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ADVISORY ASSISTANCE TO IMPROVE THE QUALITY OF FISH PRODUCTS IN THE FISH PROCESSING INDUSTRY IN KARACHI

SI/PAK/94/801

PAKISTAN

Technical report: Assessment of the fish industries in Pakistan and recommendations on short-, medium- and long-term measures to improve the product quality*

Prepared for the Government of Pakistan by the
United Nations Industrial Development Organization,
acting as executing agency of the United Nations Development Programme

Based on the work of T. Nielsen, Processing and quality control consultant and U.J. Hansen, Fishing and fish handling consultant

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Vienna

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* This document has not been edited

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EXPLANATORY NOTES

Currency Exchange Rate

- March 1995: 1 US $ = 30.4 PRs.
- March 1996: 1 US $ = 33.5 PRs.

Abbreviations and acronyms

ADB	-	Asian Development Bank
EU	-	European Union
FAO	-	Food And Agriculture Organisation, Rome
FCS	-	Fishermens Cooperative Society, Karachi
GOP	-	Government of Pakistan
HACCP	-	Hazard Analysis Critical Control Points
IQF	-	Individually quick frozen (production form for shrimps)
KaFHA	-	Karachi Fisheries Harbour Authority
MFD	-	Marine Fisheries Department, Government of Pakistan, Karachi
PSPEA	-	Pakistan Seafood Producer and Exporters Association, Karachi
PD	-	Peeled and deveined (a product form of shrimps)
PRs	-	Pakistan Rupees
PUD	-	Peeled undeveined (a product form of shrimps)
QMP	-	Quality Management Programme
UNDP	-	United Nations Development Programme

ABSTRACT

Following a request from The Pakistan Seafood Producer and Exporters Association (PSPEA) to the Government of Sindh, a project was initiated, financed by UNIDO. It was given the following title:

ADVISORY ASSISTANCE TO IMPROVE THE QUALITY OF FISH PRODUCTS IN THE FISH PROCESSING INDUSTRY IN KARACHI
SI/PAK/94/801/11-51/07-20A0
Project for the Government of Pakistan

Two Danish experts were appointed to carry out the mission:

- Mr. Tom Nielsen, M.Sc., team leader, fish processing and quality control consultant
- Mr. Ulrik Jes Hansen, M.Sc., fishing and fish handling consultant

The purpose of the project was to provide high-level advisory assistance to the Pakistan Seafood Processor and Exporters Association (PSPEA) on immediate, medium and long-term measures to improve the quality of the fish products of the individual processors within the group.

The project followed the plan below:

- March 1995: First visit to Karachi by consultants. Fact finding, concentrating on collecting information about:
  - Product quality requirements from the market for Pakistani seafood products
  - Present state of the fish processing industry in Karachi
  - Raw material handling from fishing vessel to plant
  - Catch handling practice on board the fishing vessels
  - The inspection performed by the Marine Fisheries Department at Karachi harbour
  - State of the Fisheries Training Centre at Karachi harbour.
- April 1995 - February 1996: Based at DIFTA at the North Sea Centre in Hirtshals, Denmark, collection of information on trade, prices, specific quality requirements on different markets relevant for the fish and shellfish products produced by the PSPEA.
- February - March 1996: Second visit to Karachi. Collection of additional information and contribution to the preparation of an analysis of the prospects for the Pakistani fishing industry. The findings, conclusions and subsequent recommendations were presented and discussed on two seminars for the fishing vessel owners/skippers and the seafood processors.

The findings of the mission revealed that there are several critical points in the handling and preparation of the seafood. The raw material and products gradually decrease in quality, due to intermittent storage at high temperatures, low hygienic standards, contamination and bruises. The result is that an unacceptable large part of the seafood products for export is of a low quality fetching correspondingly low prices on the World market.

The critical points are found at all levels in the way of the products from handling aboard the fishing vessels over the landing to the processing and packaging in the premises of the industries.

Several earlier projects have addressed these problems, and have - to a certain extent - created an awareness for good quality among the different partners. Nevertheless there are still major problems, which - according to the preliminary findings of the present project - can only be solved by putting effort into:

- training of fishermen, workers in the harbour handling the catches, and workers in the fishing industries in optimal handling for better quality
- changing the practice of storing fish aboard, shifting from carrying the catch in bulk to storing it in boxes and containers,
- refurbish the jetty and auction hall in Karachi, by improving the hygienic standard and preventing the catch from contamination. This implies the making of proper draining, and alter the practices for handling, sorting and selling the catches.
- Clarifying the responsibilities and obligations of the authorities involved in the management of Karachi Fisheries Harbour in order to assure cleaning and maintenance of the buildings and surroundings.
- Improving the hygienic standards and lay-out of the premises of the seafood processors. Only a few of the processors were found to have a hygienic standard which could fulfill the requirements from the high-value markets in EU, USA and Japan.
- Improving the manufacturing practice of the processors. Most of the processors visited were making products which were low priced in relation to the price similar products fetch on the World market. This was either due to the low quality of the raw or semi-produced material available, or to bad manufacturing practice in the enterprise. If a better quality can be assured and the manufacturing practice is improved there is a potential for a substantial increase in value of the seafood products from the processing industries in Karachi.
- Strengthening the public Quality Inspection of landing facilities, production and products.

TABLE OF CONTENTS

List of Appendices

INTRODUCTION

Following an enquiry from The Pakistan Seafood Producers and Exporters Association (PSPEA) to the Government of Sindh, a project was initiated, and later financed by UNIDO. It was given the following title: ADVISORY ASSISTANCE TO IMPROVE THE QUALITY OF FISH PRODUCTS IN THE FISH PROCESSING INDUSTRY IN KARACHI. SI/PAK/94/801/11-51/07-20A0. Project for the Government of Pakistan.

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- February - March 1996: Second visit to Karachi. Collection of additional information and contribution to the preparation of an analysis of the prospects for the Pakistani fishing industry. The findings, conclusions and subsequent recommendations were presented and discussed on two seminars for the fishing vessel owners/skippers and the seafood processors

Thirteen fish processing companies are members of the Pakistan Seafood Processors and Exporters according to the list in Appendix 4. All of them have processing facilities in the Karachi fish harbour area. The members of the group receive approximately 80% of the raw material from fishing vessels landing their catch in Karachi Harbour. The remaining 20% are transported on lorries from other fish harbours and from freshwater fishing.

Also located in the Karachi fish harbour area are the Marine Fisheries Department, Government of Pakistan, with quality control laboratories, the Marine Fisheries Training Centre for training of fishermen, and the office of the association Karachi Fishing Boat and Trawler Owners Group.

With these geographically close locations of facilities for delivering the raw material, units for processing to final products, quality control laboratories, training facilities, and attached organisations, the opportunities to be able to deliver good quality fish products to the markets are appropriate.

However, the processing industry has been facing increasing problems in export because of the tightening up of the quality regulations for Pakistan's fish products on the traditional overseas markets.

It is a well-known fact that fish and shellfish products have to meet the consumers requirements. A growing tendency shows on the markets in Europe and the USA, that a quality control system is required for each individual link of the chain from catch handling aboard, via unloading, transport and processing to final product. A quality control system can assure the quality so that the buyer can rely on the product and can trace back through all links if his own quality control system reveals any deviation in the quality from the specified quality in the trade contract, for example between the Pakistani producer and the company on the export market. To appraise whether this is feasible to seafood products from the Pakistan Seafood Processors and Exporters, the following quality related "links" have been evaluated:

- Requirements both from the authorities and the consumers on the foreign markets,
- Present state of the fish processing industry in Karachi,
- Raw material handling from fishing vessel to plant,
- Catch handling on board the fishing vessels,
- The legislation,
- The quality control and inspection performed by the Marine Fisheries Department at Karachi harbour.

Several development projects have been performed in the Pakistan fishery during the eighties and nineties, and many have addressed the problems of low quality of the final exported seafood products. The consultants were asked to review the achievements of the following three projects:

- Strengthening of the fisheries training centre (DP/PAK/88/013)
- Development of fish marketing and utilization (DP/PAK/77/033)
- Upgrading of quality control of fish and fishery products (PAK/88/034)

The preliminary findings and recommendations presented in this report have been discussed with the Pakistan Seafood Processors and Exporters Association (PSPEA), Karachi Fishing Boat and Trawlers Group, The Export Promotion Bureau, Karachi and Marine Fisheries Department (MFD), Government of Pakistan.

I FISHERY AND MARKETS

A Catches and landings

The knowledge about the size of the fish stocks and level of sustainable catch in Pakistan waters is limited However, surveys have been carried out, and the results regarding the potential yield the stocks can support are summarized in table 1.

Tabel 1 Estimated level of exploitation of the fish and shellfish resources available for Pakistan. Source: ADB, 1994, Second Marine Fisheries Project.

Species group	Annual potential	Estimated catch 1993	Balance available for exploitation
Demersal	189	210	-21
Small pelagic	250	225	25
Big pelagic	30	30	-
Shrimps	35	35	-
Total	504	500	-4

In spite of the uncertainties incorporated in the figures, they do indicate that the present level of exploitation has reached an acceptable maximum. An increased revenue from fishing cannot, therefore, be expected from a more efficient fishery resulting in larger catches.

Analysis of the fisheries statistics of Pakistan in the years 1990 to 1993, provided by MFD, shows a steady continuation of the increase seen in the previous decade.

The total catch from marine and inland fisheries increased almost 30% over the period, from 483 to 622 thousand tons (appendix 5.1). The increase originates almost entirely from marine fisheries, showing an increase of 35%, going up from 370 to 500 thousand ton. Still, in 1993 freshwater fish makes up 20% of the total weight of catches.

In the marine fishery shrimps are a very valuable resource, but they only make up 9.2% of the weight in 1993.

Despite warnings of growth overfishing of major fish and shrimp stocks, few attempts are taken to monitor the fishing fleet by technical measures. During the past ten years there has been a closed season in the monsoon period. June - July. Although intended to last two months it has rarely exceeded 30 - 45 days.

Appendix 5.1 also gives the geographical distribution of the landings in Pakistan. In 1993 a little over 60 % of the marine catches, were caught in the waters of the Sindh province and almost exclusively landed in Karachi. 24% were caught in the waters of Baluchistan. These fish are mainly sold as low quality dried fish because of the absence of fish processing industries in Baluchistan.

20% of the total landings were caught in fresh water inland, and if not sold for the local market these fish are brought to Karachi for processing and export.

In the EEZ of Pakistan, only small amounts are reported caught. Some of these are also landed in Karachi.

The catch is composed of a vide variety of fish and shellfish species. Appendix 5.2 gives the total catch of marine fisheries on species from 1989 to 1993. In spite of difficulties in compiling reliable statistics of the fishery these tables do give an indication of how the catch is composed.

Of high value fish for human consumption, Grunters, Croakers and Breams are the most important. In the last years catches were 25 - 30.000 tons. Pomfrets and Trevallies are also high priced and made up around 5 - 6.000 tons.

The more oily small pelagic fish like sardines makes the bulk of the total landings. In 1993 it made up 33% of the total marine catch. Of this more than half was Indian oil sardine.

Large pelagic species like Tuna made up 60.000 tons in 1993, a doubling of the catches since 1989.

Catches of sharks was in the period around 45.000 tons.

The most important catch from an exporters view is the catch of shrimp. In the period 1989 - 93 catches increased from 23.000 tons to 34.000 tons. The small shrimps (called "Kiddy") make up about half the shrimp catches, 18.600 tons in 1993. The rest are the medium sized (Metapeneaus sp.) and large "White" or "Brown" shrimps (banana prawn and tiger prawn of the genus Peneaus). Catches of these were 9.500 and 6.800 tons respectively in 1993.

B Present main markets for the Pakistani seafood products

There has been an export from Pakistan of seafood products since the very creation of the nation. Shrimps has always been the major commodity. For many years shrimps were canned and shipped to Europe and USA. Over the past decade the preferences of the consumers on these markets have shifted from canned products to frozen products and most of the canning factories have been closed or has shifted to freezing the products.

The development of the overall fish and shellfish export up to 1993 is given in appendix 6.1 and summarized below in table 2.

Tabel 2 Export of fish, shellfish and fish products, 1990 - 1993. Source MFD

	Weight, 1000 ton				Value, mill. PRs			
Commodity	90	91	92	93	90	91	92	93
Fish	29	30	54	57	642	653	1585	2761
Dried	19	19	23	22	288	338	426	388
Frozen	7	9	29	33	290	280	1074	2297
Chilled	2	1	2	2	59	28	81	75
Shrimps	15	17	14	17	1556	1689	1430	2260
Frozen	15	17	14	17	1554	1684	1422	2252
Lobsters	0.2	0.2	0.0	0.1	35	30	8	13
Crabs	0.2	0.1	0.3	0.4	18	9	20	13
Cuttlefish	-	4	7	6	-	130	233	280
Fish products	1.4	2.1	3.9	3.3	87	107	178	181
Fish meal	1.1	1.7	3.3	2.8	7.5	11	24	19
Fish maws	0.1	0.1	0.2	0.2	23	27	50	50
Shark fins	0.2	0.3	0.3	0.3	56	70	101	112
TOTAL	46	72	79	84	2341	2622	3455	5509

Table 2 shows a tremendous increase in export up to 1993. The volume almost doubled and the revenue more than doubled over the four years. It should be mentioned, however, that the Pakistani Rupee has devaluated some 50% over the period.

The main contributor to this increase was frozen fish which showed a five fold increase in weight and 8 fold in value. Together with frozen shrimp it made up 83% of the total export value in 1993.

The main markets for these two products are given for 1990 - 1993 in appendix 6.2 and 6.3.

In terms of value, Japan has been the most important market during the whole period. In 1993, 30% of the frozen fish and 31% of the frozen shrimps were exported to Japan. Moreover, the average price is high on the Japanese market. For shrimps it is the highest obtained on any market, 207 PRs per kg. For frozen fish it is also high (74 PRs/kg) but not as high as that obtained on the markets in Singapore and Germany, 82 and 88 PRs/kg respectively.

In appendix 6.4 the development in export value in US $ is given for the fiscal year (July - June) up to June 1995. The export of shrimps makes up ⅔ of the total

value of the catch in 1994/5. There has been a fluctuating export over the past years but since 1992/3 it has increased from 72 mill. to 103 mill. US $ in 1994/5. Frozen fish has in the same period experienced a considerable drop from 81 mill. to 27 mill. US $.

The development of the markets is also given in appendix 6.4. The most important market has since 1992 been Japan. But the trends varies on the different markets. The value of the export to Japan has dropped from 50 mill. in 1992/3 to 34 mill US $ in 1994/5. A more severe drop in the same period has occurred in the export to Singapore, from 49 mill. to 5 mill. US $. On the markets in UK and USA the value has increased around 50%. The market in The Netherlands has increased from 4 mill. to 11 mill. US $ in the period.

The export statistics does not fully demonstrate the concern which the processors in Karachi express. Partly this is because the most recent development is not yet documented partly because the negative development has been coped with so far.

The situation is said to be that the buyers from the major markets are getting fewer and that they require better quality, than what can be delivered from the processors in Karachi. Also there is a growing concern that the authorities in the country of destination will impose stricter inspections. Several shipments have already been detained.

C Import regulations and quality requirements on the main markets

Over the past decade the authorities in the importing countries have developed a growing concern about consumer safety and have enforced strict laws on the quality of imported products. This trend naturally coincides with the development among the consumers especially in EU, USA and Japan for products of high quality - high value.

A number of standards for the international trade with food are given in Codex Alimentarius, including seafood (see appendix 8). Here standards for names and definitions of preparation are given together with a code of practice for the preparation, presentation and labelling.

It appears that most of the processors and exporters in Karachi have a reasonable sense of fish and shellfish quality as for freshness and grading, although only few know the standards and specific requirements of the markets. Some examples of the printed requirements are given in appendix 8 and summarized below.

1 Import regulations in EU, USA and Japan

The regulations governing the production and import of seafood in EU is given by Council Directive 91/493/EEC from 1991 (appendix 8). This directive is important for everybody wanting to import to EU because it is stated that "provisions applied to imports from third countries shall be at least equivalent to those governing the production and placing on market of Community products".

The conditions specified implies that for unloading and placing on market products the facilities must apply to the following:

- Unloading equipment shall be easy to clean and disinfect
- Constructions shall be made in a way that contamination can be avoided
- Proper temperature
- Specifically about the auction hall:
  Easy to clean walls, inclining and waterproof floor
  Minimum requirements for sanitary installations: WC, basins, soap, towels
  Regular cleaning, at least after each sale
  Smoking, eating, spitting and drinking prohibited (sign)
  Adequate clean water supply.

Similarly, for establishments on land the requirements are:

- The size and layout shall be sufficient for ensuring hygienic conditions
- Flooring must be easy to clean and disinfect and with drainage
- Walls, ceilings, doors must be made so they are easy to clean and disinfect
- Specifically about facilities for hand cleaning: taps must not be hand-operable and single use towels must be available
- There shall be facilities for cleaning
- Protected against pests
- All equipment corrosion resistant
- Clean drinking water (or clean seawater)
- Changing rooms with wash basins and flush lavatories
- Facilities for cleaning and disinfection the means of transport (or access to ..).

The normal procedure for import into EU is that it is only allowed for companies that are approved by the Commission. If a manufacturer does not appear on the list, each shipment will be inspected. We were informed that the Marine Fisheries Department have applied on behalf of 13 seafood processors in Karachi to be put on that list, also some that appear in Group B in chapter II. So far (February 1996) the approval has not been recognised.

Most producers rely on their own sensory determination of freshness. Only very few (one among the visited) have at present their own laboratory.

2 Consumer requirements for shrimps

In spite of a growing production of "wild" and cultured shrimp, the prices have not dropped over the past years. This indicates that the world shrimp market is growing.

It is difficult to predict the prices of shrimps in the future. Most likely this will be dependant on the situation for the shrimp farming industry. In the Far East and also in other parts of the world a huge number of shrimp farms have been set up over the last decade. Diseases have followed the expansion and have lead to a drop in production in recent years.

For trading shrimps there is an international standard which the buyers can refer to. The specifications for this standard are given by FAO in Codex Alimentarius, appendix 8.1 and 8.2.

The buyers are mainly aware of:
- black spots
- broken or damaged shells
- grading
- weight
- added water

Japan
The requirements are very strict. The price difference can be up to 30% higher for what is regarded as prime quality. Within A-grade some buyers look for:

- fixed counts in a package
- presence of slightly ruptured shells
- microbiology
- neatly laid-down shrimps
- neatly shaped blocks in the package (e.g. by freezing in pans and not in a cardboard box)

No producers in Pakistan can deliver the best quality. Some can deliver "normal" A-grade. If they have a lot which they cannot sell to Japan, they will let it go to other markets at 5 - 10% lower price.

USA, EU
Are more flexible (e.g. in case of great demand) and some buyers even allow a few shrimps with black spots, uncertain grading etc. They are not so keen on uniformity (grading in sizes, presentation in packages etc.). Buyers often rely on specific brands by experience.

Buyers from the USA normally have a certain (lower) price for Pakistani products. Some buyers have an agent in Karachi, but they are often not sufficiently skilled to be able to decide the different qualities.

Far East
Some good quality shrimps are exported to Thailand, but they are normally of the same quality (freshness) as those going to Japan. In Thailand the shrimps are often re-processed and re-exported to Japan.

There is indications that China, especially the southern part, will become a good markets for high quality shrimps in the future. There the consumers are used to shrimp from the vast shrimp culture industry. The farms have, however, suffered from diseases and the production has decreased by up to 150.000 tons.

3 Consumer requirements for fish

Trading of fish is much more complex. There are not the same international standards for freshness and (especially) size grading. Trading is often accomplished by sending samples or by the buyers or his local agent visiting the processor in Karachi.

Once a permanent supply is established the buyer will report complaints to the producer.

Fresh fish export is a special problem. This is often performed by exporters in Karachi, who do not have facilities of their own. That makes them vulnerable and they are eager to sell their lot. It seems as if a practice has developed that the fresh fish export to mainly the Middle East is totally at the mercy of the buyers: Price of the shipment will not be settled until the fish reach its destination, when there is little room for negotiations.

Japan
This is the most quality concerned market, and the price difference is high between acceptable quality (according to import regulations) and prime quality.

Size of fish is also very important, big fish get higher prices than small fish. Presentation of the fish in the package is important. Buyers require the fish to be arranged in a neat pattern.

Raw material for the sashimi has very high standards and the fish must be extremely fresh when frozen, almost alive.

USA and EU (UK)
In relation to Japan the buyers are generally not so concerned about the quality of the fish: freshness, grading, size, packing, etc. (as long as the products comply with the legal requirements).

Far East, Middle East and China/Sri Lanka
The quality requirements of the buyers from these areas/countries are less strict than from other areas. Far East has the highest among them, and China and Sri Lanka definitely the lowest. There is normally little or no concern about grading, size, freshness, packaging, etc.

II PRESENT STATE OF FISH PROCESSING INDUSTRY IN KARACHI

Almost all processing plants belonging to members of the Pakistan Seafood Processor and Exporters Association are situated in the fishing harbour area in Karachi. A few are situated at the Korangi harbour and in Korangi. The 13 plants are listed in appendix 4.

Most of the processing and handling of the products takes place in these industries. However the peeling of shrimps often takes place outside these premises in so-called peeling sheds. They may be located on or outside the harbour area, and have no dedicated premises or facilities for the production. The peeling sheds are discussed in section E of this chapter.

A General overview of the Pakistan Seafood Processors and Exporters plants

During the field visits a representative number of 11 plants were selected in corporation with the PSPEA. The plants were visited and evaluated in relation to immediate, medium and long term objectives of improving the quality of the seafood products.

The details from the analysis have been systematized in a scheme with headlines as follows:

- Name of enterprise
- Location
- Year of establishment
- Management and other contacts
- Processing facilities and capacities:
  - Building
  - Reception area
  - Processing departments
  - Packing area
  - Chilling rooms, freezing facilities and cold store
  - Technical level and maintenance
- Quality control/assurance
- Markets
- Environmental conditions

The results of the analysis are presented in appendix 7, where - for the sake of confidentiality - each plant has been given a code number. The code number replaces the company name, location, management etc.

