

Control of Fish Processing Establishments in Singapore

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ABSTRACT

The Veterinary Public Health and Food Supply (VPHFS) Division of the Primary Production Department (PPD) is the government agency responsible for the inspection and licensing control of all fish processing establishments in Singapore. This paper reviews the current status of the fish processing industry in Singapore and the inspection and auditing approaches adopted by PPD to ensure the wholesomeness and public health safety of fish and fishery products for human consumption as well as to meet the health and sanitary requirements of the importing countries in respect of the plants' export and premises. The application of the Hazard Analysis Critical Control Point (HACCP) concept to the fish processing establishments is also discussed.

Introduction

The Veterinary Public Health and Food Supply (VPHFS) Division of the Primary Production Department (PPD) is the government agency responsible for the inspection and licensing control of all fish processing establishments in Singapore. The Department's primary concern for the local fish processing industry is to ensure the wholesomeness and public health safety of the fish and fishery products for human consumption as well as to meet with the health and sanitary requirements of the importing countries in respect of the plants' export and premises.

At present, there are altogether 100 fish processing establishments licensed by PPD. The establishments process a wide range of fish and fishery products, ranging from the traditional fish jelly products such as fish balls and fish cakes, Chinese delicacies such as shark's fins and sea cucumber to frozen seafood such as tuna, swordfish etc. and canned seafood products. Figure 1 shows the various fish processing establishments in Singapore. To ensure the establishments' strict compliance with PPD's mandatory requirements and in order to monitor their performance and standard of hygiene, inspection of the premises and on-line monitoring of the establishments' production processes are regularly conducted. The inspection and audit approach which

PPD adopts for the fish processing establishments will be elaborated subsequently in the paper.

Export-oriented Fish Processing Establishments

There are a total of 16 export-oriented fish processing establishments in Singapore. Some of the importing countries of our fish and fishery products include those in the European Union, Australia, China, Cyprus, Hong Kong, Indonesia, Israel, Korea, Maldives, South Africa, Switzerland, and the United States of America. Some of the fish and fishery products exported overseas are frozen raw fish, crustaceans and shellfish, such as tuna, shark, swordfish, dory, prawn, shrimp, mussel, scallop, squid, and processed fishery products such as individually quick frozen cooked shrimps, retorted abalone, and canned seafood products. To facilitate the industry's export abroad, PPD which is the competent authority in Singapore, provides health certification services for them. Production processes of the products destined for export are monitored closely to ensure that they not only comply with the requirements imposed by the importing countries but also that the sanitary and hygiene standards of the establishments are maintained at the highest level at all times. Samples of the products are collected for the relevant laboratory tests, i.e. microbiological tests, chemical tests, heavy metals, freshness test, etc. Health certificates are then issued pending satisfactory laboratory results. The total quantity of fish and fishery products exported from Singapore under PPD's export health certification over the past 5 years is shown in Figure 2. Some of the export-oriented establishments process their products for the local market as well.

Local Fish Processing Establishments

There are 84 fish processing establishments producing mainly for the domestic markets. They consist of small to medium-sized enterprises, many of which are family-owned businesses. Most of their operations are still performed manually and rely on labour intensive methods. Some of the products processed by the industry include fish jelly products such as fish balls, fish cakes, chilled /frozen seafood,

shark's fins, sea cucumber and dried seafood products.

On-line monitoring of the production processes are carried out regularly at both the export-oriented and local fish processing establishments. Samples of products are collected at the various stages of production for the relevant laboratory tests to verify that the operations are carried out under strict control. Documents pertaining to the production such as temperature records, sanitation standard operating procedure records, corrective action records etc. are also audited periodically.

Inspection and Licensing Control

In September 1995, PPD officially took over the responsibility of approving and licensing 335 local meat and fish processing establishments in Singapore from the Ministry of the Environment, out of which 100 are fish processing establishments. Formerly, the Department only licensed a handful of export-oriented fish processing establishments. For the past year, PPD has been vigorously inspecting and auditing these establishments to assess the conditions of their premises and the sanitary standards of the processing activities and facilities. A comprehensive check list is used to audit these establishments. Faults and deficiencies observed during inspection are brought to the licensee's attention for rectification during each visit. Photographs of the establishments' premises and facilities are also taken for record and monitoring purposes. Periodic follow-up inspections are also conducted at these establishments regularly to ensure continued compliance with PPD's mandatory requirements. Samples of ingredients, raw materials or cooked products are also taken routinely for testing in the Department's laboratory.

