP based system. This system has been successfully adopted by the Canadian industry which includes both large and technical sophisticated processing plants and small family run processing operations.

QMP is, as HACCP is, a system designed to prevent instances of public health significance. However, QMP has been designed to also prevent instances of unacceptable quality and economic fraud from occurring. This is a fundamental difference between the QMP and a pure HACCP system.

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Report of the Expert Technical Meeting - The Use of HACCP Principles in Food Control. Vancouver, Canada, 12-16 December 1994.

QMP is closely linked to the Canadian Fish Inspection Regulations and the application of a QMP aids the processor in interpreting the regulations and operating within the regulatory requirements. The overall results is that the fish produced is safe, of acceptable quality and marketed fairly. By implementing the Quality Management Program the fish processing industry is able to demonstrate that they are operating on a day to day basis with controls that ensure compliance with the regulations.

The development of an individual Quality Management Program for a fish processing operation incorporates all of the basic steps involved in developing a HACCP system for a specific food product. A hazard assessment of the process operation is performed. Critical control points are identified. Defect definitions and tolerances, monitoring procedures, record keeping criteria, corrective action systems, and company verification measures are established for each critical control point.

As of February 1, 1992 each Fish Processing Plant is required by regulation to have in place and be operating under a QMP specific to its fish processing operations. The Department developed the QMP Submission Guide to assist the industry in developing their programs. The Guide helps the processor identify the Critical Control Points in the process and the associated hazards and sets out for the fish processing industry the minimum requirements for a plant's Quality Management Program.

Under QMP a Fish processing plant required to address 12 elements that are applicable to their operation. Potential hazards will be prevented through the application of controls at each of the elements in the process operation:

- 1. Incoming Fish
- 2. Other Ingredients
- 3. Packaging Material
- 4. Labeling
- 5. Chemicals (Cleaning Agents, Sanitizers, Lubricants, and Pesticides)
- 6. Construction and Equipment
- 7. Operation and Sanitation
- 8. Process Control
- 9. Storage
- 10. Final Product
- 11. Recall Procedures
- 12. Employee Qualifications

A "Critical control point" is defined as a point in time or a physical location in the process at which failure of preventative measures will expose the customer to unacceptable risks related to tainted, decomposed, or unwholesome fish or to economic fraud.

At each Critical Control Point the fish plant must:

- identify the standard that is applied to ensure compliance with regulatory requirements,

- identify the monitoring procedures and inspection frequencies that will be followed to ensure that the standard is being met during production,
- identify the reporting mechanism that will be used at each Critical Control Point to document the results of the inspections and
- the fish plant will be required to develop contingency plans or corrective action plans that will be followed if and when the monitoring procedures identify an instance where the standard is not being met.

The fish processing plant must have available for inspection their documented QMP that provides a written description of the program being implemented in the processing plant. The fish processing plant is also required to retain records of all inspections performed as part of their QMP for 3 years. These records must be made available to DFO Inspectors when requested.

In summary a fish processing plant's responsibilities under QMP are:

- to develop their own in-plant QMP specific to its operation
- to implement the in-plant QMP
- maintain the QMP records of the QMP inspections, and
- to correct all problems identified during the QMP inspections.

OMP Inspection

The Department of Fisheries and Oceans inspects the fish processing plant against the Quality Management Program requirements. Individual Inspectors perform QMP Inspections that entail:

- * The verification of the written QMP to ensure the documented standards, monitoring procedures, record keeping systems and guidelines for corrective action meet the minimum requirements as set by the Department of Fisheries and Oceans,
- * the confirmation that the written QMP is being followed in the plant. This will require the inspector to observe the processor's QMP activities at each critical control point in the plant, and
- * the verification that the processor's records are accurate. This will require the inspector to withdraw and inspect parallel samples of the processor's products and compare the results with those of the company's.

The completion of the QMP Inspection results in the process operation being rated as either Excellent, Good, Satisfactory, or Fail. These QMP ratings represent the degree of confidence that DFO has in the company's ability to operate within compliance of the regulations and determines the inspection coverage to be directed at the in subsequent weeks.