Based on the analysis it was found feasible to divide the companies in two groups. This was done on the basis of the impression the consultants obtained during the first mission to Karachi. The classification considered among others:

- The raw material handling,
- The processing facilities equipment
- Processing methods
- Quality assurance aspects

These aspects were related to export to present and potential markets. It should be mentioned that the duration of the visit did not allow for a thorough analysis of the individual company. Basically the characteristics of the two groups are:

Group A: Plants able at present, or in the near future, to fulfill quality specifications for high value, high quality products on export markets.

Group B: Plants not able to fulfill the quality requirements of certain export markets.

Some of the companies in Group B are having the capacity to be upgraded to meet quality specifications for high value quality products. Presumably most buyers - present or potential - will classify the majority of companies in Group B.

One important step in the process of upgrading will be the ability of the producers to prove a quality control system. There is a growing trend that the authorities and buyers on the high value markets will require this. Generally the import regulations issued by the authorities will require that there is a strict control by the authorities in the country of origin, while the buyers in addition will require that the individual processor can prove an internal quality control.

If the seafood processors in Pakistan want to export for example to the EU countries "provisions applied to import of fishery products from Pakistan shall at least be equivalent to those governing the production and placing on the markets of the Community products" (Article 10, Council Directive 22 July 1991, (91/493/EEC)). This means that the individual Pakistani seafood processor has to fulfill the same quality assurance standards as the processing plants in the EU. Examples of this and other quality requirements are given in appendix 8.

Different systems have been adopted by the different countries. In the USA and EU references are given to the "HACCP"-concept, in EU there is specifically talk about "Internal Control" or "Self-check", and Canada has its Quality Management Programme". Nevertheless the objectives and methods are similar:

- identification and analysis of hazards,
- pointing out critical control points,
- monitoring and keeping records,
- taking corrective action when risks to seafood are found,
- providing documented evidence to prove that the programme is working.

B Raw material handling in the plants:

Group A:
A few of the visited plants have a raw material handling that can fulfill the quality requirements for this group.

The reception area has to be constructed of material that is easy to clean and disinfect and kept in good state of repair and cleanliness.

As to lay out of these plants, the raw material reception area is completely separated from the area for processing the products, so no contamination of the clean products from the contaminated raw material can happen.

The floorings of the plants are waterproof and facilitates drainage of the water, as required.

Rodents, insects and any other vermin must be systematically exterminated in raw material areas.

The raw material was placed in a protected environment at a temperature near 0°C in whicker baskets, boxes or containers in ice or ice water.

Contamination of the fish products was avoided by storing the raw material in clean baskets, boxes or containers, so the raw material was not placed directly on the floor.

Group B:
Most of the visited plants did not fulfill the export markets' quality specifications for high quality products. The majority can, however, be upgraded to meet the requirements.

As an important factor, the walls in the reception area must be painted with washable painting or covered with tiles and kept clean. Some of the inspected raw material rooms had dirty floors and walls and were thus unhygienic.

The raw material area must be quite separated from the processing area, for example by using plastic strip in the doorway to the processing department so no contamination can occur from the contaminated raw material to the clean products in the processing department.

The flooring has to be repaired so it is waterproof and facilitate drainage of the water. There must be no holes in the floor with bacteria infected water.

The material on the floor, walls and ceiling must be easy to clean and disinfect and kept in a good state of repair and cleanliness.

Some raw material areas were yards covered with a sheet. Here insects and other vermin can contaminate the raw material. These areas must be systematically closed with washable walls.

In some inspected rooms, the raw material was placed directly on the floor and sometime without ice. Such storage will cause contamination and deterioration of the raw material. To avoid this, the fish should be stored in clean baskets, boxes or containers with ice. Shrimps should be stored in ice or in ice water.

C Processing facilities and methods

Group A:
In these plants the working areas were of sufficient size for the processing to be carried out under adequate hygienic conditions and the areas were kept quite separated from contaminated parts of the plant to prevent contamination of the products from the raw material and the waste. In one plant, a foot bath was placed in the doorway to prevent the boots from carrying dirt and bacteria into the processing department.

The floors, including the drainage channels, were easy to clean and disinfect and laid down so that no water can collect in depressions in the floor. The walls and ceilings had smooth surfaces easy to clean.

The rooms had good ventilation and lighting. There were an adequate number of facilities for the workers to clean and disinfect their hands, and the rooms had facilities for protection against pests.

Most of the working equipment is made of corrosion resistant materials easy to clean and disinfect, and so are most of the utensils. However, in some plants in group A, the packing material such as freezing trays and trolleys needs maintenance in order to be easy washable.

At some tables the workers were sitting on high benches with the seats at nearly the same level as the top cover of the table. This causes a risk for contamination of the products on the table from the seats. Some plants use plastic covered seats easy to clean and disinfect, but not all.

The water was supplied in pipe or by lorry from the public water supply system. At a couple of the visited plants in this group, the water was sterilized in UV equipment. It is required that the processing water is good drinking water quality. There is a risk for contamination of the water in the public pipelines and in the tank lorries.

In these plants the fish and shrimps were not processed in the same rooms. The ice was clean to avoid contamination of the final products, and the waste was collected in tight containers emptied at least at the end of each working day.

Some plants had an adequate number of changing rooms easy to clean with wash basins with material for cleaning the hands. These rooms must not open directly to the work rooms. Rest rooms and facilities for heating bring-along food is a good thing to prevent the workers from going outside in the breaks and getting contaminated in the rather polluted surroundings.

The staff must wear suitable clean working clothes and headgear that cover the hair completely. Wounds on the hands must be covered by a waterproof dressing. Hands should be washed at least each time work is resumed. Only in a couple of the plants the workers apparently were dressed in working clothes delivered be the employer and not their own daily clothes.

Group B:
The working areas were not kept completely separated from contaminated parts of the plant to prevent contamination of the products from the raw material and the waste.

The floors, including the drainage channels, were not easy to clean and disinfect, and in some plants water had collected in holes in the floor.

The walls and ceilings needed painting or the lower part of the walls to be covered with tiles so that they are easy to clean.

In some of the plants there were no facilities for cleaning and disinfecting the workers' hands.

In some of the plants the packing material such as freezing trays and trolleys was rusty and not easy washable.

Some top seats on the high benches were made of wood, which cannot be cleaned and disinfected.

There was a risk that the water delivered had been contaminated in the public pipelines or in the water tank lorries.

The processing of fish and shrimps was not sufficiently separated, causing a risk for contamination of the final products.

The freezing trays and the plates in the plate freezers were damaged so that the frozen blocks were deformed and did not give a good presentation of the product. Some of the master boxes were overfilled with frozen fish and thereby not easy to stack in the buyers cold store.

Some plants did not seem to have changing room easy to clean with wash basins with material for cleaning the hands. The workers were dressed in their own daily cloths.

D Quality assurance system in the plants

Group A:
In a few of the visited plants they have a programme for health control and monitoring of the production that can fulfill the requirements for the buyers in the export markets for high value quality products, and they can fulfill good hygiene and sanitary conditions.

Some of them have production and packing instruction as part of their quality assurance system and laboratory control of the final products.

As part of the quality assurance system their refrigeration plant and freezing equipment is well kept and maintained and can assure fast freezing and a low storage temperature. In case of interruption of the power supply their standby power plant can keep the compressors running.

In the future they have to establish their own quality assurance system using "HACCP"/ "Internal control" / "QMP" as mentioned above.

Group B:
The majority of the industries was not able to present a quality management programme which could guarantee production of high value products. In principle this should not prevent the company from being able to produce good quality products. Nevertheless it was obvious that the quality management in these industries was in the hands of the management, and they often preferred to buy cheap, low quality raw materials, making little value adding through processing and selling at low prices at markets accepting low quality.

E The peeling sheds

The peeling sheds represents a serious problem on its own. The way the shrimps are handled here is a very important source of contamination and decomposition of the products. The peeling sheds are used for peeling the shrimps for PUD production.

The sheds are generally small and lack essential facilities like lighting, sanitary installations and potable water. The floors, walls and ceilings are in poor condition.

The sheds are often placed in poor and labour class residential areas on the harbour area or outside. The roads are muddy, with open drains. Pets, birds, household animals, and vermin are many. Little or no ice is used, and the whole lot is often left in a pile overnight.

The processors and exporters have nothing to do with the peeling sheds. They do buy from them or they use them as contractors to do the peeling. They have no control over the cleanliness, sanitation, employees, and hence not control over the quality.

III RAW MATERIAL HANDLING IN PORT

The prospect of exporting high quality products depends very much on the handling of the raw material in the harbour as well as on the vessels. During the field visits the consultants made frequent visits to the auction halls and the jetty for unloading the catch. Apart from the installations, the work procedures and management were examined.

A Unloading the catch

Returning from a fishing trip, the fishing vessels go straight to the jetty next to the market hall. The jetty is some 200 m long and paved with good quality concrete. There are "scuppers" towards the harbour to let out water. The scuppers are, however, too small and some are blocked by a water pipe laid down along the edge of the quay.

As the surface has only a minor inclination, water, blood and scales remain on the concrete.

The boats normally adjust the time of return with the time of auction. In the morning, shrimps are sold from 7 o'clock and fish are sold from 9 o'clock. There is an evening auction which is mostly used by the so-called "one-day catchers". Therefore the fishermen sometimes do not unload the boats immediately, thinking (correctly) that the temperature of the catch is better kept low if it stays in the hull.

The normal procedure is to take the large shrimps out first. They are sometimes kept in baskets in the central gangway, sometimes in a separate compartment. In the latter case they are transferred to baskets with shovels and then brought to the aft deck for grading into species. Here the shrimps are placed on the deck, and two or three of the crew members sort them and put them back into baskets.

Fish, squids and others are shovelled into baskets and carried to the jetty. Big fish are handled individually. They are placed on the deck until taken on land. Previously the crew did this, but now it is people from the harbour.

Unloading the catch takes 1 - 2 hours for one ton. That means that there is an acceptable "turnover" of boats, and the vessels will normally find room along the jetty. In the late afternoon and evening when many boats return they will, however, have to lie alongside. This is also the case when vessels have chosen to keep the catch in the hull until time of auctioning. This makes the transfer of baskets over many boats difficult. Inevitably they will get several strokes.

Wicker baskets are used for most transport of fish in the harbour. They are round and are found in two sizes:

- 60/30 cm top/bottom diameter, 30 cm high
- 80/60 cm top/bottom diameter / 50 cm high.

They are woven from palm leaves and rot rapidly. They can only be used for a few days. Cleaning of the baskets occurs, but it was observed that they were washed

in the harbour water that is extremely dirty and contaminated with oil and human faeces.

B Sale and transport of the raw material

On land the baskets and large fish are taken on small carts to the market hall. The catch is normally with a little ice at this stage. Sometimes the fish are graded into species in small piles on the concrete just outside the market hall.

The market hall consists of three compartments in a row:

- The new market hall, approx. 100 by 25 m. Steel doors open to both sides, good concrete cover, drains for water, scales and blood. In one end there are chilling rooms, but we were told that they had never been in operation. Unfortunately the floor has little inclination and only few drains. Consequently water was seen standing permanently on the floor. In the summer of 1995 small platforms were constructed in one end of the hall with a terrazzo surface. This was intended for use when the catch is brought in and displayed for sale on the floor. Unfortunately the height (10 cm) does not prevent people from walking on the platforms and contaminating the catch.
- The old market hall, approx. 80 by 25 m. The roof is suspended by pillars in three rows. Also here there is a good concrete cover on the floor with drains.
- A storage room approx. 20 by 20 m. Same construction as the old hall.

Fresh fish for human consumption are brought to the new hall. Trash fish are brought to the old hall, where also some handling of the fish takes place.

In the market hall the salesmen (and -boys) take over the catch. They sort the fish according to species and size and place them directly on the floor. In case of a big lot the fish stay in the basket. Ice-blocks are available here. The ice is crunched and used in different quantities. Some salesmen use ice in adequate quantities to keep a low temperature of the fish, while others use inadequate quantities.

Measurements of the body temperature of samples of fish, shrimps and squids were taken on consecutive days. While the temperature in the hall was +20 to +28°C, in some slightly iced fish it was +12°C and in well iced fish it was +0.5°C. It appears that at least some of the catch, though well chilled in the fish hold, warms up during sorting and grading and takes several hours to regain a low temperature. In a well-iced pile of large shrimp the temperature was +14.5°C.

Auctioning of the fish and shrimps seems to go on all day in spite of the announcement of fixed hours. Only in the middle of the afternoon and in the middle of the night the hall is emptied for cleaning. The employees of FCS take care of the cleaning. Clean water from trucks with tanks are used, as the water pipes are out of order.

If the fish are not sold immediately they are stored either along the wall or, more regularly, in the third small compartment of the auction hall, waiting for the next auction. Here they are stacked nicely in layers with a layer of ice between and with

a thicker layer of ice on the top. Sometimes a little salt is sprinkled over the layers of ice. Temperature of a fish in such a pile was measured to +0.8°C.

When the buyer has acquired his lot, the fish are again taken in a basket, often by shovelling, and carried to carts or small lorries outside the hall, bringing them to the processors, - or they are carried all the way.

IV FISH HANDLING AND PRESERVATION ON BOARD THE FISHING VESSELS

Most of the marine fish resources used by the fish processors in Karachi are harvested by a large number of indigenous fishing crafts. They are primarily wooden-hulled vessels build by skilled boat builders and limited in size to less than 20 m in length. The boats range in length from 5 to 20 m with the most common length being 10 to 12 m.

The boat building industry is well established and mainly situated along Karachi Fish Harbour. The boats are handcrafted by indigenous skilled labour using hand tools. The boats are constructed of imported Burmese teak or of a less durable local pine wood called "shesham". Vessel construction takes 4 to 6 months.

The boats are constructed with the engine aft and a low casing above the engine room. The accommodation for the crew is in front, also with a low casing above.

The fish hold is between the engine room and the accommodation with a small hatch as access. On the deck aft there is a chair at the steering wheel. Some boats have a wheelhouse.

Between the steering wheel and the casing the deck is plane. Here the catch is placed after being lifted on board from each trawl haul. Round the hatch there is a plane area on the deck for handling the catch, but not very large.

Before leaving the harbour, the trawlers get ice from an ice plant in Karachi. Several privately owned ice plants supply the vessels with 80 kg ice blocks transported to the harbour on trucks covered with a tarpaulin.

On the quay the blocks are manually handled and split into 20 kg blocks for handling purposes. Prices for ice vary with seasonal demand, being highest in the summer months at 75 PRs per block compared with 50 PRs per block in other seasons. The ice is stored in the fish hold.

The fish hold is insulated and built with sections at each side and a centre fore and aft gangway. A section for the fish is approximately 1.8 m high. When the fish is iced in the section on a bottom layer of ice, the section is closed against the gangway with boards. No horizontal boards are used to divide the section into smaller parts.

The walls in the hold are covered with galvanised plate but the wooden boards are not painted.

During trawling some ice is crushed manually into pieces ready for chilling the fish and shellfish from the trawl haul.

The crew grade the catch in shrimp, edible fish species and trash fish. This is done manually on the aft deck exposed to the heat of the sun. The consultants were told that most vessels have the possibility to put up an awning, but if they are used it is normally only while in harbour for protection of the crew. The different parts of

the catch are stored ungutted in ice in separate sections in the fish hold. The shrimps can be stored in big wicker baskets in ice and placed in the gangway.

The water from the melting ice is allowed to run to the bilge, and during the fishing trip the melting water can be manually pumped overboard.

The trip can be from 3 to (normally) 10 days, but it can also be much longer if the fishing is poor. Then the fishing vessel continues the trip because of the expenses already made before leaving the harbour.

V REVIEW THE ACHIEVEMENTS OF UNDP PROJECTS

A Upgrade of Quality Control of Fish and Fishery products. PAK/88/034/A/01/12

Background information

The programme was initiated realizing the necessity of improving quality of fish and fishery products and to strengthen the existing preshipment inspection programme.

The aim was to introduce a systematic quality assurance programme to ensure that the seafood has been handled, processed and packed hygienically and to achieve competence to improve quality of fish and fishery products, develop export markets, ensure confidence for Pakistan seafood in the importing countries and thereby maximize export earnings.

The projects immediate objectives were:

- To support MFD in establishing a fully operational quality control laboratory and train staff in laboratory technology, quality control promotion and enforcement,
- Propose a set of legally enforceable standards for fish products, especially for export. In conjunction to formulate codes of practice for production of seafood, and to advise the processors,
- Strengthening the administrative and operational functions of Quality Control and Inspection Service of MFD.

Present state

The project was terminated even before it was approved/implemented. The main reason was that a prerequisite for the project: the introduction of effective legislation regulating the system of quality control and issuance of certificates, did not materialise. It is however expected to be signed by the Government later in 1996. A draft of the act "The Pakistan Fish Inspection and Quality Control Act, 1995" is included in appendix 9.4.

Today, MFD issues a certificate of "Quality and Country of Origin". These certificates are not covered by Statutory provision but are required for export into EU. They certify that the handling of the products complies with the requirements in EU Council Directive 91/492 of 15 July 1991.

Shipments to non-EU member states are often followed by "Certificate of Health of Seafood Products for Exportation" from Animal Quarantine Department, Ministry of Agriculture. Samples of both certificates appear in appendix 9.2 and 9.3

B Strengthening of Fisheries Training Centre, PAK/88/013/I/01/12

Background information

The need for a training institution in Pakistan has been recognized for a long time. In the sixth Five-Year plan 83 - 88 priorities were given to "extension of new technology" and in the seventh 88 - 93 specific reference was given to the Fishermen Training Centre (and Quality Control).

Under the Second Marine Fisheries Development Project (a large loan provided by ADB to Pakistan, 1980) a loan was made available to MFD for the construction of a Fisheries Training Centre, comprising the School and a training vessel. Also included was training aids and equipment, although to a limited extent. The project started in early 1988, and was scheduled to be finished within a year. Several constraints arose during the initial stages and later and the project was not completed until 1993, and some activities did not materialize.

The recommendations in the GOP/UNDP/FAO Marine Fisheries Development Project (PAK/77/033) presented the following "follow up" proposals: Fishermen training a) under UNDP funding and b) ADB & GOP/FAO funding.

FAO/TCP Support to Marine Fisheries Training Centre (TCP/PAK/6761) 1988-89. This project was approved on the understanding that it would be followed by an FAO trust Fund Project for 18 months using unallocated means from the above mentioned ADB loan (Second Marine Fisheries Development Project). However, this part was not accepted by ADB. FAO provided help to continue and develop the fishermen training courses and prepare staff and facilities.

Present situation

The school

The school is a two-story building with a total floor area of 1200 m^2. It is built on rented land, and there is no land available around it. At the moment new vessels are built in vast numbers all around the school.

The building provides space for various workshops, offices and classrooms. The equipment is installed and suitable for workshop training in engineering, maintenance, fishing gear construction, use of navigational and safety aids.

The school has no electricity, water or telephone connections.
The associated dormitory can accommodate 50 students, but has never been used.

Training vessel

The school was never provided with the training vessel originally included in the ADB project. Instead two smaller vessels were drafted. They were not provided too.

The MFD research vessel *Machhera* (29 m) was transferred through help from TCP/FAO funding to the project. It is equipped with all sorts of fish-finding and navigational instruments, but due to corrosion in the hull it was condemned in 1986. It now serves as a floating training unit, but in reality only main and auxiliary

engines are maintained and can be operated. The rest of the vessel is in a stage beyond repair and the hull is leaking due to corrosion. Water has filled the accommodation and it is a question of time before the engine room becomes flooded.

The *Techeca*, also a former MFD research vessel, has been scrapped.

The wooden hulled *Rhebar* provided by FAO was used for the fishing trials with longline for tuna fisheries. Through this it acted as a training vessel for the fishermen hired for the project. They were demonstrated the use of the hydraulic power-block, radio, fish-finder, longline etc.

The GOP has been seeking external funds for procurement of training vessels and has recently been successful. It is expected that in two years a 30 m multipurpose vessel will be procured by JACA, Japan. It is not clear to what extent the vessel will be used for training.

Staff
4 MFD staff members have received training abroad in management and administration. Recently one scientific officer from MFD has been appointed officer in charge of the school.

Three persons from the crew of the *Rhebar* have been acting as instructors on contract basis for the last nine years.

Training performed
Curricula and training programmes for several training courses and educations have been elaborated according to the plans. Due to the lack of GOP funding only few courses are performed.

Since 1992 four-week training courses have been given for deck-hands and for engineers:

- 53 deckhand courses with 457 trainees
- 53 engineer courses with 499 trainees.
- 115 people fishermen have attended short courses
- 226 fishermen have joined *Rehbar* on fishing trials.

A substantial part of the trainees is not from the fishing community, but bachelor students from a local engineering college.

For 1995 eight training courses were scheduled for Fisheries Technology and eight for Engine Maintenance. A plan was presented which showed the following plan for two-week courses in 1995:

- Fish composition and its spoilage,
- Post harvest fisheries technology,
- Fish processing by freezing,
- Other methods of fish relations,
- Fish smoking,
- Fish canning,

- Fish meal and oil,
- Fish quality control,
- Value added seafood products.

Also in 1995 it was planned to start to perform longer lasting educations for deck-hands, mates and skippers.

All of these scheduled training courses was not performed due to lack of government funding.

Short-term courses can be given on request or demand. They normally last for one week and cover construction of gill-nets, use of fish-finding equipment etc.

Trainees
It can be difficult to attract active fishermen to attend the four week courses, because they are not given sufficient daily allowance to compensate for the loss of earning in one month. There is given preference to people already employed, but unemployed fishermen are also taken in.

The short-term courses are rather attractive to the participants, and they are normally attended by people already employed.

C Development of Fish marketing and Utilization, DP/PAK/88/033

Background information

The projects immediate objectives were:

- to evaluate the opportunities for increasing the sales and consumption of marine fish and other products
- to train the staff of MFD and other from the fisheries sector
- to provide information on handling of fish to the private sector
- to undertake popularization programmes based on consumer surveys.

The project called for a multi-disciplinary approach. To mention some activities:

- construction of a processing shed
- experimental work on minced fish products and chilled fish methods
- fish consumption patterns and market surveys, resulting in outlining consumer acceptability criteria
- training of MFD staff in fish handling, processing, distribution and marketing
- training of and propagation of results to fishermen, fish processors and exporters, fish retailers etc. in all aspects of quality conservation: handling, chilling, filleting, packaging, marketing, presentation etc. This training was as lectures, workshops, seminars, hands-on training and ad-hoc advice to individuals and companies, pamphlets, posters, information packages etc.
- evaluation of transport methods.