Many of the family-owned fish processing establishments are small businesses and their processing areas are relatively small, typically of 90 - 120 square metres. The physical space constraints can give rise to poor housekeeping and maintenance of the premises and increase chances of cross contamination between the cooked and raw food. In addition, many of the workers have inadequate knowledge of food hygiene and sanitation. Hence, personal hygiene, quality control and assurance programmes are often not given sufficient attention in these establishments.

In the case of export-oriented fish processing establishments, workers are usually better trained and do observe food hygiene and sanitary practices at all times during processing. Many of these establishments have already adopted Good Manufacturing Practices (GMP) and have some form of quality control and assurance system in place.

In order to assist the industry in gradually

overcoming the problems that they currently face, PPD has already adopted several approaches as follows:

- Conducting periodic inspections of the premises to ensure their compliance.
- Providing scientific guidance and advice on public health safety, hygiene and sanitation to the plant personnel.
- Assisting establishments in upgrading their premises in terms of technical expertise/skills and/or structural changes.
- Helping applicants of fish processing establishments in the set up of their new premises by assessing and confirming the layout of their establishments and the production flow of their process and ensuring that all conditions mandated by the Department are complied with.
- Carrying out surprise audit checks and in-recalcitrant cases, enforcement action in the form of meting out compound fines and/or court actions to the licensee or company in question.

Implementation of the Hazard Analysis Critical Control Point (HACCP) Concept

The application of the HACCP concept to the fish processing industry has gained increasing popularity in many developed countries in recent years as the system of choice for enhancing food safety and quality. It has been widely recognized and accepted that the basic principle underlying the HACCP concept is that it is possible to identify and control potential hazards and problems at an early stage in food production, and thereby, preventing them from becoming risks to consumers or an economic burden to the industry. This is the key advantage of HACCP over the other conventional approaches such as inspection and end-item testings, where a negative result can only be remedied when detected, but does not prevent the occurrence of the hazard in the first place. As a result, many of the developed countries are now integrating this system into their food inspection services programme and national legislation. Some of these countries are now requiring their domestic industry as well as those that export fish and fishery products into their markets to adopt the same concept in their operations.

The concept of HACCP was brought into the food legislation in the European Union (EU), after the adoption of the EU Food Hygiene Directives in June 1993. Under the directive, food business operators are required to identify steps in their processes and activities that are critical to achieving food safety and to ensure that adequate safety procedures are identified, implemented, maintained and reviewed based on the principles of the HACCP concept. To comply with this directive, the EU-

approved fish processing establishments in Singapore have gradually begun to adopt the principles and applications of this concept and are in the process of implementing it in their production operations. Although the implementation of a complete and fully-documented HACCP system is not a mandatory requirement under the regulation at this stage, PPD is strongly encouraging the industry to move in this direction. PPD has been actively communicating the basic principles and necessary information required for its effective implementation to the various establishments. As the regulatory authority, PPD assesses the appropriate means of implementation of the HACCP system by the establishments. Follow-up inspections to the establishments to ensure the consistent application of the concept and to verify and audit their relevant documents are also performed.

Some of these EU-approved fish processing establishments have taken the leap as they move from quality control to company-wide quality assurance by achieving accreditation to ISO 9002. With the introduction of the HACCP concept, a few of them are now trying to integrate this concept into the quality management systems i.e. ISO 9002 so as to produce both quality and safe products for the consumers. This will definitely enhance their sales and exports to overseas markets. In fact, meeting the export requirements of importing countries has generally been a strong motivation to the application of the HACCP concept by the establishments. Thus, the concept is better accepted and increasingly integrated by the fish processing industries who are targeting their products towards the export market.

Moreover, these export-oriented establishments are generally those which are better supported by resources in terms of financial capabilities, qualified personnel and facilities. With these, they are able to advance themselves to compete in the world market.

On the other hand, the local-oriented establishments have not embraced this concept into their operations so readily. Small business is bound to have greater difficulties in adapting to this system as they have little or no incentive to do so. Moreover, the smaller and traditional family-owned establishments are usually more resistant to any changes in their production technique or the way in which their production is being managed. Unlike the export-oriented establishments, the implementation of this concept in the smaller enterprises is also hampered by insufficient technical-resource base and training and the high turnover of plant personnel.