Fail rated plants will be asked to voluntarily correct the deficiencies and improve their rating to at least a "Satisfactory". Refusal to deal with the problems voluntarily will jeopardise the federal certificate of registration and therefore the ability of the processing plant to export its products. Plants which receive a "Satisfactory" rating will be inspected on a frequent basis until they gain greater control over their process and obtain a higher rating.

Processing operations that are successful in meeting all but a few of the QMP requirements will receive an "Excellent or "Good" rating. These plants will be qualified to apply for the use of the "CANADA INSPECTED" logo on their product labels. Also the product certification process will be streamlined and provided without delay, and the company will have more autonomy in their day to day processing operation. The implementation of the Quality Management Program has provided added assurances that problems are identified early in process, prior to value being added to the product, and that process and product standards are being met.

The Quality Management Program has also allowed the Department to measure the level of compliance of the industry in an uniform manner and direct its resources to those areas where problems have been identified. And as QMP is based on prevention and detection of problems it provides for a better system for preventing crises.

The Quality Management Program - Industry's Role

The major change for industry under QMP is that they must accept more responsibility and accountability in monitoring their own performance. The processing plants are required to perform inspections of the plant and products and initiate corrective actions when they identify a problem. And records of all these QMP activities must be maintained so that they are able to demonstrate that they consistently operating in compliance with the regulations.

The Role of Government in Regulating Under OMP

The implementation of the Quality Management Program meant a change in the relationship between the fish processing industry and the Government. Under QMP the Department of Fisheries and Oceans' role shifted from solely an inspection function to include an auditing function. The Inspector continues to perform random inspections of the process operation and products but the focus is not on individual lots of product or on a day of plant operation, as previously, but rather on the overall QMP system. The Inspector's decisions are based upon a compilation of inter-related inspection results gathered over time by both the Inspector and the processor.

Role of OMP in Maintaining Access to Export Markets

As previously stated European Community implemented new import requirements as part of their common market initiative. The Canadian QMP was determined by EU Inspectors to be equivalent to the EU requirements and Canadian fish products have received facilitated access to the EU market.

The Canadian Department of Fisheries and Oceans has also signed a Memorandum of Understanding with the Australian Quarantine and Inspection Service concerning the inspection and certification of fish products traded between the two countries.

Mutual goals of the two food inspection agencies are to:

- * Provide reasonable assurance that fish products prepared under the supervision of each agency will not be tainted, decomposed or unwholesome and will otherwise meet the requirements of the importing country.
- * To recognise export certificates issued by the participating agencies, thus minimizing the requirements for further inspections and analyses of certified shipments at the time of importation.

Under the MOU Canada and Australia will recognise the principle of equivalency of their respective systems for controlling fish processing establishments and ensuring that imported and exported fish products are safe and of acceptable quality. QMP played an important role in satisfying the Australians new Imported Food Inspection Program implemented in February 1993.

In conclusion, HACCP based systems are recognised internationally as a very effective approach to ensuring the production of safe fish products. As more and more countries adopt HACCP principles as part of their national fish inspection programs, fish production under HACCP systems will be imperative processors wishing to maintain access to the major markets. The development of a successful HACCP system will rely on the cooperation of industry and governments working together to design a system that meets their needs and satisfies international norms. The Department of Fisheries and Oceans has been successful in implementing such a system, the Quality Management Program, and has demonstrated that HACCP principles can be expanded to control other aspects of the product related to minimal acceptable quality (decomposition), economic fraud and product misrepresentation. The Quality Management Program has provided the Canadian fish processing industry and the Department of Fisheries and Oceans with an effective mechanism to ensure the protection and assurance needed in today's demanding markets. The price of this assurance was change. If HACCP based systems, such as QMP, are to continue to meet the needs of industry and government they must be adaptable and designed for improvement in response to future demands of the marketplace.

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