The project aimed at increasing the domestic consumption of fish, in order to supply the population with a nutritious foodstuff, which they had no or little

previous experience with. It is, however, also relevant for the present project, as the aspects of quality conservation are also applicable to the problems of improving export of fish from Pakistan.

Present state

Apart from use of the provided and installed hardware it is impossible to measure the impact of this project.

Some of the findings and recommendations from the Marketing and Utilization Project are particularly relevant in the present project:

- that there is a need to improve the fish quality at all steps
- that CSW chilling of the fish on board should be tested and coordinated with attempts to increase exports
- the need for tightening of sanitary regulations in the market
- the need for a gradual replacement of the wicker baskets with a standardized boxing system
- that establishments for pilot production facilities must be coordinated with attempts to set up pilot facilities to increase export
- that minced fish production requires an extremely high level of hygiene.

The effect of the training and all the information and material spread out to the producers, at sea as well as on land, and to the retailers and consumers, cannot be assessed in this project. Several local people stated that changes have occurred in the handling of the fish aboard, in port and in the processing industries, in terms of actions to conserve quality of the fish. The increased awareness is supported by the psychological effect of the rehabilitation of the harbour. These improvements inevitably will also be reflected in the handling of fish products meant for export.

One ambition of the project was to implement a better handling by introducing boxes for the fish. This was not accomplished. Some of the boxes provided were lost in a fire, but the rest can be found around the harbour area, but they are not used according to intentions: To keep the catch in the same container, from storing the fish in the fish hold on board right through to the processing plant, preventing a lot of handling.

The processing shed next to MFD is now out of use, and the equipment (the meat-bone separator, and other processing and cooling equipment) was recently auctioned to a processing plant, but plans for its use are not yet implemented.

VI PROBLEMS AND CONSTRAINTS

A Requirements

The international market for fish and shellfish products has built up sets of standards that the producers have to comply with and on which the price is determined. Whether the producer of export products is aware of these standards or not, the buyers of high quality products will certainly be aware of them and can set the price accordingly.

Several countries have enforced strict regulations for import of seafood, stating the minimum conditions under which the seafood is handled, produced and stored. In EU and USA the regulations transfer the responsibility for the consumers safety to the importers and the authorities in the country of origin.

Attempts to violate the rules by exporting products that cannot comply with them, may be successful (due to lack of possibilities for the authorities in the foreign country to check production conditions), but if they fail, it will inevitably cause lack of credibility, which can be very difficult to reestablish. In case of severe violations to the import regulations the exporting company or the country as a whole can be banned. A number of shrimp producing companies in Karachi have been expelled from major markets in this way.

The authorities in Pakistan responsible for the inspection of the landing and production facilities as well as the products will have difficulties demonstrating a convincing inspection. In this context it is also a severe problem that the Quality Control Act has not been put into effect yet.

Likewise, many seafood processors in Karachi will have difficulties in documenting an own-check quality assurance programme.

B Problems

It appears from the interviews with the processors that there are no big problems in finding buyers to the products, although during 1995 more shipments have been detained from import in some important countries. Analysis of the prices however shows that the prices obtained are lower than the average world market prices.

In order to optimise the exploitation of the resources and increase the export revenue the quality of the products must be increased and/or more value to the products must be added before they are exported.

Some improvements can be made without big investments and will therefore be for the benefit of the producers (fishermen and processors), others may require investments and may therefore not be of immediate benefit for the producer. In both cases, however, the society will benefit immediately.

For the seafood products from Pakistan the present survey identified the following problems of complying with the international market demands and legal requirements, which are causing or will cause problems selling the products at optimum price.

1 Handling causing deterioration:

- High temperature:
  The products are not kept chilled in ice at all stages. During sorting on the deck of the fishing vessel, sorting and presenting the catch in the market hall, peeling, and sometimes also during processing, the products are unprotected and without sufficient ice, and the temperature rises to unacceptable levels. In some cases the storage temperature was found to be too high in the freezers and cold stores.
- Long fishing trips:
  When the fishing trips last one to two weeks the fish stored will deteriorate. The problem is that outside the peak season, the trawls and the non-mechanized hauling method are inefficient and it will take long time to catch a lot which can pay for the running cost incurred at the start of the fishing trip, oil, ice etc.
- Bruising during handling:
  The multiple handling and transferring of the catch results in a lot of bruises.
- Contamination:
  The fish and shellfish are often in contact with material and surfaces that are not properly cleaned and disinfected. That regards the fish hold, the wicker baskets, contaminated ice, contaminated freshwater (for "cleaning"), the floor at the market hall, in the peeling sheds, and the environment in many of processing industries. Also the people handling the products have often taken no precautions in terms of cleaning the hands, avoid contact with wounds, wear clean working clothes etc.
  The fish and shellfish are at many stages not properly separated from the surroundings: The market hall is completely open to everybody and everything, the same regards many reception areas and processing areas in the industries. It is also a problem that the equipment and facilities are often not constructed in a way which facilitates repairing, cleaning and disinfection.
- Bruising in bad packing:
  Damaged freezing pans and poorly maintained freezers cause the frozen blocks to be out of shape. Large piles of packed such blocks will get bruises.
- Inferior packing material:
  The properties of the packing material must be so that they do not allow water to evaporate through.
- Bad storage conditions:
  The freezers and cold stores are often in a bad condition, not capable of giving the products a quick freezing or storing the products at sufficiently low temperatures.
- Acceleration by combination of the above conditions:
  Even if the impact of the above conditions is small, they will in combination lead to an unnecessary and undesirable loss of quality.

2 Presentation

- Grading in size and quality (uniformity):
  A high quality is often associated with a very accurate grading of the sizes and quality. The buyer will appreciate if he can get a large quantity in one specific size and quality.
- Laying in nice pattern and artistic design of the package:
  Although of no importance for the quality of the product, a nice design of packing material can signal quality consciousness.

3 Documentation of quality conscious handling and production

- Processors quality assurance system:
  If a buyer knows exactly what product he is buying he is willing to give top price (within the particular quality level) for the lot. Few Pakistani seafood producers are today able to demonstrate a quality assurance system which can convince the buyer.

C Constraints

1 Management

- Legislation:
  There has so far been no legislation on public control of the quality of the produced seafood. It is, however, expected that an act of Quality Control will be passed by the GOP later in 1996.
  The commercial fishing has so far not been declared "an industry" in Pakistan. The implication is that there is high import taxes on gear and equipment. This is a hindrance for modernization of the fleet.
- Licensing of processors
  It is a problem for the credibility of the country as exporter of seafood products that not all parties concerned with handling and processing of export products are registered and licensed.
- Fisheries regulations:
  The Karachi fishermen are at the moment not allowed to fish in Baluchistan waters. The effect is that the available resources are in danger of overfishing and the fishermen sail for a long distance and time in order to find profitable fishing grounds. The duration of the fishing trips therefore becomes long, causing deterioration of the catch.
- Enforcement:
  When the legislation comes into force there is still the problem that MFD will have difficulties in enforcing the regulations. It was the intention that the UNDP/FAO project of Upgrading Quality Control should provide laboratory equipment and training of MFD staff. Unfortunately the project was never implemented.
- Harbour management:
  Several critical points have been identified in the harbour area, which impede progress in quality improvements: Unhygienic surroundings, no clean water supply, no sewage treatment, chill rooms not in operation. This should not occur if their management obligations and fundings were outlined more clearly, and better communication between the involved institutions took place.

The regulations state that the companies must have an authorization to bring in building materials (i.e. concrete for the floors, plaster and tiles for the walls etc.) on the harbour area. This seems to be an unnecessary precaution and it is a hindrance for the refurbishing and maintenance of the premises of the companies.

2 Knowledge

- Market requirements:
  Few exporters in Karachi are familiar with what is required on the international market for high value products. Also, few are aware of the possibilities for adding value to their products and the associated techniques.
- Training:
  If a higher quality of the exported products is desired it is necessary to train all those who are involved in handling the fish and shellfish: fishermen, workers and sellers in the harbour, workers in the industries and managers. The project of Marketing and Utilization introduced a higher concern and awareness of quality aspects, and the results are evident, although some critical points remain.
  The Fishermen Training Centre was supposed to take over the training of fishermen, but the institution is still awaiting funds from GOP.

3 Traditions and habits:

It is a problem that not all participants (fishermen - buyers - processors) know the conditions of the other. The attitude is therefore to stick to traditions and usual habits. If there were better communication and understanding between fishermen and producers as well as between producers and the markets, many problems could be solved.

RECOMMENDATION

Based on the findings, the Pakistani seafood processors and exporters at present are producing and exporting as follows:

EU + USA + Japan:	Frozen high value products
Middle East:	Fresh and frozen high value products
Far East:	Frozen products
	Salted and dried products
	Dry and wet produced fish meal

With the purpose of improving quality of the edible products and the amount of high value products for the export markets, the following recommendations and project interventions are proposed:

A Immediate measures with the aim to improve the fish quality in the short-term perspective

At the end of the second field visit two seminars were held in Karachi on "Seafood Quality Improvements, Technical Guidance". The seminars (see programme and list of participants in appendix 11) were attended by fishermen, buyers from the market (moleholders) and processors. On these seminars the following recommendations were given:

Fish handling and preservation on board the fishing vessels and in port

- Instruct all parties of the importance of keeping the raw material chilled through all links of the raw material flow.
- Implement a profitable fish handling and preservation on board the fishing vessels with boxes or containers.
- Reduce the multiple handling and transportation of the raw material to avoid quality deterioration of good quality catch.
- Keep good sanitation and cleaning conditions to avoid contamination of the raw material.

Fish processing and export

- Upgrade of the processing plants. Procure examples of good lay out for a processing plant that can fulfill the basic requirement for a market oriented production.
- Improve the sanitation and cleaning standard of the plant.
- Upgrade the freezing and cold storage facilities.
- Survey the international markets for buyers of the products.
- Monitor the quality and keep a record of it.

Local and federal authorities management

- Register and licence all parties involved in handling of seafood.
- Establish a convincing quality control system.
- Elaborate and implement clear guidelines for the right to collect fees and taxes in the harbour and the obligations to maintain a proper environment for food production.

In addition to the above recommendations the seminars covered an outline of the situation for the international trade with seafood and the import restrictions, regulations and requirements found on the major markets in EU, USA and Japan.

The findings, problems and recommendations were also communicated during a lecture at the Department of Food Science and Technology at the University of Karachi.

It is recommended that the above seminars be held periodically in order to strengthen the awareness of the quality aspect.

B Medium-/long-term measures with the aim to make Pakistan's fish products fully compliant with the requirements of the export markets

1 Information visit to a fishing harbour in EU

- It is recommended that a small group of representatives from various parties in the seafood handling make an information and study visit to a Europ.country to study operation practices and handling facilities for seafood handling, trade and production. A study of the enforcement of the import regulations and fisheries inspection shall be included. In addition the team should consider training facilities and possible joint-venture partners.

  This recommendation is seen as an important follow-up on the present project, and has gained massive support from the Export Promotion Bureau in Karachi.

2 Raw material handling

- Establish, on a commercial trawler, a demonstration project introducing more profitable handling and preservation of the raw material. With a rapid and careful handling using CSW containers and storing the raw material using shelves or baskets in the fish hold, a larger portion of the catch can be sold for processing into high value quality products. Advisory and hands-on training in the system and its quality assurance.

- Establish a project to design a modernization of one of the fish market halls for chilled storage and selling of the raw material. On site advisory and training in market oriented raw material handling in port by using boxes/ containers/baskets and good chilling of the fishery products to avoid contamination and quality deterioration of the unloaded catch. Thus, the processors and exporters can show a customer-minded fish handling in ports, as part of their marketing.

3 Market oriented production of high value quality products for the international markets

- Assistance to analyse the international markets to determine what products processors and exporters could produce profitably with their existing processing equipment. Assistance to analyse what additional equipment could be purchased to increase the value of shrimp and fish they process and to examine if this is feasible under the present conditions in Pakistan.

- External assistance for the modernization of the Pakistan's fish processing industry to produce high value quality products. Assistance in designing of facilities, selecting and purchasing processing equipment and in modernization of freezing and cold storage of the products.

- External assistance for the establishment of a demonstration production line at a commercial processing plant for producing the high value quality products demanded by the international markets. Assistance from an external expert for bringing the facilities up to full-scale profitable production of the requested high quality. Assistance for training the leaders of the fish processing plants in producing high value quality products using the demonstration line.

- Assistance from an international expert to develop a program for a quality assurance system so that the processors can meet these future requirement from the export market on product hazards for high value quality products, by having its own quality assurance system as a supplement to the governmental quality control. Training in HACCP (Hazard are Analysed through the regular monitoring of Critical Control Points, USA), Self-Check (quality assurance programme, EU) and QMP (Quality Management Programme, Canada).

Appendix 1

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

February 1995

Project for the Government of Pakistan

Advisory assistance to improve the quality of fish products in the fish processing industry in Karachi

Job Description

SI/PAK/94/801/11-51/07-20A0

Post title: Fish processing and quality control consultant (FPQCC) Team leader

Duration: 2.2 w/m split as follows:
- 1.0 w/m in the field (March 1995)
- 0.5 w/m home-based work
- 0.5 w/m in the field (date still to be defined)
- 0.2 w/m home-based work.

Date required: Beginning of March 1995

Duty station: Karachi, with travel within the country

Purpose of project: To provide high-level advisory assistance to the Pakistan Seafood Processors and Exporters (PSPEG) on immediate, medium- and long-term measures to improve the quality of the fish products of the individual processors within the group.

Duties: The FPQCC will, in cooperation with the Fishing and fish handling consultnat (FFHC), be expected to carry out the following tasks:

1st mission to the field - 1 month

1. Review the achievements of the relevant projects implemented in the fisheries sector;

2. Visit the fish processing facilities with the PSPEG and examine the working conditions within the processing units: Technical and technological working methods, hygiene of the premises, equipment and staff, quality of the raw material and ingredients, the quality control system for raw material and finished products, packaging and labelling, processing of by-products and wastes, effluent treatment, etc.

3. Identify the fish products exported by Pakistan and the export markets (current and potential) and specify in detail the quality requirements at the different levels of the production chain;

4. Based on the findings identify and propose:

i) Fish handling and preservation on board of the fishing vessels: Cleanliness and hygiene of the deck and the hold of the fishing boats, utilization of ice, etc.;

ii) Fish handling in the port: Hygiene conditions during landing, preservation and transport operations, etc.;

5. Discuss with the PSPEG and the Government the findings and recommendations.

Home-based work - 0.5 month (2 weeks)

6. Prepare a draft report on the findings;

7. Collect information on trade, prices, specific quality requirements of different markets relevant to the fish products produced by PSPEG;

8. Prepare a seminar programme for two seminars to be organized for both fishing vessels' owners/skippers and fish processors to discuss the findings;

2nd mission to the field - 0.5 month (2 weeks)

9. Collect additional information and prepare a detailed analysis of the prospects of Pakistan's fish industry;

10. Organize two seminars to discuss the recommendations and agree on the implementation initiatives;

Home-based work - 0.2 month (1 week)

11. Prepare a report containing a detailed review of the fish industry in Pakistan and the major findings and recommendations as well as the implementation modalities. The recommendations will focus on the immediate measures to be taken to improve the fish quality and the medium and long-term measures to make the fish products compliant with the export markets' requirements. The report should be in accordance with the reporting system established in UNIDO and should be submitted in 3 copies in writing, accompanied by the diskette using WP 5.1.

Qualifications: Expert in fish processing technology and quality control with at least 15 years of experience with major companies and international organizations.

Language: English.

Background information: The fisheries sector in Pakistan, which comprises marine and inland fisheries as well as a limited fresh water and aquaculture subsector, is not only a source of employment and income generation and foreign exchange earner, but also a source of highly nutritious food. The coastline of Pakistan is 1,050 km long. However, marine fishery is carried out only in two main fishing areas, the Sindh Coast, on a broad continental shelf extending south east towards the Indian border and the Mekran

coast along the Baluchistan coast towards the Iranian border and characterized by a coastline with a narrow continential shelf marked by large bays.

The inland fisheries subsector comprises the interior Sindh Province, the Punjab Province, the north-western Frontier Province, the Mangla Dam Reservoir and the northern areas.

At present, the fisheries subsector is considered an important source of employment and it is estimated that about 228,000 full-time and part-time fishermen and fish farmers are earning their living from marine fisheries (40%) and inland fisheries (60%).

The total fish production in Pakistan was estimated at about 446,000 metric tons in 1989, of which 341,000 metric tons came from marine fisheries and 105,000 metric tons from inland sources.

The fish processing industry in Pakistan is mainly located within the harbour area of Karachi. This industry consists of 22 fish processing units which are members of the Pakistan Seafood Processors and Exporters Group (PSPEG). They are mainly involved in the processing and export of shrimps, lobsters and crabs along with other frozen products to USA, Europe and Japan as well as to the Middle East. Recently, however, the industry has been facing increasing problems in export because of the tightening up of the quality regulations for Pakistan's fish products on traditional foreign overseas markets. In other words, the quality of Pakistan's fish products does not meet the consumer requirements in the export countries.

The main reason for the low quality of Pakistan's fish products is the old processing machinery. Some plants are 25-30 years old and badly maintained. In addition, processing is very rudimentary and the freezing facilities for frozen fish products are not standardized; sometimes freezing storage facilities are only equipped for - 7° to - 8° C, while they should be for - 18° to - 30° C. Furthermore, the current handling procedures yield very low sanitation and hygienic conditions.

Exporters are also using inferior packaging material which affects the hygienic transport to overseas markets.

Recently stricter quality regulations on certain foreign markets have reduced the output of seafood to a low level and some seafood exporters have been blacklisted by certain buyers (e.g. US buyers) and earnings from shrimp exports fell from US$ 100 million to US$ 33 million in 1991 while the total of annual exports of seafood only to the United States were worth about US$ 100 million.

For the fish processing industry to survive these acute problems have to be overcome by improving the quality of the export products. For this purpose the exporters need assistance of an expert who has immediate understanding of the future quality requirements of the overseas markets and who can participate in the upgrading of the future quality requirements of the fish processing units in Pakistan. As such the expert should have a thorough understanding of the requirements of how to improve the handling technology (as immediate measure) and the fish processing facilities (as medium-/long-term measures). The expert should also look into the processing of salted and dried fish for export to markets in Sri Lanka and advise on the improvement of the quality of fish for fish meal products.

In the 1980s Pakistan received considerable financial and technical assistance for the development of its fishery sector. All aspects at all the different levels were addressed: The fisheries policy, monitoring system, determination of potential yields (PAK/77/033), fisheries development in reservoirs through improvement of hatching design and nursery site selection (FAO/TCP/PAK/6657), introduction of low cost fish farming in rural areas (TCP project), support to the fish farmers and fishermen operating in inland waters (assistance from Asian Development Bank and Canada (CIDA), strengthening of fisheries training centre (PAK/88/013), development of fish marketing and utilization (PAK/88/033) and upgrading of quality control of fish and fishery products (PAK/88/034). Among these technical assistance projects the last three will be considered in particular as the present SIS project could be seen as follow-up action to them.

Strengthening of fisheries training centre (DP/PAK/88/013)

This project was designed to help in establishing a fully operational training centre and training schemes and train fishermen and shore-based fisheries-related personnel. Among the outputs and activities of this project the organization of a training course in fish handling and quality, and particularly training of women in fish handling (drying, salting and smoking) as materialized, will be taken into account by the UNIDO expert when giving advice on the measures to be taken to improve the quality of the fishery products.

Development of fish marketing and utilization (DP/PAK/77/033)

The goal of this project was to popularize and increase the consumption of marine fish products to improve the per capita protein intake in the national diet through an improved utilization of the catches, an improvement in quality and demonstration of appropriate marketing techniques and systems.

To achieve this goal the project had

+ to evaluate the possibility of increasing the sale and consumption of marine fish and other fish products;
+ to train the staff of the Department of Fisheries and of provincial directorates of fisheries as well as selected representatives of the fisheries sector in the appropriate techniques for an improved marketing of the marine fish;
+ to provide the private sector with information on the improved handling of fish; and
+ to undertake popularization programmes in respect of the importance of marine fish for human consumption on the basis of established needs and criteria.

As stated, the project addressed the local market. In addition, ad hoc advice and on-the-job training were provided to several fish processors and exporters in the post-harvest handling and processing of fish to upgrade in particular their handling, filleting and packaging techniques, to improve in-plant quality control and in some instances to provide guidance to meet the international quality standards so as to enable the exporters to compete in the international seafood markets. The project made experiments and organized workshops and seminars on fish handling, processing and marketing.

The achievements of the above project will be fully taken into account and the SIS project will be implemented as a follow-up in order to consolidate the results on a case-by-case basis and following the export-oriented approach.

Upgrading of quality control of fish and fishery products: 1991 (PAK/88/034)

The goal of the project was to improve the utilization of marine fishery resources through a better quality of the fish and fishery products including shrimps with a concomitant increase in export earnings and domestic consumption of marine products. The intention was to directly support the Marine Fisheries Department in establishing a new fully operational quality control laboratory, providing all the equipment and training required as well as in proposing, introducing and enforcing the quality standards and strengthening the quality control and inspection service of the Marine Fisheries Department of the Ministry of Food, Agriculture and Cooperatives and the provincial directorates of fisheries. However, due to the failure of the Government to implement and enforce quality control legislation, this project was terminated even before its implementation started.

The above issues are undoubtedly still to be addressed and the assistance expected within the framework of the above-mentioned project is still needed. The problems that have been faced in the export markets during the last years have made the Pakistan seafood processors and exporters conscious of the necessity of improving the

quality of their marine products to meet the required standard.