Future Developments

Since PPD has been entrusted with the task of controlling all fish processing establishments in Singapore, we recognize the important role we play as government regulators in helping the industry to improve and upgrade their standards of hygiene and sanitation as well as the advancement of processing technology, etc. In this connection, PPD will vigorously pursue the following:

1. Application of HACCP and other Quality Systems

To assist the fish processing industry in the application of the HACCP concept and other quality systems so as to assure food safety in their food production operations, improve their efficiency and cut down costs in the long run. Moreover, adoption of the HACCP concept, especially in the export-oriented establishments can boost and enhance international trade as more and more developed importing countries are now making this concept mandatory. As for the local-oriented fish processing establishments, PPD intends to help them in acquiring a better understanding and acceptance of quality control and gradually introduce the concept of HACCP to their production operations.

2. Training on Good Manufacturing Practices (GMP)

To provide relevant technical training courses, seminars and talks on GMP, public health and food safety concerns and specialized subjects such as HACCP to the various levels of personnel from the industry especially those from the smaller family-owned establishments. This aims to create a constant awareness of food safety amongst the industry and help train their personnel so as to improve the standard of hygiene and sanitation at their establishments.

3. Development of Fish Processing Technology and Value-Added Products

To assist the fish industry to go into areas of research and development which improve their processing technology and produce value-added fish products with the assistance of research agencies like the Marine Fisheries Research Department (MFRD) or other relevant authorities. As Singapore has limited natural marine resources, it is crucial that her local fish industry constantly upgrades and improves itself so as to stay competitive and to continue to create a niche for itself in the overseas markets.

Discussion

It was emphasized that most of the raw materials used by processing establishments in Singapore are imported. With regards to the

implementation of Hazard Analysis and Critical Control Point (HACCP) and ISO 9002, the Seminar was informed that although the Primary Production Department of Singapore implements these criteria, consultants have been hired to prepare the plan and layout of such systems.

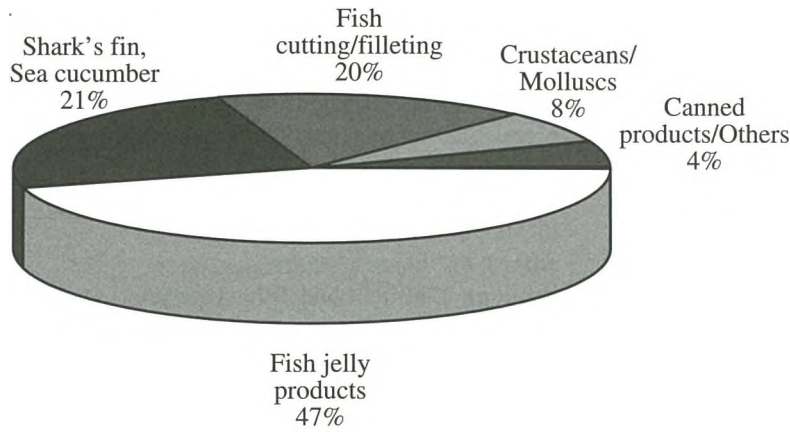


Fig. 1. Fish Processing Establishments in Singapore (as at August 1996).
Source : PPD, Singapore.

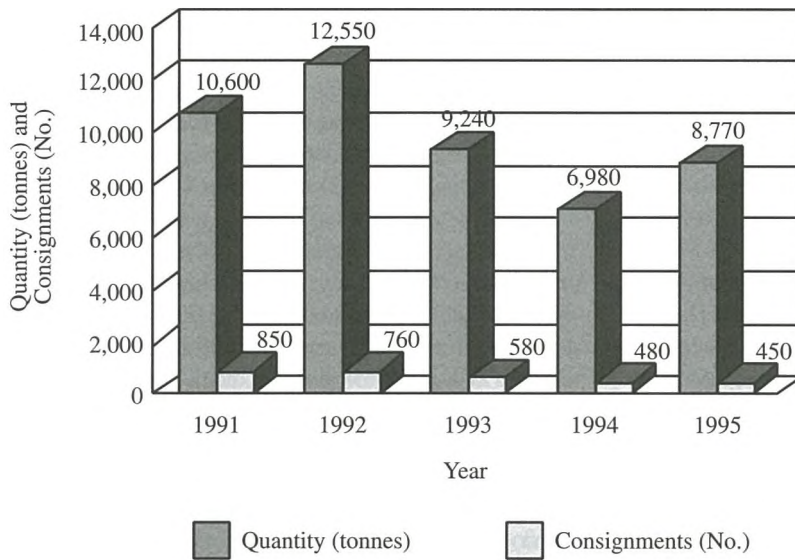


Fig. 2. Certification for Export of Fish and Fishery Products from Singapore (1991 - 1995).
Source : PPD, Singapore.