The present project which will work within the industrial units and in close cooperation with the private operators concerned will help to facilitate the application of the measures taken by the Government in terms of implementing and enforcing inspection and quality control legislation. In other words, the demand for new quality standards and the services of a quality control laboratory originates from the private users concerned, the Government will thus have no difficulty in establishing such a system, particularly for export products.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

February 1995

Project for the Government of Pakistan

Advisory assistance to improve the quality of fish products in the fish processing industry in Karachi

Job Description

SI/PAK/94/801/11-52/07-20A0

Post title: Fishing and fish handling consultant (FFHC)

Duration: 2.2 w/m split as follows:
- 1.0 w/m in the field (March 1995)
- 0.5 w/m home-based work
- 0.5 w/m in the field (date still to be defined)
- 0.2 w/m home-based work.

Date required: Beginning of March 1995

Duty station: Karachi, with travel within the country

Purpose of project: To provide high-level advisory assistance to the Pakistan Seafood Processors and Exporters (PSPEG) on immediate, medium- and long-term measures to improve the quality of the fish products of the individual processors within the group.

Duties: The FFHC will, in cooperation with the Fish processing and quality control consultant (FPQCC), be expected to carry out the following tasks:

1st mission to the field - 1 month

1. Review the achievements of the relevant projects implemented in the fisheries sector;

2. Visit fishing vessels and fishing ports and examine the following:

i) Fish handling and preservation on board of the fishing vessels: Cleanliness and hygiene of the deck and the hold of the fishing boats, utilization of ice, etc.;

ii) Fish handling in the port: Hygiene conditions during landing, preservation and transport operations, etc.;

3. Contribute to the identification of the fish products expoerted by Pakistan and the export markets (current and potential) and specify in detail the quality requirements at the different levels of the production chain;

4. Based on the findings, identify and propose at the three above-mentioned levels of the production chain:

i) Immediate measures with the aim to improve the fish quality in the short-term perspective;

ii) Medium-/long-term measures, within a global quality programme, with the aim to make Pakistan's fish products fully compliant with the requirements of the export markets.

5. Participate in the discussion of the findings and recommendations with the PSPEG and the Government.

Home-based work - 0.5 month (2 weeks)

6. Contribute to the preparation of a draft report on the findings;

7. Participate in the collection of information on trade, prices, specific quality requirements of different markets relevant to the fish products produced by PSPEG;

8. Participate in the preparation of the seminar programme;

2nd mission to the field - 0.5 month (2 weeks)

9. Collect additional information and contribute to the preparation of a detailed analysis of the prospects of Pakistan's fish industry;

10. Participate in the organization of the two seminars for both fishing vessels' owners/skippers and fish processors to discuss the findings;

Home-based work - 0.2 month (1 week)

9. Participate in the preparation of the final report of the project. The recommendations will focus on the immediate measures to be taken to improve the fish quality and the medium and long-term measures to make the fish products compliant with the export markets' requirements. The report should be in accordance with the reporting system established in UNIDO and should be submitted in 3 copies in writing, accompanied by the diskette using WP 5.1.

10. When implementing the above activities pay special attention to the environmental aspect (i.e. processing of by-products and wastes, effluent treatment, etc.).

Qualifications: University degree in biology with experience in fishing, fish handling and quality control.

Language: English.

Appendix 2

List of people met during 1st mission to Karachi

Institutions and Organisations

Pakistan Sea Food Processors and Exporters Group,
- Mr. Azhar Butt, Chairman, (Chairman of Mekran Fisheries)
- Mr. Tariq Ikram, Secretary General, (president of Pak Export, Ltd.)

Marine Fisheries Department, Goverment of Pakistan, Fish Harbour, West Wharf, Karachi
- Dr. Abdul Majid, Director General
- Mr. Lutfullah Khatri, Quality Control Officer
- Mr. Mohammed Moazzam Khan, Pricipal Planning Officer
- Mr. Shaukat Hussain, Principal Fishing Technologist (Fisheries Training Centre)
- Ms. Humera Sultana, officer In Charge, (Fisheries Training Centre)
- Mr. Shamsuddin Qureshi, Principal Research Officer
- Mr. Mohd. A. Ghafoor Shah, Biochemist
- Mr. Rizwan Ahmed, Marine Production Officer
- Mr. Shahid Ali Siddiqi, Senior Economist

Karachi fishing Boat & Trawler Owners Group, C-6 Karachi Harbour, Karachi,
- Mr. Mahboob Ahmed, coordinator

Mr. Irsrad Qazi, fish processing expert

Mr. Zahid, former FAO officer

Mr. Gul. Mohammed, market officer, Fishermens Cooperative Society

Export Promotion Bureau.
- Mr. Abu Shamin M. Ariff, vice chairman,
- Mr. Syed Masood Jafari, project officer.

University of Karachi,
- Prof. Rashda Ali, chairperson
- Mr. Abid Hasnain, assistant professor
- Mr. Syed Asad Sayeed, lecturer
- Mr. Ramanulla Siddiqi, food technologist

List of people met during 1st mission to Karachi Appendix 3

Producers

Pak Export, C-6 Fish Harbour, Karachi
Mr. Tariq Ikram, President
Mr. Anis Bhiwandiwala, Quality Control Incharge

Spectrum Fisheries, Ltd, E-1, Fish Harbour, West Wharf, Karachi
Mr. Muhammed Siddique, Chief Executive
Mr. ?? (his son)

Mukhi Noordin & Sons,
Mr. Zulfiqar M. Noordin, partner

Kanpa International Sales, Seafood Division
Mr. Kabir P. Kanji, Managing Director
Allaudin, S. Maruani, Advicer

A.G. Fisheries, Ltd.,
Mr. M. Ashraf, managing director,

Long Wharf Seafoods Ltd
&
Shahsons Fisheries, Ltd
Mr. Muhammad Hanif Khan, managing director,

Mekran Fisheries,
Mr. Ashar Butt, chairman,

Seagreen Enterprises (Pvt) Ltd.
Abrar Ahmed, Managing Director,

People Fisheries (Pvt) Ltd.
Mr. S. Hasan Iftikhar Zaidi, Director

3 Kings
Mr. Frank Ong, Seven Seas International (Fisheries Division)

Appendix 4

List of companies that are members of The Pakistan Seafood Processor and Exporters Association as per November 1994.

1.	Mekran Fisheries (Pvt.) Ltd.	B-2, B-4, Fish Harbour, West Wharf, Karachi. Tel. 2311241-4
2.	United Fisheries (Pvt.) Ltd.	19-A, Sector 16, Korangi Industrial Estate, Korangi, Karachi. Tel. 314344-5
3.	Pak Exports	C-6, Fish Harbour, Karachi. Tel. 2310302
4.	Marcon Int. (Pvt.) Ltd.	B-1, Fish Harbour, West Wharf, Karachi. Tel. 200200
5.	Seagreen Ent. (Pvt.) Ltd.	A-2, Fish Harbour, West Wharf, Karachi. Tel. 2310324
6.	Rehman Fisheries	201-202, Sector, Korangi Industrial Estate, Karachi. Tel. 315525
7.	A.G.Fishieries (Pvt.) Ltd.	B-5, Fish Harbour, West Wharf, Karachi. Tel. 201458
8.	Asha Enterprise	41, Old Raily Building, Talpur Road, Karachi. Tel. 2416807
9.	Seven Seas Int.	C-3 Fish Harbour, West Wharf, Karachi
10.	Kanpa Int. Sales	3rd Floor, Room 4 Gilani Building, Marriot Road, Karachi. Tel. 2419004
11.	Sufi Sea Foods	101-B Fish Harbour Uni Centre, I.I. Chundrigar Road, Karachi. Tel. 2414470
12	Allied Fishing & Cold Storage (Pvt.) Ltd.	C-4, Fish Harbour, Karachi.
13.	Seapak Enterprise	B-3, Fish Harbour, Karachi. Tel. 2310440

Appendix 5.1

Nominal Catch of Fin-Fish and Shell-Fish (1990-1993)

Distribution on provinces

AREAS	Quantity in metricTons 1990	1991	1992	1993
Pakistan	482.960	518.702	553.118	621.625
Marine	369.802	402.795	431.465	499.759
Fin-Fish	337.158	363.974	398.485	456.990
Sindh	228.441	252.128	262.913	307.998
Balochistan	106.482	105.884	110.644	118.440
E.E.C.	2.235	5.962	24.928	30.552
Shell Fish	32.644	38.821	32.180	42.169
Sindh	31.805	37.226	30.961	40.690
Balochistan	744	1.197	1.609	1.354
E.E.C.	95	398	410	125
Inland	113.158	115.907	121.653	122.536
Fresh Water Fish	113.158	115.907	121.653	122.536
Sindh	60.270	57.971	59.971	60.270
Punjab	49.989	54.509	58.160	58.615
N.W.F.P.	1.403	1.569	2.335	2.431
Northern Area	90	150	160	180
Dams	1.497	1.708	1.027	1.040

Source: MFD, 1995

Appendix 5.2

Total catch of Marine Fish and Shellfish in Pakistan 1989 - 1993, metric tons

Catch Group Species	1989 Group Species	1990 Group Species	1991 Group Species	1992 Group Species	1993 Group Species
Shads	**875**	**935**	**861**	**823**	**796**
Hilsa	875	935	861	823	796
Barramundi	**325**	**312**	**250**	**237**	**210**
Lates sp.	325	312			
Flounders, halibuts, soles	**1.363**	**1.373**	**1.589**	**2.041**	**2.024**
Redfish, basses, congers	**34.733**	**41.144**	**64.035**	**68.417**	**87.437**
Catfish	10.053	14.550	27.253	27.648	37.840
Conger	1.474	1.890	7.389	8.335	9.484
Grouper	2.402	2.908	3.621	4.863	6.255
Snapper	853	938	1.108	1.222	2.178
Grunt	4.422	4.252	4.929	4.491	5.417
Croaker	10.846	12.270	14.449	16.706	19.740
Bream	3.211	2.885	3.432	3.284	3.939
Jacks, mullets, sauries	**23.681**	**30.786**	**29.941**	**35.976**	**57.028**
Mullet	1.510	6.017	6.751	10.176	22.485
Hardtail scad	3.445	4.048	2.550	4.525	5.863
Queenfish	9.448	10.833	9.750	9.628	13.111
Trevally	2.071	2.223	2.651	2.852	3.933
Silver pomfret	3.314	3.183	3.081	2.552	3.103
Herrings, sardines, anchovi	**57.861**	**119.997**	**119.155**	**132.103**	**166.509**
Indian oil sardine	19.816	63.743	65.858	74.553	92.704
Tunas, bonitos, billfish	**32.291**	**31.536**	**33.735**	**53.922**	**60.073**
Seerfish	9.257	9.160	10.647	12.133	12.252
Tuna	21.693	20.432	20.826	38.585	44.845
Mackerels, snoeks, cuttlass	**1.511**	**2.474**	**4.123**	**4.616**	**3.474**
Ribbonfish	1.511	2.474	4.123	4.616	3.474
Sharks, rays	**27.633**	**40.043**	**45.098**	**45.745**	**46.405**
Other marine fish	**135.598**	**68.558**	**65.187**	**54.605**	**33.034**
Crabs	**1.247**	**364**	**390**	**437**	**480**
Lobsters	**361**	**470**	**799**	**502**	**507**
Shrimps	**23.492**	**27.921**	**32.060**	**26.328**	**34.920**
Peneaus sp.	3.472	5.505	6.574	5.397	6.820
Metapeneaus sp.	7.340	8.750	9.080	8.238	9.468
Kiddi shrimps	12.680	13.666	16.406	12.693	18.632
Squids	**251**	**3.889**	**5.572**	**5.713**	**6.262**
Total	**341.222**	**369.802**	**402.795**	**431.465**	**499.759**

Source: Marine Fisheries Department, 1995

Appendix 6.1

Export of Fish, Shell Fish and Fish Products (1990-1993)

	Quantity in metric ton				Value in PRs			
Year Commodity	1990	1991	1992	1993	1990	1991	1992	1993
A: FISH	28.776	29.643	53.939	57.297	641.676	652.630	1.584.849	2.761.045
I) Dried salted	19.257	19.400	22.650	22.404	287.513	338.233	425.682	388.063
II) Dried unsalted	49	279	307	6	959	6.528	4.512	135
III) Frozen	7.614	9.178	28.996	32.864	290.466	279.593	1.073.863	2.296.909
IV) Chilled	1.786	786	1.965	2.016	58.744	28.276	30.603	75.586
V) Fish Canned	24	0	0	5	294	0	0	305
VI) Wet salted	1	0	0	0	12	0	0	0
VII) Live	35	0	0	0	3.266	0	0	0
VIII) Smoked	10	0	1	0	422	0	27	0
IX) Others	0	0	20	2	0	0	162	47
B: Shell Fish	15.937	20.956	21.400	23.200	1.612.494	1.862.030	1.691.407	2.566.349
1. SHRIMPS	15.353	16.896	14.243	17.012	1.555.641	1.688.703	1.430.085	2.260.029
I) Frozen	15.255	16.827	14.098	16.886	1.553.738	1.684.828	1.421.772	2.251.503
II) Canned	Ø	14	33	20	28	1.254	3.615	1.921
III) Dried	94	52	54	43	1.588	2.463	2.026	2.768
IV) Fresh	4	3	58	63	287	158	2.672	3.837
2. LOBSTER	220	202	45	66	34.982	30.455	7.757	12.978
I) Frozen	145	184	44	62	20.137	29.111	7.688	12.653
II) Live	54	0	0	0	9.882	0	0	0
III) Meat Frozen	3	18	0	Ø	601	1.344	0	9
IV) Tail	18	0	1	4	4.362	0	69	316
3. CRABS	295	86	332	356	18.481	9.063	20.448	13.457
I) Frozen	149	20	112	17	9.587	2.636	7.590	801
II) Meat Frozen	47	54	55	203	5.936	6.089	8.118	8.704
III) Fresh	99	12	165	136	2.958	338	4.740	3.952
4. CUTTLE FISH	0	3.719	6.780	5.766	0	129.863	233.117	279.885
I) Frozen	0	3.719	6.780	5.746	0	129.863	233.117	279.622
II) Preserved	0	0	0	20	0	0	0	263
5. OTHERS	69	53	0	0	3.390	3.946	0	0
I) Frozen	59	53	0	0	2.106	3.946	0	0
II) Preserved	10	0	0	0	1.284	0	0	0
C. FISH PRODUCTS	1.424	2.078	3.856	3.286	87.256	107.220	178.713	181.314
I) Fish Meal	1.070	1.715	3.325	2.847	7.522	10.884	23.501	18.762
II) Fish Maws	118	102	181	161	23.368	26.659	50.477	50.482
III) Shark Fins	236	261	333	278	56.366	69.677	101.114	112.070
IV) Fish Past	0	0	6	0	0	0	2.697	0
V) Fish Preparation	0	0	11	0	0	0	924	0
TOTAL:	46.137	52.677	79.195	83.783	2.341.426	2.621.880	3.454.969	5.508.708

Source: MFD, 1995

Appendix 6.2

Export , 1990 - 1993

frozen fish	1990 Weight ton	1990 Value Rupies	1990 Rs/kg	1991 Weight ton	1991 Value Rupies	1991 Rs/kg	1992 Weight ton	1992 Value Rupies	1992 Rs/kg	1993 Weight ton	1993 Value Rupies	1993 Rs/kg
Dubai	1.919	38.703	20	1.035	23.923	23	1.364	21.325	16	479	24.229	51
Japan	1.175	79.545	68	1.146	54.940	48	11.933	439.371	37	9.378	695.413	74
Hong Kong	949	16.455	17	1.481	27.686	19	800	15.738	20	1.468	32.898	22
Thailand	687	33.696	49	297	13.467	45	127	4.541	36	225	9.148	41
UK	554	33.252	60	429	18.249	43	312	12.437	40	1.216	62.182	51
Suadi Arabia	489	11.136	23	559	15.525	28	668	18.491	28	999	28.564	29
Germany	343	19.819	58	214	12.485	58	32	2.970	93	148	12.956	88
South Korea				1.719	28.792	17	949	17.022	18	1.453	86.607	60
Singapore				160	6.731	42	10.444	468.620	45	14.764	1.215.745	82
Others	1.498	57.860	39	2.138	77.795	36	2.367	73.348	31	2.734	129.167	47
Total	7.614	290.466	38	9.178	279.593	30	28.996	1.073.863	37	32.864	2.296.909	70

frozen shrimp	1990 Weight ton	1990 Value Rupies	1990 Rs/kg	1991 Weight ton	1991 Value Rupies	1991 Rs/kg	1992 Weight ton	1992 Value Rupies	1992 Rs/kg	1993 Weight ton	1993 Value Rupies	1993 Rs/kg
USA	5.635	483.488	86	5.629	422.837	75	3.587	319.022	89	3.123	358.416	115
UK	4.001	406.224	102	3.547	427.461	121	3.288	360.168	110	3.506	500.287	143
Japan	2.419	405.496	168	2.782	499.217	179	2.236	360.664	161	3.373	696.889	207
Malaysia	253	16.566	65	272	14.295	53	26	1.203	46	44	4.499	102
Sweden	333	29.042	87	402	32.360	80						
France	761	59.279	78	779	48.338	62	766	54.272	71	749	68.025	91
Belgium	876	68.537	78	1.788	98.701	55	1.198	89.229	74	1.907	189.494	99
Bulgaria	96	6.123	64	22	1.898	86						
The Netherlands	378	25.923	69	236	13.547	57	1.241	77.483	62	1.877	170.874	91
Spain	110	13.741	125	215	23.798	111	313	36.993	118	359	46.054	128
Singapore	14	636	45	424	41.357	98	249	23.544	95	27	3.214	119
Others	379	38.683	102	731	61.019	83	1.194	99.194	83	1.921	213.751	111
Total	15.255	1.553.738	102	16.827	1.684.828	100	14.098	1.421.772	101	16.886	2.251.503	133

Five Year Data of Fish

Quantity in '000' Kgs.

Value in Rs.'000'

Product Group	Direction of Trade	1992-93		1991-92		1990-91		1989-90		1988-89	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Shrimps	TOTAL	4,412,337	463,077	4,895,066	455,213	6,150,238	743,652	7,397,650	664,017	1,802,439	163,683
	Finland							60,071	7,284		
	Asian Countries N-S	260,440	19,162								
	Australia			17,000	426						
	Belgium	404,802	27,685	595,200	41,828	380,335	37,464	370,698	18,883	81,500	3,696
	Canada			8,981	917	38,000	5,099				
	China			88,000	2,244						
	Czechoslovakia	27,000	2,848								
	Denmark	22,000	703								
	Dubai	24,000	1,237	2,120	104	40,000	2,762	50,700	2,233	1,020	56
	Germany	89,875	11,029	56,000	3,165	21,000	1,506	30,463	2,368	268	33
	France	169,580	11,558	264,500	13,995	191,000	16,496	334,600	22,127	166,300	11,986
	Hong Kong			5,000	258	13,200	722	20,000	1,284	600	34
	Italy			14,500	2,227			58,400	5,009		
	Japan	945,264	146,659	655,727	112,767	1,267,961	246,669	1,084,218	152,524	390,758	63,580
	Kuwait	1,700	175								
	Luxembourg			14,000	798			37,000	3,217		
	Malaysia			84,000	6,519	84,620	7,130	45,000	1,875		
	Netherlands	311,710	17,971	43,000	2,931	165,000	11,641	50,000	2,861		
	Philippines	12,000	272								
	Saudi Arabia	800	91	3,920	355						
	Singapore			121,000	6,651					1,605	128
	Spain	104,200	12,770	19,700	2,130	68,000	8,851	68,594	7,545	34,400	2,728
	Sri Lanka	16,510	352								
	Sweden			116,102	8,171	131,600	13,920	110,000	8,302		
	USA	1,207,523	109,818	1,540,186	117,388	1,821,657	159,308	2,996,627	243,852	675,189	45,653

Quantity in '000' Kgs.

Five Year Data of Fish

Value in Rs.'000'

Product Group	Direction of Trade	1992-93		1991-92		1990-91		1989-90		1988-89	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	UK	814,933	100,747	1,246,130	132,339	1,863,865	225,225	2,029,344	179,626	428,799	34,766
	Bulgaria					48,000	2,999	51,400	4,950		
	Nauru									22,000	1,023
	South Korea					16,000	3,860				
	Sharjah							535	77		
Shrimps P&D	TOTAL	10,439,904	1,120,697	10,854,097	1,035,660	7,210,850	719,614	5,027,242	458,178	4,000,404	131,542
Frozen	Asian Countries N-S	265,260	21,968								
	Belgium	856,594	62,944	1,202,400	61,322	605,500	42,812	360,300	17,035		
	China			133,000	7,765						
	Cyprus	14,200	634							1,000	68
	Czechoslovakia	34,000	1,573							7,000	141
	Dubai	152,953	11,364	228,425	16,470	63,280	4,482	43,615	2,506	1,089,930	14,426
	Germany	187,830	17,110	144,500	10,614	60,000	4,080	32,000	1,718	98,518	7,926
	Finland			280	35						
	France	472,252	34,409	491,380	31,012	470,600	34,494	392,300	31,885	323,100	15,093
	Ghana			10,000	526						
	Greece			795	106						
	Hong Kong	125,690	21,725	82,220	8,672	21,000	1,319			54,397	1,797
	India	29,700	7,957								
	Indonesia			64,500	382						
	Italy	15,400	1,349	27,500	4,195					63,000	1,712
	Japan	1,904,485	306,492	1,879,212	304,828	1,538,572	264,685	984,607	143,388	396,090	24,012
	Jordan			200	13						
	Kuwait	12,831	1,103	23,280	2,909			2,440	175	5,900	173
	Laos	17,000	3,072								

Quantity in '000' Kgs.

Five Year Data of Fish

Value in Rs.'000'

Product Group	Direction of Trade	1992-93		1991-92		1990-91		1989-90		1988-89	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	Malaysia	20,000	872	170,006	6,608	179,000	10,068	30,900	3,365		
	Netherlands	990,400	64,187	192,476	11,483	220,000	14,827	53,000	2,560	47,400	2,528
	Portugal	2,300	251								
	Ryukus			10,000	452						
	Saudi Arabia	42,203	1,789	13,678	529	1,650	98	1,000	76	306,005	7,378
	Singapore	20,000	1,127	531,862	57,123			14,000	636	397,100	12,607
	Spain	300,290	36,013	205,262	23,679	148,500	16,764	40,000	5,511	237,788	9,166
	Sri Lanka			30,000	4,080			28,140	3,800	258,929	4,169
	Norway									14,000	841
	Lebanon									2,413	127
	Qattar									6,650	177
	Sultanate of Oman	10,800	687	3,590	229					3,900	86
	Sweden			192,454	13,440	147,519	14,132	56,000	4,206		
	Thailand	2,850	543							362,000	13,592
	Turkey			82,567	2,257						
	USA	2,518,433	222,776	3,215,100	258,524	3,631,032	293,901	2,933,540	236,408	49,000	2,700
	UK	2,429,333	297,784	1,919,410	208,407	2,497				237,284	10,814
	Yugoslavia	15,100	2,968								
	Brunai					19,000	1,331				
	Bulgaria					34,000	2,854	27,400	2,583		
	Canada					19,200	1,404				
	Greenland							28,000	2,328		
	Rep. Of Bernin					12,500	3,469				
	South Korea					37,000	8,894				
	Austria									39,000	2,009

Five Year Data of Fish

Quantity in '000' Kgs. Values in '000' Rupees

Product Group	Direction of Trade	1992-93		1991-92		1990-91		1989-90		1988-89	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Fresh Fish	Asian Countries										
	N-S							4,190	180		
	Bahrain	7,836	362	3,920	143	4,200	78	14,110	268	15,537	434
	Belgium			225	5						
	Canada	2,730	148					850	47		
	Cyprus			720	30	920	56				
	Denmark	8,550	361	6,290	135			710	45		
	Dubai	31,195	1,074	30,591	1,150	15,605	496	26,290	785	23,035	731
	F. R. Germany	900	20	1,040	76	18,650	1,026				
	Germany F.R.							14,000	1,178	1,246	81
	France	535	9	8,735	220	50,650	1,535				
	Greece			5,800	377	2,440	107				
	Hadhra Maut			10,720	74			3,796	88	3,430	95
	Hong Kong					50,000	691	160	9		
	Iraq									700	30
	Italy			120	12	2,600	136				
	Japan	201,125	9,469	108,103	3,705	23,305	1,122	29,950	1,447	200	17
	Jordan	15,600	517	17,060	579	5,510	202	650	10		
	Kuwait	1,135,323	46,347	817,620	32,133	100,816	3,039	2,365,097	65,503	2,405,853	67,181
	Malaysia	1,500	59			1,200	33				
	Lebanon							480	18	1,050	24
	Netherlands							75	2		
	Libya									1,780	63
	Norway							1,200	40		
	Peru							750	23		
	Philippines	150	8								
	Qatar			8,050	187			4,015	104	8,000	255

Five Year Data of Fish

Quantity in '000' Kgs. Values in '000' Rupees

Product Group	Direction of Trade	1992-93		1991-92		1990-91		1989-90		1988-89	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	R. of Yemen	450	18	4,250	108						
	Saudi Arabia	418,496	17,469	331,611	13,017	246,022	8,700	408,911	16,516	517,870	18,031
	Sharjah										
	Singapore			8,500	331	6,885	261	7,630	241	10,590	436
	Sri Lanka	15,875	280	5,000	180					2,000	54
	S. of Oman	1,100	47	100	3			2,300	46	1,600	38
	Switzerland			300	16	1,150	41				
	Syria										
	Sweden									643	27
	Thailand					16,000	801	14,000	706		
	U. S. A.	1,500	47	7,100	566	90,322	4,393	132,273	5,174	3,275	79
	U. K.	3,060	81	42,650	1,152	30,430	3,408	86,317	3,085	36,107	1,414
	Turkey							1,100	30		
	TOTAL	**1,845,925**	**76,316**	**1,418,505**	**54,199**	**666,705**	**26,125**	**3,118,854**	**95,545**	**3,032,916**	**88,990**
Flat Fish Frozen	Asian Countries										
	N-S	180,417	10,149	94,490	3,223	72,285	3,451				
	Bahrain										
	Belgium	13,000	592	21,000	645	79,500	3,245	38,000	14,495		
	Cyprus										
	Czechoslovakia										
	Dubai	48,550	1,379	52,620	1,852	238,600	6,826	280,720	8,435		
	Equador			48,260	602						
	Fiji A BR ADMN Isls					10,000	395				
	France	17,000	399	176,600	6,464	45,600	1,790	19,000	1,177		
	F. R. Germany	59,430	3,521	26,250	1,481	18,000	973				
	Germany F. R.					4,250	285	69,000	2,834		

Appendix 6.4

Export of fish and fish preparations
mill US $

Country-wise

Country	1992-93	1993-94	1994-95
Japan	49,6	41,0	34,4
U.K.	18,5	20,0	26,0
U.S.A.	14,6	17,8	22,3
Sri Lanka	14,7	10,9	12,0
Netherlands	3,7	7,8	11,2
China	0,1	1,1	7,5
Belgium	3,7	7,9	7,6
Hong Kong	5,1	6,5	5,6
Singapore	48,9	20,4	5,0
Dubai	1,6	3,9	3,7
Others	21,2	17,4	19,0
Total	181,7	154,7	154,3

Commodity

	1990-91	1991-92	1992-93	1993-94	1994-95
Fresh fish	1,2	2,2	3,0	2,6	5,0
Frozen fish	11,9	23,0	81,5	40,3	27,0
Dried, salted, smoked fish	14,4	16,3	16,8	12,2	12,7
Shellfish and mussels	83,8	67,9	74,1	94,2	103,5
Others	3,6	5,3	6,3	5,4	6,1
	114,9	114,7	181,7	154,7	154,3

Source: Export Promotion Bureau, 1996

Appendix 7

Company: code no. 1

The company has a range of activities in addition to fish processing:

- Fishmeal production, where the good quality is made into poultry feed (Japan, Taiwan and local market) and the bad quality is made into fertilizer
- State oil agent who delivers fuel to the vessels
- Licence for rations which deliver food to the vessels
- They have 90% of all fish processing in Baluchistan

Processing facilities and capacities:
The capacity of the plant was informed to be more than 50 tons per day.

Building:
One building comprises the whole fish and shrimp processing including the block ice plant and cold storage. The building is in two storeys, with the processing on the ground floor and the administration on the top floor.

Reception area:
On the ground floor is a raw material department, not seen during the visit.

During the visit an automatic shrimp roller grader was placed in the hall for processing and manual grading.

Processing departments:
On the floors are big concrete tiles with joints. The lower part of the walls are also concrete. There are columns in the room and drain channels in the floor covered with iron grating. The upper part of the walls and the ceiling are painted. There are concrete basins for storing the products in ice water in the room. Plastic containers are also used.

The tables and trays for grading, peeling and packing in boxes are made of stainless steel. The workers are sitting on benches with wood seat wearing their own clothes.

In the room there are plate freezers and trolleys for the steel tray with the packed products ready for plate freezing.

Packing area:
In direct connection with the processing room, in front of the cold storage rooms, is another room. This room has the same type of floor and walls.

The water is supplied from Karachi Development Authorities Filter Plant and is not further treated in the plant.

Chillrooms, freezing facilities and coldstore:
4000 cu. feet capacity.
4 plate freezers of 3 tons capacity per 3.5 hours load.
2 blast freezers of 2 tons per 8 hours load.

About 1,500 tons storage capacity at -32° C.

Commercial ice manufacturing plant, capacity about 100 tons of block ice per day.

The refrigeration plant is ammonia with some Sabroe compressors and older vertical compressors. The compressors were running at -32°/ -10°/-30° C. The temperature in a coldstore room showed -21° C.

Two standby generators are available to secure the plant power, in case of interruption of electricity supply.

Technical level and maintenance:
Most of the equipment in connection with the processed products are of stainless steel.

The steel trays and trolleys for the packed material are rusty and need painting.

In some parts of the floor there are holes which need to be repaired, so water cannot stand in the holes.

Quality control/assurance:
The company has an agreement with Mackinnons Pakistan insurance department, Lloyds Agency, Karachi to survey the plant, and they have issued survey report 5th December 1994 without any deviant remarks.

Laboratory report of the water showed in the Mackinnons survey report that the water quality can fulfill the WHO standard for drinking water except that the Total Dissolved Solids are 556 mg/litre (normal limits are 500 mg/litre) but the water is free from pathogenic micro-organisms.

Some countries impose a lower duty when the company can present The Lloyds Certificate.

None of the workers were wearing working clothes/garments during our visit.

The plant needs some upgrading to fulfill the hygiene and sanitary requirements from the market in the EU, for example, the design shall be with waterproof flooring easy to clean and disinfect and a lay out of working areas such as to preclude contamination of the products and keep quite separate the clean and contaminated parts of the building.

The manager declared that the processors generally need assistance, financial as well as technical advice, on value added processing and marketing of high value products.

Markets:
A list of products was supplied. Products not mentioned (other products/units/grades/species) can be delivered on order.

- Shrimps, tail-on — Japan
  - headless shell-on — USA, UK
  - shell-on — France, Italy, Netherlands, Germany
  - PUD — Belgium, France, Netherlands
- Fish — Far East
- Salted and dried fish — Sri Lanka, this product was not profitable last year

The only markets they do not export to are Australia, New Zealand and Scandinavia.

Generally no marketing problems. New demands from buyers are coming up, e.g. more fancy packing.

Most of the products are sold for reprocessing, cooking, frying, ready made, etc. In the UK the products are sold directly to restaurants.

Fishery in Pakistan is seasonal, which makes it difficult to process and sell fish products.

They are fully aware that they do not always get a good price; Shrimps from Indonesia cost
US$ 26, while from Pakistan they cost US$ 23.

Environmental aspects:

No remarks

Company: code no. 2

Processing facilities and capacities:
Building:
A two storey building comprising 1,350 sq.m. factory area on the ground floor and 800 sq.m. office area. The building is gradually being renovated, a process which has been going on for the last three years. The outside appearance is nice. The building is a brick and concrete building, well maintained.

Reception area:
Through a steel gate the reception area can receive a lorry. The area is protected from the sun by a roof and is at the same time airy. The openings will in the near future be protected with fly-net. In one end a corridor will be used as peeling-shed.

The raw material is transported from the fish market, direct from the fishing vessels or from other harbours, to the raw material department with concrete terrazzo tiles on the floor with fall against a drain channel along the wall, which is covered with tiles.

In the room is a washing drum and a raw material balance.

Processing departments:
From the raw material room is access through an air ventilated lock with plastic strips to a room for fish processing with terrazzo tiles on the floor and painted ceiling and walls. In the middle of the room is a drain channel.

Through a doorway with plastic strips is asses to the shrimp processing room with stainless steel tables and trays for processing the shrimp, often with deheading, washing, grading, collecting in ice water and packing in plastic cover in 2 kg boxes for plate freezing.

For storing the graded products in ice water without chlorine was used plastic boxes for each size fraction. Scales are used for weigh out to packing, and a special scale is used at the table for quality control.

On the floors are marble tiles and in approx. 1.5 meter hight the walls are covered with white tiles. The upper part of the walls and the ceiling are painted with light washable painting. The bottom and walls in the drain channels are covered with white tiles so it is easy to clean.

The equipment is mostly made of stainless steel. A roller grading machine is available for grading the shrimps in four different sizes. It is used only when large amounts of raw material come in, e.g. in the peak season.

Packing area:
In the shrimp department the boxes are assembled in an area and for the packing in master boxes. After freezing there is a special packing room.

Chillrooms, freezing facilities and coldstore:
Sabroe ammonia. Two step refrigeration plant.
In connection to the fish processing and master packing department are:

2 plate freezers, capacity 2 tons/charge approx. 10 tons/24 hours.
2 blast freezers capacity 6 tons/charge approx. 10 tons/24 hours.
2 coldstores approx. 300 tons. Room temperature informed to be -35° C 2 diesel standby generators of 300 KVA for electrical power supply in case of interruption the electricity supply for the city.

Technical level and maintenance:
The raw material room has good washable drains. All processing rooms are well maintained and suitable for cleaning.

Only the benches for the workers in the shrimp department are with wood seats, this is the only wood used in the processing departments.

The refrigeration plant looks well maintained and so do the diesel generator machinery.

Quality control/assurance:
The production is performed under good sanitary and hygiene conditions. The workers are wearing their own clothes.

The processing plant is easy to clean and the raw material and processed material areas are separated so the plant easy can be upgraded to fulfill the sanitary and hygiene requirements from the export markets for high value products.

The diesel generators can supply the refrigeration plant with power so it can keep the temperature low in the coldstores in case of electricity interruption.
Product check: uniform counts, no black spots, no soft shell.

The buyers have interest in bacterial counts and therefore the plant has a laboratory of their own.

Water is taken from the "Government Plants", this water is filtered and chlorinated. In case of shortage they order tankers.

MFD issue certificate. They take at random samples of 2 kg.

Some countries want Health Certificate from Animal Quarantine Department, other countries want certificate of Quality and Origin from MFD.

On-the-job training of workers.

Markets/products:
The main products are ribbonfish, squid and cuttlefish. They buy from the markets through experienced middlemen. They have special agreements concerning quality and species. The middlemen can arrange that the lot is sorted; the required part is brought to the plant while the rest is resold on the market.

In the peak season they buy shrimps from one-day catches in Korangi.

The raw material is brought on trolleys in baskets.

They do not produce PND products

- Shrimps, shell-on — Japan
- P.U.D. — Europe
- Ribbonfish — Japan
- Sole France
- Squid — Europe
- Cuttlefish — Japan, Taiwan
- Cuttlefish skin-on — Japan, for sachimi

Future:
The company would like to expand the product range with:

- IQF shrimps
- Surimi, maybe only pasta, maybe kamaboko. Sea-eel (conger) would make a good raw material and give a special product. Sardine would make a surimi product suited for export to China, Taiwan and Hong Kong.

They also see possibilities to expand toward the Iranian market. Few other countries have good relations there.

They expect a production based on 60% C.P. and 40% surimi.

Environmental aspects:
Waste water goes to the central sewage system.
Shells and other wastes are sold to fishmeal factories.

Company: code no. 3

Processing facilities and capacities:
Building:
A three-storey building overlooking the harbour. A 3 m wall surrounds the whole complex. The building has recently been refurbished outside with a nice layer of plaster painted white. Inside the wall the ground is covered by flagstones.

The processing department is on all three floors and the administration offices on the 2nd floor.

Reception area:
The raw material is received in a room on the ground floor. The room is under renovation but with terrazzo tiles on the floor and white tiles in approx. 1.5 meter hight at the walls. The upper part of the walls and the ceiling are painted in light colours.

A room for combined chilling, tunnel freezing and coldstore are under construction in a well insulated room without drains.

Processing departments:
On the first floor are rooms with tiles on the floor and the lower part of the walls are used for cleaning and producing whelk. On the second floor is a processing department with two rooms, now used for processing fish with tunnel freezer and coldstore on the same floor. The processing is carried out by workers standing by stainless steel tables.

A number of basins covered with tiles can be used for storing the fish in ice water.

Packing area:
For packing the products on the different floors are used stainless tables, balances and trolleys for transporting the products to freezing.

Chillrooms, freezing facilities and coldstore:
3 plate freezers, 1,100 kg, 700 kg, 500 kg, 5 cycles per 24 hours. The plate freezers are standing in a room with tiles on the floor and walls.
1 blast freezer, capacity 8,000 kg/24 hours.
1 blast freezer, capacity 2,000 kg, 3 cycles per day.
1 blast freezer, capacity 4,000 kg, 3 cycles per day.
Storage capacity 300 tons.

The compressors in the refrigeration plant consist of modern Sabroe compressors and vertically old compressors. It is an ammonia plant running with a suction pressure at 0 atm. corresponding to a temperature at -32° C.

A standby diesel generator plant can supply the compressor plant with electrical power in case of interruption in the public supply.

Technical level and maintenance:
The rooms and equipment are well maintained and easy washable. The rooms are cleaned

with soap twice a day and the drainage channels are disinfected with chlorinated water.

Quality control/assurance:
Daily clean-down of processing rooms at the end of the day. Detergent are used for the room, chlorine for the drains. The water used comes from tankers. The cost is around US$ 3,000 per month.

For the workers are under construction: changing room, toilets and canteen for preparing the food so they stay at the plant during the breaks.

The rooms for raw material and final products are separated and all the rooms are very easy to clean. The rooms are still under modernisation, but the layout looks to be good and easy to be subject to an HACCP analysis.

There exist two different certificates:
- Health Certificate, issued by Animal Quarantine Department. Must follow each shipment, price about 100 - 200 PRs.
- Certificate of Quality and Origin, issued by MFD on the request of the buyer. Free of charge.

Markets:
They have specialized in Eel (conger) and they take about 90% of the landings:

• Gutted eel	Japan, Hong Kong
• Croaker	China
• Threadfin bream	China
• Sole, >200 g	Taiwan
• White pomfret	Taiwan

Japan is a difficult market, the quality demands are high, and it takes long time to negotiate a contract (up to three years).

They consider entering into the shrimp market, but they will only make finished products, cooked and peeled (otherwise the competition is too high from other local producers). They are negotiating with a Danish company about equipment. They expect to be able to begin in September 1995.

Another specialized production is cooked marine mussels and shells like:
- green mussels
- top shell
- white shell

Other products:
- ribbon fish
- grouper
- sardinella
- PUD

Environmental conditions:
No remarks

Company: code no 4

The Company is also involved in Aquaculture, especially Shrimp farming.

Processing facilities and capacities:
Building:
On the ground floor is an old block ice plant, a new cold storage room, machine room and a delivery room. On the 1st floor is the processing area and a machine room for the freezers and a new coldstore. The 2nd floor consists of rest rooms and changing rooms for the workers. The administration is also on this floor.

Reception area:
The floors in the reception and processing area have epoxy-cover and tiles on the walls. There is water installation in the rooms and good outlet in the floors.

The raw material and ice blocks are transported on pallets by a lift to the reception area on the 1st floor. The ice blocks are crusted in a crushing mill standing in the walk to the raw material department.

Next to the raw material department is a chillroom for plastic boxes and plastic containers. In the raw material department the scale can be removed from the fish. A machine for small fish and tables with rotating rasp tools for the bigger fish are used to remote scale from the fish.

The raw material is transported to the processing room through a door opening with plastic tape separating the two departments. Insulated containers and plastic boxes can be used for handling the raw material.

Processing departments:
The processing hall can be air conditioned at +15° C.
Complete stainless processing lines for fish and shrimp consisting of a table for filleting operators, a table for operators for preparing fish and shrimps, skinning machines, a saw, a table for trimming the fillets for operators. On a grading machine with rotating rollers fish can be graded in 4 sizes.

For the workers is a separate entrance to the hall with a foot bath and wash-hand basins and basin for disinfection the hands.

Packing area:
A packing table for operators and some separate tables and trolleys for storing the packed product ready for the plate freezers.

The packed and frozen products can be transported by a separate lift to the coldstore on the ground floor.

Chillrooms, freezing facilities and coldstore:
1 chillroom for raw material. Capacity approx. 10 tons.
1 chillroom for finished products. Capacity approx. 10 tons.
2 plate freezers, capacity approx. 11 tons/24 hours with approx. 1 hour freezing time for the shrimp and 1.5 hour for fish products.

1 blast freezer, capacity approx. 18 tons/24 hours. During the visit -22° C was measured in the room used for storing fish products.

On the ground floor is a big coldstore, capacity approx. 400 tons with a room in front which approach to the lift and a loading platform.

The compressors were running at -40/-10/+28° C. It is an ammoniac plant.

The company has its own block ice plant with a capacity of 100 tons per 24 hours with three old compressors.

Technical level and maintenance:
The technical level is in top and all equipment is new. The water can be heated for cleaning purpose. For cleaning a high-pressure cleaner is available.

The rooms in the processing department are all easy to clean and the walls are washable.

Quality control/assurance:
In the processing department is a laboratory with balances and some equipment for chemical analyses, but the laboratories are not in full operation.

The water comes from the public supply and is adding chlorine and radiated with UV light. Bacteriological tests on the production water are carried out by a private laboratories showing that the water is free from Coliform and E. Coli Bacteria.

On thermographs are recorded the temperature in the coldstore. They showed -31° C during the visit.

The clean and contaminated parts of the processing facilities are kept quite separated, so no contamination of the final products can occur. A 325 KVA standby generator plant can supply the compressor motors in case of electricity interruption, so they can keep the temperature in the coldstore.

The processing plant can fulfill the hygiene and sanitary requirements from the EU and US export markets for high value products.

We were told that the processing is carried out under a strict Quality Management Programme (QMP) implemented and supervised by a Canadian fisheries consultant.

The manpower have, according to the received information, been trained in accordance with the regulations laid down by the Canadian Federal Department of Fisheries.

Markets:
The most important product is shrimp, but they are shifting more and more towards selling fish.

The markets are Europe and the USA. The Far East is not interesting because they do not take quality products. Markets today:

- China Croaker, 100 - 500 g
- Mauritius Croaker, > 500 g

• China	Ribbonfish, whole round
• USA	Ribbonfish, strip pack
• Europe	Squid tubes
• Spain	Whole squid and cuttlefish
• UK	All freshwater species (to Bangladeshis)
• Japan	Pomfrets & sole
• Middle East	Fresh fish
• Japan, Europe and USA	Shrimps

Environmental aspects:
There is no treatment of waste water, it goes to the central sewage system. They assume it goes into the harbour, and do not know if the septic-tank (supplied as part of the Karachi Fish. Harbour Rehabilitation Project) is functioning at all.

The byproducts and waste are used for dry fish and meal production.

Company: code no.5

Processing facilities and capacities:
Building:
A two-storey building, with an outside overall impression of a normal industrial building of the harbour area. The road outside (together with some 300 m road along the N-E harbour basin) have not (yet?) been renovated as part of the Karachi Harbour Rehabilitation project (EU-funded).

Reception area:
The raw crabs - mostly caught by fishing vessels hired by the company - are received on the ground floor.

Processing departments:
At the entrance to the room are stainless steel hand-wash basins with soap and a bowl with disinfectant. The room is with air conditioning and with tiles on the floor and walls. The roof is painted in a light colour and well illuminated with neon light.

The room is very good laid out for cleaning.

The water for the department is given an extra UV radiation to be sure that the water do not contaminate the peeled crab products.

The equipment and tables are made mainly of stainless steel, the workers are sitting on clean benches.

On a conveyer band the final products are inspected for impurities in ultraviolet light.

The crab meat are collected in plastic trays before packing in the tins.

Packing area:
In the processing room is an area where the products are manually packed in round tins which are sealed and pasteurised. Labels are put round the tins.

Chillrooms, freezing facilities and coldstore:
There are 4 compressors in a separate compressor room for the air condition plant and the coldstore.

A standby power plant can supply the processing plant with electricity in case of interruption the public supply.

Crushed block ice is used in the production.

Technical level and maintenance:
The production is manually done, except sealing the tins with easy open lids.

The rooms and equipment are very well maintained and so are the 4 compressors in the refrigeration plant.

Quality control/assurance:

The production is performed under good sanitary and hygiene conditions. The workers are wearing white working clothes on the upper part of the body and they have their hair covered with hairnet.

Extensive personal hygienic care:
- hand washing, hand inspection for wounds, hair caps, no leaving of factory (lunch at the factory)

Extensive cleaning care:
- Regular wash-down
- Water used comes from tankers with clean water

Extensive product check:
- samples are randomly checked for bacteria
- in case of problems more frequent checks

Bacteriologically controls are done in the laboratory in the processing department and the sealing of tins can be controlled.

A good water quality is assured by treating all water when pumped from the watertanks and given an extra UV radiation before used in the processing department.

The processing plant can fulfill the sanitary and hygiene requirement from the export markets for high value products.

Markets/products:
The products are pasteurized and canned crab meat in 8 - 12 different varieties, crab meat, crab fingers, stuffed crab, shell back side etc.
- Crab USA
- Crab brain Japan
- Crab offal France

The offal is exported to France in 2 kg frozen blocks.

A production of around 5 tons per day. This amount is hardly sufficient for the American buyer, so no other markets have been investigated.

Competitors on the American market are Thailand and Taiwan, who have the advantage of a can production of their own. Cans in Pakistan are imported from France and the USA.

Environmental aspects:
Crab offal is sold. Waste water goes to public sewage system.

Company: code no. 6

Processing facilities and capacities:
Building:
A two-story building with all processing on the ground floor, and the administration department on the first floor. A small lane which can take small vans leads to the entrance to the processing department.

If fish are received in surplus they are stored temporarily in a room with seven basins of concrete.

Reception area:
The raw material is received in a yard from which it can be transported in baskets or boxes through an air lock chamber to processing department which has raw material room with concrete basins along the walls.

On the floors are concrete terrazzo tiles and along the walls open drain channels.

The walls in the room have been painted and are not easy to wash.

During the visit fish and shrimp were stored in ice and water in stainless steel basins in the processing department.

The temperature in raw shrimp received in ice in plastic boxes was measured during the visit to be zero degree.

Processing departments:
The fish and shrimp are processed on stainless steel tables in the processing room, which is connected to the room for raw material through a doorway without door or plastic strips. A crushing mill is standing in a corner to crush the ice blocks.

Packing area:
The products are packed in an area in the processing department on tables with a balance.

The floors in the department for processing and packing are covered with tiles as in the raw material room. The walls have been painted. The room can be ventilated by roof propellers..

Along the walls in the processing/packing room are open drain channels without tiles.

Chillrooms, freezing facilities and coldstore:
In direct connection with the processing department is a room with 4 plate freezers of 800-1000 kg per cycle, capacity approx. 14 tons/24 hours.
2 tunnel blast freezers, 3 tons per 8 hours charge, capacity approx. 12 tons/24 hours.
The temperature in one of the freezers with fish was measured to be -10° C.
Coldstores with fibreglass doors. Total capacity approx. 200 tons.

Materials can be transported between the front room at the freezers to the floor above.

The refrigeration plant is ammonia and has Sabroe, Douglas compressors and some old types. The suction temperature at the compressor was during the visit -18° C, so the temperature in the rooms is higher.

A standby 250 KW generator with a gas engine is placed in a separate room at the yard.

Technical level and maintenance:
The tables and equipment in the processing and packing department are stainless and good. So are the floors in these departments. The walls and ceiling need painting to be easy washable. The drain channels are not easy to clean.

The floor in the freezer room needs to be repaired and the cabinets round the freezers are under repair but not finished. At some of them there are no roof so the cold are dispersed to the surroundings. The room is very difficult to clean.

The standby generator plant looks good and so do some of the compressors. Other compressors are under repair or very old one step compressors.

Quality control/assurance:
The raw material and products look to be handled carefully and the foremen in each department were responsible of the quality and reports to the processing manager.

The different rooms are not separated in any way, so contamination of the finished products can occur from the raw material.

The water from the public supply appared not to be treated in the plant before use.

It is difficult to achieve good hygiene and sanitary standards. The processing plant cannot fulfill the hygiene and sanitary requirements from the export markets in Europe and the US for high value quality products.

The standby generator assures that it is possible to keep the temperature in the cold storage incase of interrupted power supply, but the impression was that the refrigeration plant was not able to keep the products at modern low temperatures below -18° C because the suction temperature at the compressor manometer was -18° C, so it is higher at the evaporators in the rooms.

Markets:
The plant is reported to process fish, shrimp, lobster and crab. No freshwater fish production. They are selling all over the world. They have 5 - 8 agents with contacts to international companies.

They produce 38 items in 350 counts. No specialization, but think it would be better.

- Taiwan Cuttlefish
- Hong Kong Shrimps
- China "
- Spain "
- Holland "

Environmental conditions:

Company: code no. 7

Processing facilities and capacities:
Building:
Constructed in the same way as company code no. 6. A small reception area leads into a room where the rest of the processing takes place. On the first floor is the administration department.

Reception area:
The company can receive the raw material in a yard and store it in a small room before entering the processing room. The floor is terrazzo tiles and plastered painted walls. In the room was a balance for raw material.

The raw material was stored in plastic boxes with water and ice in the processing department. During the visit the temperature was measured to be +9° C. The ice block is crushed manually in rubber tubs.

Processing departments:
The room has also terrazzo tiles floor, painted walls, an insect killer and ventilators under the roof. For processing the shrimp are stainless tables and trays for the different size of the grated shrimp.

Packing area:
Is situated in a corner of the processing room. There are tables and a balance for packing the different products in boxes and masters. A drainage channel goes through the middle of the processing and packing room.

Chillrooms, freezing facilities and coldstore:
The products are frozen in a building at the neighbouring company, code 6.

Technical level and maintenance:
The equipment is based on traditional manually work and well maintained.

The floor and walls are maintained and washable. The room for raw material and for the final products are not separated.

Quality control/assurance:
The products specifications can be marked on pre-printed fields on the 2 kg boxes.

The room is well illuminated for grading the quality of the shrimps after appearance.

There is a water hose in the room for cleaning.

No changing rooms with wash basins and lavatories were observed.
The factory can be upgraded to fulfill reasonable hygiene and sanitary requirements from markets buying traditional products.

Markets/products:
Are newly established and are therefore concentrating on the easy and cheap products:

PUD, PD, PD tail on, PUD tail on, broken, headless, shell on, white brown, pink.

- China ribbonfish
- China Croaker
- ?? Shrimps

Environmental conditions:
The drained waste water goes to the sewage system.

Company: code no. 8

Processing facilities and capacities:
Building:
A small yard leads to the entrance of the processing room. A van or truck cannot park in front of the door, so the raw material has to be carried.

Reception area:
The raw material is delivered in the yard outside the processing department on the ground floor. Through a door it can be transported into the processing department.

Water is available for washing the raw material.

Processing departments:
In the department are mostly produced un-peeled shrimps and a little fish. Peeling the shrimp is done on wage contract in another company.

In the department is concrete columns. The floor is made of concrete and painted and the walls are painted. There are a few original drains in the floor. More have been added later by carving out.

The room is partly separated by a wall in an area with stainless tables for deheading, grading and peeling shrimp. The final products are collected in stainless trays.

The water used when producing the shrimp is ice-chilled in a tank and pumped to the tables.

Next to this area are concrete basins for storing the processed shrimps in water and ice before they are packed in plastic wrapper in cardboard boxes. The boxes are stored in the freezing moulds at trolleys before loaded in the plate freezer.

The plate freezers are standing in the processing department. Two washing drums are available for washing the products.

Propel ventilators on the roof. Hand-wash basin near the grading area.

Packing area:
The packing is done in the processing department and the packaging material is stored in a room next to the processing department.

Chillrooms, freezing facilities and coldstore:
4 plate freezers , capacity 15 tons/24 hours. Mostly used for the shrimp products in 4 kg boxes and 4 boxes in one master.
2 blast freezers, capacity 4 tons/24 hours. Used when producing fish products in 10 kg blocks with two in one master carton. Not currently used.

3 cold storage rooms, capacity approx. 125 tons. Little use are made of coldstores due to ready availability of refrigerated shipping containers, proximity of port and frequency of shipping.

They have Sabroe compressors but also some old compressors and there are two diesel standby generator plants.

Technical level and maintenance:
The building is old and some of the columns need repair. In the concrete floor are holes filled with water.

The equipment for grading and packing the products are stainless and well maintained. The freezing moulds are made of iron and painted, so they are not easy to maintain and clean. It is the same for the trolleys.

The processing department can be upgraded to fulfill reasonable hygiene and sanitary requirements for the export markets but cannot fulfill requirements for exporting high value products to the European markets.

Quality control/assurance:
No quality assurance system as such. They rely upon the costumers/buyers acceptance. The products are inspected by MFD who occasionally come and collect samples of the shipment for further inspection.

The customer in Japan acts as advisor on quality aspects and train the foremen who after that train the workers.

They would like to cook themselves but know that it requires a very high hygiene standard and better trained workers. They have got offers for the machinery.

Markets:
The company originally produced canned shrimp. About ten years ago production shifted to frozen shrimp, because of high prices on imported cans.

The small shrimps - "kiddi" - are the most important. The raw material they get from 3-4 suppliers who buy from the market and do the peeling. About 10% comes from other harbours than Karachi. They have a small production of Kalri and Jaira shell-on. This material is bought by their own staff.

The majority are graded and frozen. They are then cooked by the buyer. They mainly produce on orders, which implies low storage cost. It will normally take 3 - 4 days to execute an order (produce and acquire the necessary certificates).

The main markets today are:
- pealed shrimps — UK, France, Belgium, Germany, USA, Japan (decreasing importance), cartons of 4 kg in 20 kg master carton.

The company has a small production of frozen fish.
- ribbonfish — China, 10 kg frozen in trays, 2 in a master carton of 20 kg.

Buyers in the different countries have been stable during many years. They know exactly what quality they will get.

Environmental conditions:

Waste water goes to the central sewage system. The offal was until 5 years ago made to fishmeal, but over the last years no one have been interested to buy. The plant closes entirely during off-season.

Company: code no 9

Processing facilities and capacities:
Building:
It is a two storey building with processing on the ground floor and 1st floor. On the flat roof was the office. The building had a look of neglect, the stairs and corridors with several damages in the floor and walls.

Another company occupies most of the ground floor facilities.

Reception area:
The fish are received in the yard and can be lifted to the 1st floor in an open lift.

Processing departments:
The floor is with big concrete tiles and the walls are painted in two colours. For processing the fish are used tables with steel rack and stainless steel table top.

The fish can be frozen in plate and blast freezers.

Packing area:
The same floor and walls as in the processing department. Some holes in the floor. For packing the fish are electroplated tables.

During the visit the temperature in big fish was measured to be +4° C and in small fish +1° C. Both fish lots were stored in baskets.

They cannot process shrimp. They do not know how to smoke and they have no equipment.

Chillrooms, freezing facilities and coldstore:
4 plate freezers each of 900 kg, capacity approx. 19 tons/24 hours.
2 blast freezers each of 3 tons/12 hours, capacity approx. 15 tons/24 hours.
It was mentioned that they had a large freezing capacity of 45 t/d.
5 coldstores. Storage capacity approx. 300 tons.

The temperature between the products in a small coldstore was measured during defrosting the evaporator to be -10° C.

The frozen products can be transported from the 1st floor down to the yard on a conveyerbelt.

The refrigeration plant is with older vertical compressors. They must try to control expenses, power is a major expenditure. The standby generator plant has been under repair for some time.

Technical level and maintenance:
The technical installations need some upgrading, and the room repair and maintenance to fulfill modern conditions.

Quality control/assurance:

The frozen fish was carried manually in whicker baskets to be packed in plastic bags and in master boxes which were overfilled.

The temperatures in the coldstore seems to be too high.

The plant need some upgrading to fulfill reasonable hygiene and sanitary standards.

The products are inspected by the director.

Markets/products:
The main raw material is today freshwater fish to Saudi Arabia, the Gulf States and the UK. They process (freeze) 2-3 tons per day.

Species handled: Grass carp (three variants), walking catfish, spring eel, common sheat fish, moonlight gounay, tilapia, and others. Most are exported whole, a few gutted. They would like to know more about how to present their products.

The export to the UK a Health and Origin and a Quality certificate is needed.

A special product is dried mullet eggs for Taiwan.

Environmental aspects:
Waste products are thrown away.

Company: code no. 10

Processing facilities and capacities:
Building:
Same building as company code no. 9. This occupies most of the processing area on the ground floor.

Reception area:
The raw material is received in a yard common to company code no 9, and are transported to a room with big terrazzo tiles and plastered walls. There are holes in the floor and the walls need to be washed.

Processing departments:
Next to the raw material room is the processing room with big terrazzo tiles and plastered painted walls.

At stainless steel tables the deheaded shrimps were graded and collected in plastic boxes in ice water. The room temperature was measured to be +19° C and the temperature in headless shrimps with shell on from the grading table was measured to be +9° C.

The workers are sitting on high benches with the seats covered with washable plastic cover. Some of the workers had a thin rubber glove on their right hand.

Packing area:
The products are packed in plastic film in carton boxes before plate freezing.

The boxes with shrimps are stored in rusty freezing trays and collected in rusty trolleys.

Squid are processed as whole and as tube for freezing, no ongoing processing was seen, but the whole cuttlefish was stored on the floor in the raw material room and the tubes in a container.

Chillrooms, freezing facilities and coldstore:
The company use the plate freezers and coldstores belonging to company code no. 9.

Technical level and maintenance:
The technical level of the equipment is the traditional and the not stainless, need maintenance and painting.

The raw material room needs to be maintained and cleaned to fulfill reasonable sanitary and hygienic requirements.

Quality control/assurance:
The company does its own quality control and the manager is interested in new technique and technology to improve the quality in order to be able to produce higher value products.

The plant can hardly be upgraded to fulfill the requirement from the market to produce high value shrimp products.

Markets:
The fish are bought from the market. Shrimps are mainly from 1-day catches from nearby harbours. They process 10 - 20 tons/day.

- Shrimps, white, brown, PUD, tail-on: Japan, Far East, Malaysia, UK, USA
- Fish: Japan, Far East, Malaysia, UK, USA
- White pomfret, China
- Ribbonfish, China
- white croaker China
- Squid France (tubes), Spain (whole)
- Cuttlefish Taiwan

The buyers are mainly agents from other companies.

Environmental aspects:
Waste products are sold to fishmeal production.

Company: code no. 11

Processing facilities and capacities:
Building:
A two-storey concrete building. A small yard with terrazzo flagstones leads to the reception area. A huge wall surrounds the building. Processing takes place only on the ground floor.

Reception area:
The area for receiving the raw material is a yard with an open shed of sheets and a wall against the street, on the floor are big concrete tiles. In the yard the shrimps can be deheaded.

There is a loading platform with entrance to the processing room and to a room with stainless washing drums for PUD shrimps and a raw material room with concrete floor and plastered walls that had been painted.

The ceiling in the raw material room has been covered with insulating plates, but a big part of them are fallen down. In the room are concrete basins and stainless containers for storing the fish raw material and the deheaded shrimps in ice water. In the room the fish was stored well iced during the visit.

Processing departments:
There are entrances to the processing department from the raw material room and from the platform through a doorway without any separations in the rooms.

The drain channels in the floor are covered with steel plate. The floor is terrazzo tiles and on the walls are white tiles in approx. 1.5 meter height. The walls above and the ceiling are painted in light colours and the room is well illuminated.

In the room are machines for roller grading the shrimps, and the equipment for processing the shrimps are stainless tables with high benches where the seats are covered with washable plastic. There are stainless trays for the graded products and stainless tables with scales for weighing the products before packing in cardboard boxes.

Plastic containers are used for storing the graded shrimp products in ice water before packing. Some fish filets were stored in wicker baskets after having been washed. The temperature in the fish was measured to be +9° C.

Packing area:
The assembled cardboard boxes are stored in a corner of the department before packing the shrimps in polyethylene in the boxes. The freezing trays and the trolleys are of painted steel.

Chillrooms, freezing facilities and coldstore:
3 plate freezers are standing at the end of the room.
1 blast freezer. Total freezing capacity is approx. 20 tons per 24 hours.

Coldstores:
The refrigeration plant is ammonia with mainly old vertical compressors. A standby

generator plant at 250 KVA supplies the plant in case of electricity interruption.

Technical level and maintenance:
The processing equipment is the traditional for processing shrimp and hand filleted fish. Most are in stainless steel and well maintained. The freezing frames and trolleys are rusty and need painting.

The processing room is very well maintained and washable, however, the drain channels with unpainted steelplate cowers looks difficult to clean.

The compressors look maintained, but it was not possible to see at which suction pressure they work. A manometer showed 1.5 atm.

Quality control/assurance:
The company do its own quality control according to the customers requirements, and have a local Lloyds survey report issued once a year.

The water supply is from pipeline and is not given further treatment. The clean and unclean rooms were not sufficient separated, but the processing department can be upgraded to fulfill reasonable hygiene and sanitary standards for exporting quality products.

The shipments are followed by Health Certificate (required for export to EU) and in certain cases (if the costumer request) a Quality and Origin certificate issued by MFD.

Markets/products:
The products are bought from the market hall. Some shrimps come from other harbours nearby, but not as far as Baluchistan. They process shrimps, marine and freshwater fish.

- shell-on white Japan
- headless shell-on UK
- PUD UK
- Pomfret, white, Chinese, black, whole round
  Japan
- Sole, gutted, fillet, IQF, block frozen, interleaved
  Japan
- Ribbonfish whole or gutted
  Japan
- Squid tubes

They have their own package, but often it is the costumer who decides how the product should be and how it should be packaged. They themselves acquire the packaging material. All package material is imported.

They feel a shortage of raw material on the market.

Environmental aspects:
They use the normal sewage system for waste water.

Byproducts (offal) are sold to fishmeal.

CODEX STANDARD FOR QUICK FROZEN SHRIMPS OR PRAWNS 1/

(World-wide Standard)

1. SCOPE

This standard applies to quick frozen raw shrimps or prawns and those which have been steamed, parboiled or fully boiled during processing, which are offered for direct consumption. It does not apply to products indicated as intended for further processing or speciality products where shrimps or prawns only constitute a portion of the edible contents.

2. DESCRIPTION

2.1 Product Definition

2.1.1 Quick frozen shrimps or prawns are obtained from species of the families:

(a) Penaeidae
(b) Pandalidae
(c) Crangonidae
(d) Palaemonidae

2.1.2 Shrimps or prawns of comparable size and colour may be packed together. Shrimps or prawns of obvious visual differences shall not be packed together.

2.2 Process Definition

2.2.1 The shrimps or prawns can be:

(i) "Raw" - not exposed to temperatures sufficiently high to coagulate the protein at the surface;
(ii) "Parboiled" - heated for a period of time such that the surface of the product reaches a temperature adequate to coagulate the protein at the surface but inadequate to coagulate the protein at the thermal centre;
(iii) "Cooked" - heated for a period of time such that the thermal centre of the product reaches a temperature adequate to coagulate the protein.

2.2.2 The product, after any suitable preparation, shall be subjected to a freezing process and shall comply with the conditions laid down hereafter. The freezing process shall be carried out in appropriate equipment in such a way that the range of temperature of maximum crystallization

1/ Formerly CAC/RS 92-1976

2.3.5 Pieces - Where the count of unglazed shrimps or prawns is greater than 150 per kg (> 70 per lb) a shrimp or prawn consisting of less than four segments is regarded as a piece;
where the count of unglazed shrimps or prawns is 150 or less per kg (≤ 70 per lb) a shrimp or prawn consisting of less than five segments is regarded as a piece.
Such pieces may be present in the products defined in sub-sections 2.3.1, 2.3.2, 2.3.3 and 2.3.4, subject to the tolerances provided for in 3.3.6. When pieces are packed and sold as such, they shall be designated in accordance with sub-section 6.1.2.

2.3.6 Other Presentation

Any other presentation of the product shall be permitted provided that it:

(i) is sufficiently distinctive from other forms of presentation laid down in this standard;
(ii) meets all the other requirements of this standard;
(iii) is adequately described on the label to avoid confusing or misleading the consumer.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Raw Material

Quick frozen shrimps or prawns shall be prepared from clean and sound fresh or prefrozen shrimps or prawns of the species of the families listed under sub-section 2.1.1 and of a quality suitable for human consumption.

3.2 Optional Ingredients

Water utilized either for glazing, cooking or for freezing may contain:

- Salt
- Lemon juice
- Sugars (sucrose, invert sugar, dextrose, fructose, glucose syrup, lactose)
- Seasonings, spices, flavourings (hydrolized vegetable protein).

3.3 Final Product

3.3.1 Appearance

- Generally uniform in size within any count category or container where appropriate.

is passed quickly. The quick freezing process shall not be regarded as complete unless and until the product temperature has reached -18°C (0°F) at the thermal centre after thermal stabilization. The product shall be maintained under such conditions as will maintain the quality during transportation, storage and distribution up to and including the time of final sale.

The recognized practice of repacking quick frozen products under controlled conditions followed by the re-application of the quick freezing process as defined is permitted.

2.2.3 Shrimps or prawns shall be either individually quick frozen or quick frozen in mass.

2.3 Presentation

Shrimps or prawns shall be presented as:

2.3.1 Whole - Cephalothorax (head), shell and tail fans on.
2.3.2 Headless - Cephalothorax (head) removed, shell and tail fans on.
2.3.3 Peeled (tail fans on) - Cephalothorax (head) removed and shell removed down to the last segment. The shell on the last segment and the tail fans to be present.

(i) Round - Prepared as described in 2.3.3.
(ii) Round and deveined - In addition to the preparation as described in 2.3.3, the back of the peeled segments of the shrimps or prawns have been cut open and the vein removed.
(iii) Fantail (split or cutlet) - In addition to the preparation described in 2.3.3, the peeled segments of the shrimps or prawns have been split longitudinally through the dorsal axis, laid open and the vein removed.
(iv) Western style - In addition to the preparation as described in 2.3.3, the peeled segments of the shrimps or prawns have been split completely and longitudinally through the dorsal axis of the first four segments, laid apart and the vein removed.

2.3.4 Peeled (tail fans removed) - Cephalothorax (head) and all shell including tail fans removed.

(i) Peeled - Prepared as described in 2.3.4.
(ii) Peeled and deveined - In addition to the preparation as described in 2.3.4, the back has been cut open and the vein removed.

mass) expressed as a range or the average number of shrimps or prawns, either in the metric system ("Système International" units) or avoirdupois or both systems of measurement as required by the country in which the product is sold, and may be so declared as described in Annex D.

3.3.6 Defects and Tolerances

The quick frozen shrimps or prawns in the various forms of presentation shall comply with the definition and essential quality factors as set forth in this standard, subject to tolerance allowances as defined in Annex B and set out in Annex C.

4. FOOD ADDITIVES

Additive		Maximum level in the final product
pH Regulating Agents		**Limited by Good Manufacturing Practice**
Citric acid		
Diphosphate, tetrasodium or tetrapotassium (Na or K pyrophosphate)		5 g/kg expressed as P_2O_5, singly or in combination
Triphosphate, pentasodium or pentapotassium (Na or K tripolyphosphates)		
Antioxidant		**Limited by Good Manufacturing Practice**
L-Ascorbic acid		
Colours		
Canthaxanthine, CI 75135		30 mg/kg singly or in combination, in heat treated products only
Erythrosine, CI 45430		
Ponceau 4R, CI 16255		
Preservatives		
Metabisulphite, sodium or potassium	(For use in raw product only)	100 mg/kg in the edible part of the raw product; 30 mg/kg in the edible part of the cooked product, expressed as SO_2; singly or in combination
Sulphite, hydrogen, sodium		
Sulphite, sodium		

- Easily separated when labelled as individually frozen.
- Colour characteristic of the species and habitat or areas from which harvested and practically free from: dehydration, black spot, blackening or other abnormal colouration.
- Clean; free from foreign matter and practically free from: legs, loose shell, antennae, heads; shrimps or prawns with parts of heads, veins, or improperly peeled as appropriate for the form of presentation; torn, damaged shrimps or prawns; and free from otherwise unacceptable shrimps or prawns.
- Free from pieces in any form of presentation except as provided for in sub-section 2.3.5 and subject to the tolerances provided for in sub-section 3.3.6.

3.3.2 Odour and Flavour

After thawing and where applicable cooking by steaming or boiling as set out in sub-section 7.3, shrimps or prawns shall have a good characteristic odour and flavour and shall be free from objectionable odours and flavours of any kind. A natural odour or flavour reminiscent of iodoform is not a defect unless excessive.

3.3.3 Texture

After thawing and where applicable cooking by steaming or boiling as set out in sub-section 7.3, shrimps or prawns shall be relatively firm and not mushy.

3.3.4 Glazing

Shrimps or prawns may be glazed either individually or in bulk. When glazed the coating of ice shall cover the shrimps or prawns so as to minimize dehydration and oxidation. The water used in glazing shall be of potable quality. Standards for potability shall be not less than those contained in the "International Standards for Drinking Water", World Health Organization (3rd Edition). Any ingredient or additive as listed in 3.2 and 4, respectively, used for glazing shall fulfill the hygiene requirements of section 5.

3.3.5 Size Classification

Quick frozen shrimps or prawns in any form of presentation may be sized or unsized. If they are sized they may be packed by count, i.e. the average number of shrimps or prawns of comparable size per unit weight (or

5. HYGIENE AND HANDLING

5.1 It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the following Codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1969 Rev. 1)

(ii) The Recommended International Code of Practice for Frozen Fish (CAC/RCP 16-1978)

(iii) The Recommended International Code of Practice for Shrimps and Prawns (CAC/RCP 17-1978)

5.2 To the extent possible in good manufacturing practice, the product shall be free from objectionable matter.

5.3 When tested by appropriate methods of sampling and examination, the raw product:

a. shall be free from micro-organisms in amounts harmful to man;
b. shall be free from parasites harmful to man; and
c. shall not contain any toxic substances originating from micro-organisms in amounts which may represent a hazard to health.

5.4 When tested by appropriate methods of sampling and examination, the heat treated product:

a. shall not contain any pathogenic micro-organisms; and
b. shall not contain any substances originating from micro-organisms in amounts which may represent a hazard to health.

6. LABELLING

In addition to Sections 1, 2, 4 and 6 of the International General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1981) the following specific provisions apply.

6.1 Name of the Food

6.1.1 The name of the product as declared on the label shall be "shrimp" or "shrimps" or "prawns" provided that such labelling is customarily used in the country where the products are to be sold and provided the product is identified to the consumer so that he will not be misled.

6.1.2 In addition, there shall appear on the label in conjunction with the name of the product, the form of presentation as indicated below:

Form of presentation	Labelling designation
(a) Whole	- Whole shrimp, shrimps or prawns.
(b) Headless	- Headless shrimp, shrimps or prawns.
(c) Peeled (tail fans on)	- Peeled (tail fans on), shrimp, shrimps or prawns. In addition, one of the words "round", "deveined", "fantail", "split", "cutlet", or "butterfly" may be used as appropriate.
(d) Peeled (tail fans removed)	- Peeled shrimp, shrimps or prawns. In addition, the word "deveined" may be used as appropriate.
(e) Pieces	- Pieces of shrimp, shrimps or prawns - shell on.
(f) Peeled Pieces or Broken Shrimp Meat	- Peeled pieces of shrimp, shrimps or prawns. In addition, the word "deveined" may be used if appropriate.
(g) Other Presentations	- If the product is produced in accordance with sub-section 2.3.6 the label shall contain in close proximity to the word "shrimps" or "prawns" such additional words or phrases that will avoid misleading or confusing the consumer.

6.1.3 The nature of the product shall appear on the label: raw, parboiled, or cooked. In the case of heated products, an indication of the degree of cooking shall conform to the provisions of sub-section 2.2.1.

6.1.4 (i) The term "quick frozen" shall also appear on the label, except that the term "frozen" 1/ may be applied in countries where this term is customarily used for describing the product processed in accordance with sub-section 2.2.2 of this standard.

1/ "Frozen" - This term is used as an alternative to "quick frozen" in some English speaking countries.

(ii) Shrimps or prawns in any form of presentation may be individually quick frozen, and in such cases the labelling may be "individually quick frozen" or "individually frozen" 1/.

6.1.5 In addition to the specified labelling designations above, the usual or common trade names of the variety may be added so long as it is not misleading to the consumer in the country in which the product will be distributed.

6.2 Size Classification

If quick frozen shrimps or prawns are labelled as to count, the classification must comply with the provisions of sub-section 3.3.5.

6.3 List of Ingredients

6.3.1 A complete list of ingredients shall be declared on the label in descending order of proportion; sub-sections 3.2(b) and (c) of the General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1981) are applicable.

6.3.2 When the shrimps or prawns are glazed and the cooking and/or glazing water contains additives these shall be declared.

6.4 Net Contents

6.4.1 The net contents shall be declared by weight in either the metric system ("Système International" units) or avoirdupois or both systems of measurement as required by the country in which the product is sold.

6.4.2 Where products have been glazed the declaration of net contents of the product shall be exclusive of the glaze.

6.5 Name and Address

The name and address of the manufacturer, packer, distributor, importer, exporter or vendor of the product shall be declared.

6.6 Country of Origin

6.6.1 The country of origin of the product shall be declared if its omission would mislead or deceive the consumer.

1/ "Frozen" - This term is used as an alternative to "quick frozen" in some English speaking countries.

6.6.2 When the product undergoes further processing in a second country which changes its nature, the country in which the processing is performed shall be considered to be the country of origin for the purpose of labelling.

6.7 Lot Identification

Each container shall be permanently marked in code or in clear to identify the producing factory and the lot.

7. SAMPLING, EXAMINATION AND ANALYSIS

7.1 Sampling

Sampling of lots for examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1969).

7.2 Thawing Procedure (CAC/RM 40-1971)
(to be used prior to examination, as appropriate)

The sample is thawed by enclosing it in a film type bag and immersing in an agitated water bath held at approximately 20°C (68°F). The complete thawing of the product is determined by gently squeezing the bag occasionally so as not to damage the texture of the shrimps or prawns, until no hard core or ice crystals are felt.

7.3 Cooking Procedure (to be used prior to examination, as appropriate)

7.3.1 Steaming - Steam the sample in a closed dish of 18 cm (7 inches) diameter over boiling water for about 15-20 minutes if frozen, or for about 7-10 minutes after thawing the product. The dish should be covered and should be kept in a water bath at 60°C (140°F) during testing.

7.3.2 Boiling in Bag - Place the sample into a boilable film type pouch and seal. Immerse the pouch and its contents into boiling water and cook until the internal temperature of the product reaches 70°C (160°F). Remove the boiled product from the pouch and drain.

Note: See also sub-sections 7.2 and 7.5

7.4 Examination of Physical Defects

The sample shall be examined for defects set out in Annex B according to Annex C.

7.5 Organoleptic Assessment

Organoleptic assessment of the product shall be made only by persons trained in such assessment and shall take place after the sample has been thawed in accordance with the procedure as set forth in sub-section 7.2. When applicable, the sample shall be cooked prior to organoleptic assessment by a method set out in sub-section 7.3.

7.6 Determination of Net Contents of Products covered by Glaze

Procedure

(1) Open the package with quick frozen shrimps or prawns immediately after removal from low temperature storage.

(i) For the raw product, place the contents in a container into which fresh water at room temperature is introduced from the bottom at a flow of approximately 25 litres per minute.

(ii) For the cooked product place the product in a container containing an amount of fresh potable water of 27°C (80°F) equal to 8 times the declared weight of the product. Leave the product in the water until all ice is melted. If the product is block frozen, turn block over several times during thawing. The point at which thawing is complete can be determined by gently probing the block apart.

(2) Weigh a dry clean sieve with woven wire cloth with nominal size of the square aperture 2.8 mm (ISO Recommendation R565) or alternatively 2.38 mm (U.S. No. 8 Standard Screen).

(i) If the quantity of the total contents of the package is 500 g (1.1 lbs) or less, use a sieve with a diameter of 20 cm (8 inches).

(ii) If the quantity of the total contents of the package is more than 500 g (1.1 lbs) use a sieve with a diameter of 30 cm (12 inches).

(3) After all glaze that can be seen or felt has been removed and the shrimps or prawns separate easily, empty the contents of the container on the previously weighed sieve. Incline the sieve at an angle of about 20° and drain for two minutes.

(4) Weigh the sieve containing the drained product. Subtract the mass of the sieve; the resultant figure shall be considered to be the net content of the package.

8. CLASSIFICATION OF DEFECTIVES

A sample shall be considered a "defective" when it fails to meet one or more of the quality requirements for the final product:

a. appearance (sub-section 3.3.1) subject to the tolerance for physical defects per sample unit of 500 g as shown in Annex C;
b. odour and flavour (sub-section 3.3.2);
c. texture (sub-section 3.3.3).

9. LOT ACCEPTANCE

A lot will be considered as meeting the final product requirements of this standard when:

a. the total number of "defectives" does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1969); and
b. the average net contents of all sample units examined is not less than the declared net contents; and
c. the size of the shrimps or prawns complies with the declared count (Annex D); and
d. there are no obvious visual differences as described in 2.1.2.

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ANNEX A

The traditional practice followed in several countries of including "prawn", with some qualifying designation, in the common name of species which are not true prawns, such as "Dublin Bay Prawn" for Nephrops norvegicus, is recognized and nothing in the standard shall prevent this practice continuing provided due precautions are taken in the labelling of the product to ensure that the consumer in those countries will not be misled.

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ANNEX B

DEFINITIONS OF DEFECTS IN QUICK FROZEN SHRIMPS OR PRAWNS
(to be examined in the thawed state)

(a) Dehydration - the shrimps or prawns shell or meat contains whitish areas which seriously affect its appearance, texture or palatability.

(b) Discoloration - the shrimps or prawns possess an obvious yellow appearance which seriously affects their appearance, texture and/or palatability.

(c) Blackening - the shrimps or prawns show an obvious dark appearance which seriously affects their appearance or palatability.

(d) Black spot - the shrimps or prawns shell or meat contains darkened areas which seriously affect its appearance.

(e) Headless - a shrimp or prawn with the cephalothorax (head) entirely detached.

(f) Partially headless - a shrimp or pawn having an incompletely detached cephalothorax (head).

(g) Cut or torn, damaged, piece:

(i) Cut or torn - a shrimp or prawn having a break in the meat greater than one third of the thickness of the shrimp or prawn at the location of the cut or tear.

(ii) Damaged - a shrimp or prawn which is crushed or mutilated so as to seriously affect its appearance.

(iii) Piece - a portion of a shrimp or prawn that contains less than five segments for counts $\leq$ 150/kg (70/lb) and less than four segments for counts $>$ 150/kg (70/lb).

(h) Improperly peeled - shrimps or prawns which have shell or pieces of shell on the meat in excess of that warranted by the form of presentation.

(i) Incompletely deveined - any black or dark vein that has not been removed if warranted by the form of presentation.

(j) Legs, loose shells, antennae:

(i) Legs - walking legs either loose or attached to the shrimps or prawns.

(ii) Loose shell - any piece of shell which is completely detached from the shrimps or prawns.

(iii) Antennae.

(k) Extraneous materials - any material in a container which is not shrimp material and is not harmful when eaten.

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ANNEX C - DEFECT TABLE

C.1 This table and the maximum allowable number of instances of defects are based on an AQL of 6.5. The defect table is not applied to individual packs but to consignments in association with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (CAC/RM 42-1969). Instances of defects are awarded for the indicated occurrences per 500 grammes sample of product.

Type of Defect	Applicable to Forms of Presentation 2.1-6						One Instance	Additional Instance
	1	2	3	4	5	6		
COUNT: Not more than 440/kg (200/lb)								
Dehydration/desiccation	x	x	x	x	x	x	5% by count	+ 3%
Discoloration (includes blackening and other abnormal coloration)	x	x	x	x	x	x	5% by count	+ 3%
Black spot meat	x	x	x	x	x	x	8% by count	+ 4%
shell	x	x			x	x	12% by count	+ 6%
Headless	x						5% by weight	+ 3%
Partially headless	x						8% by weight	+ 4%
Cut, torn or damaged	x	x	x	x		x	5% by weight	+ 5%
Pieces	x	x	x	x		x	5% by weight	+ 5%
Improperly peeled in relation to form of presentation			x	x			5% by weight	+ 3%
Incompletely deveined (when specified)			x	x	x	x	5% by count	+ 3%
Heads, parts of heads and soft shell shrimp		x					5% by weight	+ 2%
Legs, loose shell and antennae			x	x	x	x	5 by number	+ 3
Extraneous material (not harmful)	x	x	x	x	x	x	2 by number	+ 1
COUNT: Over 440/kg (200/lb)								
Dehydration/desiccation	x	x	x	x	x	x	5% by count	+ 3%
Black spot meat	x	x	x	x	x	x	8% by count	+ 4%
shell	x	x			x	x	12% by count	+ 6%
Cut, torn or damaged	x	x	x	x		x	5% by weight	+ 5%
Pieces	x	x	x	x		x	25% by weight	+ 10%
Improperly peeled in relation to form of presentation			x	x			5% by weight	+ 3%
Incompletely deveined (when specified)			x	x	x	x	5% by count	+ 3%
Heads; parts of heads and soft shell shrimp		x					5% by weight	+ 2%
Legs and loose shell			x	x	x	x	20 by number	+ 5
Extraneous material (not harmful)	x	x	x	x	x	x	2 by number	+ 1

Maximum allowable tolerances for defects: A sample of 500 grammes will be considered defective if it contains more than 4 instances of defects.

C.2 Tolerance for uniformity (as set forth in Annex D)

Uniformity of size is determined by computing the actual count per kilogramme or pound of the shrimps or prawns in the sample unit, then allowing a tolerance as follows:

1. 60% of the shrimp must fall into the stated count bracket, except that:
2. Only 20% of the remaining shrimp by number may fall into the next two larger count brackets, and the remaining 20% must fall into any lower count bracket.

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D.2 The following is an alternative method for size classification:

The size classification shall refer to the unglazed shrimps or prawns contained in the final product and may be expressed by indicating the average number of shrimps or prawns per unit of weight. The weight of the largest shrimp or prawn in the package shall not exceed the average weight (calculated by dividing the unit of weight by the average number declared) of the shrimp or prawn by more than 10% of such average weight, and the weight of the smallest shrimp or prawn shall not be more than 10% below such average weight.

ANNEX D

SIZE CLASSIFICATION (RANGES) FOR UNGLAZED SHRIMPS OR PRAWNS* (OPTIONAL)

D.1 WHOLE SHRIMPS OR PRAWNS

Number of whole shrimps or prawns per kilogramme
≤ 9
10 - 15
16 - 23
24 - 32
33 - 42
43 - 53
54 - 65
66 - 78
79 - 99
100 -120

ALL STYLES EXCEPT WHOLE

Number of shrimps or prawns per kilogramme	Number of shrimps or prawns per pound
≤ 21	≤ 9
22 - 33	10 - 15
34 - 44	16 - 20
45 - 55	21 - 25
56 - 66	26 - 30
67 - 77	31 - 35
78 - 88	36 - 40
89 -110	41 - 50
111 -132	51 - 60
133 -154	61 - 70
155 -176	71 - 80
177 -198	81 - 90
199 -220	91 -100
221 -286	101 -130
287 -440	131 -200
441 -660	201 -300
661 -1100	301 -500
> 1101	≥ 501

* The count designation of quick frozen shrimps or prawns shall apply to the unglazed shrimps or prawns in the form of presentation designated on the label.

QUICK FROZEN SHRIMPS OR PRAWNS (CODEX STAN 92-1981)

(a) shall be quick frozen shrimps or prawns obtained from species of the families: *Penaeidae; Pandalidae; Crangonidae; Palaemonidae*. The standard applies to quick frozen raw shrimps or prawns and those which have been steamed, parboiled or fully boiled during processing and which are offered for direct consumption.

(b) shrimps or prawns of obvious visual differences shall not be packed together

(c) the freezing process shall not be regarded as complete unless and until the product temperature has reached -18°C (0°F) at the thermal centre after thermal processing. The recognized practice of repacking quick frozen products under controlled conditions followed by the reapplication of the quick freezing process is permitted.

(d) shrimps and prawns shall be presented as: Whole; Headless; Peeled (tail fans on); Round; Round and Deveined; Fantail (split or cutlet); Western Style; Peeled (tail fan removed); Peeled and Deveined; Pieces (where the count of unglazed shrimps or prawns is greater than 150 per kg a shrimp or prawn consisting of less than four segments is regarded as a piece; where the count is 150 or less per kg a shrimp or prawn consisting of less than 5 segments is regarded as a piece); or Other Presentations

(e) water used either for glazing, cooking or freezing may contain: salt, lemon juice, sugars, seasonings, spices, flavourings (including hydrolyzed vegetable proteins)

(f) may contain the following food additives indicated in the relevant pages of Division 3 as listed below:

FOOD ADDITIVE/CLASS NAME	INS NO.	PAGE
Acidity Regulator	330	4, 109
Phosphate	451 b	48, 71
"	450 a	47, 89
Anti-oxidant	300	23
Colour	161 g	36
"	127	38
"	124	39
Preservative	224	76
"	223	80
"	222	79
"	221	79

(g) in addition to the mandatory labelling provisions found in the General Standard for the Labelling of Prepackaged Foods, the following specific provisions apply:

- the name of the product shall be "shrimp" or "shrimps" or "prawns"
- the form of presentation as described in Section (d) shall appear on the label in conjunction with the name of the product using the designations stated below:

Form of Presentation	Labelling Designation
Whole	Whole shrimp, shrimps or prawns
Headless	Headless shrimps, shrimps or prawns

Peeled (tail fans on)	Peeled (tail fans on) shrimps or prawns. In addition, one of the words "deveined", "fan-tail", "split", "cutlet", or "butterfly" may appear
Peeled (tail fans removed)	Peeled shrimp, shrimps or prawns. In addition, the word "deveined" may be used, as appropriate.
Pieces	Pieces of shrimps, shrimps or prawns, shell on.
Peeled pieces or Broken shrimp meat	Peeled pieces of shrimp, shrimps or prawns. In addition the word "deveined" may be used if appropriate.
Other Presentations	In close proximity to the word "shrimps" or "prawns", such additional words or phrases as will avoid misleading the consumer

- the nature of the product shall appear on the label: raw, parboiled, or cooked
- where products have been glazed, the declaration of net contents shall be exclusive of the glaze
- where the shrimps of prawns are glazed and the cooking and/or glazing water contains additives, these shall be declared

EEC COUNCIL DIRECTIVE (91/493/EEC) of 22 July 1991 laying down the health conditions for the production and the placing on the market of fishery products

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 43 thereof,

Having regard to the proposals from the Commission (1),

Having regard to the opinions of the European Parliament (2),

Having regard to the opinions of the Economic and Social Committee (3),

Whereas, with a view to achieving the internal market and more especially to ensuring the smooth operation of the common organization of the market in fishery products established by Regulation (EEC) No 3796/81 (4), as last amended by Regulation (EEC) No 2886/89 (5), it is essential that the marketing of fish and fish products should no longer be hindered by disparities existing in the Member States in respect of health requirements; whereas this will enable production and placing on the market to be better harmonized and bring about competition on equal terms, whilst ensuring quality products for the consumer;

Whereas the European Parliament in its legislative resolution of 17 March 1989 (6) requested the Commission to come forward with comprehensive proposals on the hygienic production and placing on the market of fishery products, including solutions for the problem of nematodes;

Whereas fishery products freshly caught are in principle free of contamination with micro-organisms; whereas however contamination and subsequent decomposition may occur when handled and treated unhygienically;

Whereas therefore the essential requirements should be laid down for the correct hygienic handling of fresh and processed fishery products at all stages of production and during storage and transport;

Whereas it is appropriate to apply by analogy certain marketing standards which are laid down pursuant to Article 2 of Regulation (EEC) No 3796/81, in order to fix the health quality of these products;

Whereas it is the responsibility primarily of the fisheries industry to ensure that fishery products meet the health requirements laid down in this Directive;

Whereas the competent authorities of the Member States must, by carrying out checks and inspections, ensure that producers and manufacturers comply with the said requirements;

Whereas Community control measures should be introduced to guarantee the uniform application in all Member States of the standards laid down in this Directive;

Whereas, in order to ensure the smooth operation of the internal market, the measures should apply in an identical manner to trade within the Member States and to trade between the Member States;

Whereas in the context of intra-Community trade, the rules laid down in Council Directive 89/662/EEC of 11 December 1989 concerning veterinary checks in intra-Community trade with a view to the completion of the internal market (7) as amended by Directive 90/675/EEC (8) apply to fishery products;

Whereas fishery products from third countries intended to be placed on the market of the Community must not qualify for more favourable arrangements than those applied in the Community; whereas provision should therefore be made for a Community procedure for the inspection in third countries of the conditions of production and placing on the market in order to permit the application of a common import system based on conditions of equivalence;

Whereas the products in question are subject to the rules concerning checks and to safeguard measures covered by Council Directive 90/675/EEC of 10 December 1990 laying down the principles governing the organization of veterinary checks on products entering the Community from third countries;

Whereas, so that account may be taken of particular circumstances, derogations should be granted to some establishments already operating before 1 January 1993 so as to allow them to adapt to all the requirements laid down in this Directive;

(1) OJ No C 66, 11. 3. 1988, p. 2;
OJ No C 282, 8. 11. 1989, p. 7 and OJ No C 84, 2. 4. 1990, p. 56.
(2) OJ No C 96, 17. 4. 1989, p. 29 and OJ No C 183, 15. 7. 1991.
(3) OJ No C 134, 24. 5. 1988, p. 31 and OJ No C 332, 31. 12. 1990, p. 59.
(4) OJ No L 379, 31. 12. 1981, p. 1.
(5) OJ No L 282, 2. 10. 1989, p. 1.
(6) OJ No C 96, 17. 4. 1989, p. 199.
(7) OJ No L 395, 30. 12. 1989, p. 13.
(8) OJ No L 373, 31. 12. 1990, p. 1.

Whereas the Commission should be entrusted with the task of adopting certain measures for implementing this Directive; whereas, to that end, procedures should be laid down introducing close and effective cooperation between the Commission and the Member States within the Standing Veterinary Committee;

Whereas the essential requirements laid down in this Directive may need further specification,

HAS ADOPTED THIS DIRECTIVE

CHAPTER I

General provisions

Article 1

This Directive lays down the health conditions for the production and the placing on the market of fishery products for human consumption.

Article 2

For the purposes of this Directive, the following definitions shall apply:

1. *'fishery products'* means all seawater or freshwater animals or parts thereof, including their roes, excluding aquatic mammals, frogs and aquatic animals covered by other Community acts;

2. *'aquaculture products'* means all fishery products born and raised in controlled conditions until placed on the market as a foodstuff. However seawater or freshwater fish or crustaceans caught in their natural environment when juvenile and kept until they reach the desired commercial size for human consumption are also considered to be aquaculture products. Fish and crustaceans of commercial size caught in their natural environment and kept alive to be sold at a later date are not considered to be aquaculture products if they are merely kept alive without any attempt being made to increase their size or weight;

3. *'chilling'* means the process of cooling fishery products to a temperature approaching that of melting ice;

4. *'fresh products'* means any fishery product whether whole or prepared, including products packaged under vacuum or in a modified atmosphere, which have not undergone any treatment to ensure preservation other than chilling;

5. *'prepared products'* means any fishery product which has undergone an operation affecting its anatomical wholeness, such as gutting, heading, slicing, filleting, chopping, etc.;

6. *'processed products'* means any fishery product which has undergone a chemical or physical process such as the heating, smoking, salting, dehydration or marinating, etc., of chilled or frozen products, whether or not associated with other foodstuffs, or a combination of these various processes;

7. *'preserve'* means the process whereby products are packaged in hermetically sealed containers and subjected to heat treatment to the extent that any micro-organisms that might proliferate are destroyed or inactivated, irrespective of the temperature at which the product is to be stored;

8. *'frozen products'* means any fishery product which has undergone a freezing process to reach a core temperature of −18 °C or lower after temperature stabilization;

9. *'packaging'* means the procedure of protecting fishery products by a wrapper, a container or any other suitable device;

10. *'batch'* means the quantity of fishery products obtained under practically identical circumstances;

11. *'consignment'* means the quantity of fishery products bound for one or more customers in the country of destination and conveyed by one means of transport only;

12. *'means of transport'* means those parts set aside for goods in automobile vehicles, rail vehicles and aircraft, the holds of vessels, and containers for transport by land, sea or air;

13. *'competent authority'* means the central authority of a Member State competent to carry out veterinary checks or any authority to which it has delegated that competence;

14. *'establishment'* means any premises where fishery products are prepared, processed, chilled, frozen, packaged or stored. Auction and wholesale markets in which only display and sale by wholesale takes place are not deemed to be establishments;

15. *'placing on the market'* means the holding or displaying for sale, offering for sale, selling, delivering or any other form of placing on the market in the Community, excluding retail sales and direct transfers on local markets of small quantities by fishermen to retailers or consumers, which must be subject to the health checks laid down by national rules for checking the retail trade;

16. *'importation'* means the introduction into the territory of the Community of fishery products from third countries;

17. *'clean seawater'* means seawater or briny water which is free from microbiological contamination, harmful substances and/or toxic marine plankton in such quantities as may affect the health quality of fishery products and which is used under the conditions laid down in this Directive;

18. *'factory vessel'* means any vessel on which fishery products undergo one or more of the following operations followed by packaging: filleting, slicing, skinning, mincing, freezing or processing.

The following are not deemed to be 'factory vessels':

— fishing vessels in which only shrimps and molluscs are cooked on board;

— fishing vessels on board which only freezing is carried out.

Article 3

1. The placing on the market of fishery products caught in their natural environment shall be subject to the following conditions:

(a) they must have:

(i) been caught and where appropriate handled for bleeding, heading, gutting and the removal of fins, chilled or frozen, on board vessels in accordance with hygiene rules to be established by the Council acting by a qualified majority on a proposal from the Commission. The Commission shall submit proposals to that effect before 1 October 1992;

(ii) where appropriate, been handled in factory vessels approved in accordance with Article 7, and in accordance with the requirements of Chapter I of the Annex.

The cooking of shrimps and molluscs on board must comply with the provisions of Chapter III, section I(5), or Chapter IV, section IV(7), of the Annex. Such vessels shall be specifically registered by the competent authorities;

(b) during and after landing they must have been handled in accordance with Chapter II of the Annex;

(c) they must have been handled and, where appropriate, packaged, prepared, processed, frozen, defrosted or stored hygienically in establishments approved in accordance with Article 7, in compliance with the requirements of Chapters III and IV of the Annex.

The competent authority may, notwithstanding Chapter II, section 2 of the Annex, authorize the transfer of fishery products *ex quay* into containers for immediate delivery to an approved establishment or registered auction or wholesale market to be checked there;

(d) they must have undergone a health check in accordance with Chapter V of the Annex;

(e) they must have been appropriately packaged in accordance with Chapter VI of the Annex;

(f) they must have been given an identification mark in accordance with Chapter VII of the Annex;

(g) they must have been stored and transported under satisfactory conditions of hygiene, in accordance with Chapter VIII of the Annex.

2. Where gutting is possible from a technical and commercial viewpoint, it must be carried out as quickly as possible after the products have been caught or landed.

3. The placing on the market of aquaculture products shall be subject to the following conditions:

(a) they must have been slaughtered under appropriate conditions of hygiene. They must not be soiled with earth, slime or faeces. If not processed immediately after having been slaughtered, they must be kept chilled;

(b) they must, in addition, comply with the requirements laid down under 1 (c) to (g).

4. (a) The placing on the market of live bivalve molluscs shall be subject to the requirements laid down in Council Directive 91/492/EEC of 15 July 1991 laying down the health conditions for the production and the placing on the market of live bivalve molluscs (1).

(b) When processed, bivalve molluscs must, in addition to the requirements in point (a), satisfy those of paragraph 1 (c) to (g).

Article 4

Fishery products to be placed on the market alive shall at all times be kept under the most suitable survival conditions.

Article 5

The placing on the market of the following products shall be forbidden:

— poisonous fish of the following families: *Tetraodontidae, Molidae, Diodontidae, Canthigasteridae,*

— fishery products containing biotoxins such as ciguatera toxins or muscle-paralysing toxins.

Detailed requirements concerning the species covered by this Article and concerning methods of analysis shall be laid down in accordance with the procedure prescribed in Article 15.

(1) See page 1 of this Official Journal.

Article 6

1. Member States shall ensure that persons responsible for establishment take all necessary measures, so that, at all stages of the production of fishery products, the specifications of this Directive are complied with.

To that end, the said persons responsible must carry out their own checks based on the following principles;

— identification of critical points in their establishment on the basis of the manufacturing processes used;

— establishment and implementation of methods for monitoring and checking such critical points;

— taking samples for analysis in an approved laboratory by the competent authority for the purpose of checking cleaning and disinfection methods and for the purpose of checking compliance with the standards established by this Directive;

— keeping a written record or a record registered in an indelible fashion of the preceding points with a view to submitting them to the competent authority. The results of the different checks and tests will in particular be kept for a period of at least two years.

2. If the results of own checks or any information at the disposal of the persons responsible referred to in paragraph 1 reveal the risk of a health risk or suggest one might exist and without prejudice to the measures laid down in the fourth subparagraph of Article 3 (1) of Directive 89/662/EEC, the appropriate measures shall be taken, under official supervision.

3. Rules for the application of the second subparagraph of paragraph 1 shall be established in accordance with the procedure laid down in Article 15.

Article 7

1. The competent authorities shall approve establishments once they have verified that these establishments meet the requirements of this Directive, with regard to the nature of the activities they carry out. The approval must be renewed if an establishment decides to carry out activities other than those for which it has received approval.

The competent authorities shall take the necessary measures if the requirements cease to be met. To this end, they shall take particular account of the conclusions of any check carried out in accordance with Article 8.

The competent authority shall register those auction and wholesale markets which are not subject to approval after verifying that such installations comply with the provisions of this Directive.

2. However, subject to the express condition that products coming from factory-vessels and establishments, auction and wholesale markets meet the hygiene standards set by this Directive, Member States may, for the requirements relating to equipment and structures laid down in Chapters I to IV to the Annex, grant to factory-vessels and establishments, auction and wholesale markets a further period expiring on 31 December 1995 within which to comply with the conditions of approval set out in Chapter IX. Such derogations may be granted only to factory-vessels and establishments, auction and wholesale markets, already operating on 31 December 1991, which have, before 1 July 1992, submitted a duly justified application for derogation to the competent national authority. This application must be accompanied by a work plan and programme indicating the period within which it would be possible for them to comply with the requirements in question. Where financial assistance is requested from the Community, only requests in respect of projects complying with the requirements of this Directive can be accepted.

3. The competent authorities shall draw up a list of their approved establishments, each of which shall have an official number.

Each Member State shall notify the Commission of its list of approved establishments and of any subsequent amendment thereof. The Commission shall forward this information to the other Member States.

4. The inspection and monitoring of establishments shall be carried out regularly under the responsibility of the competent authority, which shall at all times have free access to all parts of establishments, in order to ensure compliance with the requirements of this Directive.

If such inspections and monitoring reveal that the requirements of this Directive are not being met, the competent authority shall take appropriate action.

5. Paragraphs 1, 3 and 4 shall also apply in respect of factory vessels.

6. Paragraphs 3 and 4 shall also apply to wholesale and auction markets.

Article 8

1. Experts from the Commission may, in cooperation with the competent authorities of the Member States, make on-the-spot checks insofar as this is necessary to ensure the uniform application of this Directive. They may in particular verify whether establishments are in effect complying with the requirements of this Directive. A Member State in whose territory a check is being carried out shall give all necessary assistance to the experts in carrying out their duties. The Commission shall inform the Member States of the results of the investigations.

2. The arrangements for implementing paragraph 1 shall be adopted in accordance with the procedure laid down in Article 15.

Article 9

1. The rules laid down in Directive 89/662/EEC, as regards fishery products intended for human consumption, shall apply, in particular as regards the organization of and the action to be taken following the inspections to be carried out by the Member States of destination, and the protective measures to be implemented.

2. Directive 89/662/EEC shall be amended as follows:

(a) in Annex A the following indent shall be added:

— Council Directive 91/493/EEC of 22 July 1991 laying down the health conditions for the production and placing on the market of fishery products (OJ No L 268, 24. 9. 1991, p. 15);'

(b) In Annex B the following indent shall be deleted:

'— fishery products intended for human consumption'.

CHAPTER II

Imports from third countries

Article 10

Provisions applied to imports of fishery products from third countries shall be at least equivalent to those governing the production and placing on the market of Community products.

Fishery products caught in their natural environment by a fishing vessel flying the flag of a third country must undergo the checks laid down in Article 18 (3) of Directive 90/675/EEC.

Article 11

1. For each third country or group of third countries, fishery products must fulfil the specific import conditions fixed in accordance with the procedure laid down in Article 15, depending on the health situation in the third country concerned.

2. In order to allow the import conditions to be fixed, and in order to verify the conditions of production, storage and dispatch of fishery products for consignment to the Community, inspections may be carried out on the spot by experts from the Commission and the Member States.

The experts of the Member States who are to be entrusted with these inspections shall be appointed by the Commission acting on a proposal from the Member States.

These inspections shall be made on behalf of the Community, which shall bear any expenditure incurred.

The frequency of and procedure for these inspections shall be determined in accordance with the procedure laid down in Article 15.

3. When fixing the import conditions of fishery products referred to in paragraph 1, particular account shall be taken of:

(a) the legislation of the third country;

(b) the organization of the competent authority of the third country and of its inspection services, the powers of such services and the supervision to which they are subject, as well as their facilities for effectively verifying the implementation of their legislation in force;

(c) the actual health conditions during the production, storage and dispatch of fishery products intended for the Community;

(d) the assurances which a third country can give on the compliance with the standards laid down in Chapter V of the Annex.

4. The import conditions referred to in paragraph 1 shall include:

(a) the procedure for obtaining a health certificate which must accompany consignments when forwarded to the Community;

(b) the placing of a mark identifying the fishery products, in particular with the approval number of the establishment of origin, except in the case of frozen fishery products, landed immediately for canning and bearing the certificate provided for under (a);

(c) drawing up a list of approved establishments and auction or wholesale markets registered and approved by the Commission in accordance with the procedure laid down in Article 15;

For that purpose, one or more lists of such establishments shall draw up on the basis of a communication from the competent authorities of the third country to the Commission. An establishment may not appear on a list unless it is officially approved by the competent authority of the third country exporting to the Community. Such approval shall be subject to observance of the following requirements:

— compliance with requirements equivalent to those laid down in this Directive,

— monitoring by an official inspection service of the third country.

5. The conditions referred to in paragraph 4 (a) and (b) may be modified in accordance with the procedure laid down in Article 15.

The list referred to in paragraph 4 (c) may be amended by the Commission, in accordance with the rules established by Commission Decision 90/13/EEC (1).

6. To deal with specific situations and in accordance with the procedure laid down in Article 15, imports may be authorized direct from an establishment or factory vessel of a third country where the latter is unable to provide the guarantees laid down in paragraph 3, provided that the establishment or factory vessel in question has received special approval following an inspection carried out in accordance with paragraph (2). The authorization decision shall fix the specific import conditions to be followed for products coming from that establishment or factory vessel.

7. Pending the fixing of the import conditions referred to in paragraph 1, the Member States shall ensure that the conditions applied to imports of fishery products from third countries shall be at least equivalent to those governing the production and placing on the market of Community products.

Article 12

1. The rules and principles laid down by Directive 90/675/EEC shall apply, notably as regards the organization of and follow up to the inspections to be carried out by the Member States.

2. Without prejudice to compliance with the rules and principles referred to in paragraph 1 of this Article and pending implementation of the decisions provided for in Article 8 (3) and Article 30 of Directive 90/675/EEC, and in Article 11 of this Directive the relevant national rules for applying Article 8 (1) and (2) of the said Directive shall continue to apply.

CHAPTER III

Final provisions

Article 13

The Annexes shall be amended by the Council, acting by a qualified majority on a proposal from the Commission.

Article 14

The Commission, after consulting the Member States, shall by 1 July 1992 submit a report to the Council concerning the minimum structural and equipment requirements to be met by small establishments which distribute on the local market and are situated in regions subject to particular supply constraints, together with any proposals, on which the Council, acting under the voting procedure laid down in Article 43 of the Treaty, shall act before 31 December 1992.

Article 15

1. Where the procedure laid down in this Article is to be followed, the Chairman shall refer the matter to the Standing Veterinary Committee set up by Decision 68/361/EEC (2) hereafter referred to as the Committee, either on his own initiative or at the request of a Member State.

2. The representative of the Commission shall submit to the committee a draft of the measures to be taken. The committee shall deliver its opinion on the draft within a time limit which the chairman may lay down according to the urgency of the matter. The opinion shall be delivered by the majority laid down in Article 148 (2) of the Treaty in the case of decisions which the Council is required to adopt on a proposal from the Commission. The votes of the representatives of the Member States within the committee shall be weighted in the manner set out in that Article. The chairman shall not vote.

3. (a) The Commission shall adopt the measures envisaged if they are in accordance with the opinion of the committee.

(b) If the measures envisaged are not in accordance with the opinion of the committee, or if no opinion is delivered, the Commission shall, without delay, submit to the Council a proposal relating to the measures to be taken. The Council shall act by a qualified majority.

If, on the expiry of a period of three months from the date of referral to the Council, the Council has not acted, the proposed measures shall be adopted by the Commission, save where the Council has decided against the said measures by a simple majority.

Article 16

In order to take into account the possible failure to take a decision on the detailed rules for applying this Directive by 1 January 1993, necessary transitional measures may be adopted in accordance with the procedure laid down in Article 15 for a period of two years.

Article 17

The provisions of this Directive shall be re-examined before 1 January 1998 by the Council, acting on proposals from the Commission, on the basis of experience gained.

(1) OJ No L 8, 11. 1. 1990, p. 70.

(2) OJ No L 255, 18. 10. 1968, p. 23.

Article 18

The Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive before 1 January 1993. They shall notify the Commission thereof.

When Member States adopt these measures, they shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The methods of making such a reference shall be laid down by the Member States.

Article 19

This Directive is addressed to the Member States.

Done at Brussels, 22 July 1991.

For the Council

The President

P. DANKERT

ANNEX

CHAPTER I

CONDITIONS APPLICABLE TO FACTORY VESSELS

I. Conditions concerning design and equipment

1. The minimum requirements for factory vessels are as follows:

   (a) a reception area set aside for taking fishery products on board, designed and arranged into pounds or pens that are large enough to allow each successive catch to be separated. The reception area and its movable parts must be easy to clean. It must be designed in such a way as to protect the products from the sun or the elements and from any source of dirt or contamination;

   (b) a system for conveying fishery products from the reception area to the work area that conforms with rules of hygiene;

   (c) work areas that are large enough for the preparation and processing of fishery products in proper conditions of hygiene. They must be designed and arranged in such a way as to prevent any contamination of the products;

   (d) storage areas for the finished products that are large enough and designed so that they are easy to clean. If a waste processing unit operates on board, a separate hold must be designated for the storage of these by-products;

   (e) a place for storing packaging materials that is separate from the product preparation and processing areas;

   (f) special equipment for pumping waste or fishery products that are unfit for human consumption either directly into the sea or, where circumstances so require, into a watertight tank reserved for that purpose. If waste is stored and processed on board with a view to cleaning, separate areas must be allocated for that purpose;

   (g) equipment providing a supply of potable water within the meaning of Council Directive 80/778/EEC of 15 July 1980 relating to the quality of water intended for human consumption [1] or pressurized clean seawater. The seawater intake must be situated in a position where it is not possible for the water being taken in to be affected by discharges into the sea of waste water, waste and engine coolant outlets;

   (h) a suitable number of changing rooms, wash basins and toilets, the latter not opening directly onto areas where fishery products are prepared, processed or stored. The wash basins must be equipped with appliances for washing and drying the hands that comply with hygiene requirements; the wash-basin taps must not be hand-operable.

2. Areas used for the preparation and processing or freezing/quick-freezing of fishery products must have:

   (a) a non-slip floor that is also easy to clean and disinfect and equipped for easy drainage of water. Structures and fixtures must have limber holds that are large enough not to be obstructed by fish waste and to allow water to drain freely;

   (b) walls and ceilings that are easy to clean, particularly where there are pipes, chains or electricity conduits;

   (c) the hydraulic circuits must be arranged or protected in such a way as to ensure that it is not possible for any leakage of oil to contaminate fishery products;

   (d) adequate ventilation and, where necessary, proper vapour extraction;

   (e) adequate lighting;

   (f) appliances for cleaning and disinfecting tools, equipment and fittings;

   (g) appliances for cleaning and disinfecting the hands with taps that are not hand-operable and with single use towels.

[1] OJ No L 229, 30. 9.1980, p. 11. Directive last amended by the 1985 Act of Accession (OJ No L 302, 15. 11. 1985, p. 218).

3. Equipment and tools such as cutting benches, containers, conveyors, gutting or filleting machines, etc., must be resistant to seawater corrosion, easy to clean and disinfect and well-maintained.

4. Factory vessels which freeze fishery products must have:

   (a) a refrigeration plant sufficiently powerful to lower the temperature rapidly so as to achieve a core temperature that complies with the specifications of this Directive;

   (b) refrigeration plants sufficiently powerful to keep fishery products in the storage holds at a temperature that complies with the specifications of this Directive. The storage holds must be equipped with a temperature recording system placed so that it can easily be consulted.

II. Conditions of hygiene relating to on-board handling and storage of fishery products

1. A qualified person on board the factory vessel must be responsible for applying good fishery products manufacturing practices. That person shall have the authority to ensure that the provisions of this Directive are applied and shall make available to inspectors the programme for inspecting and checking critical points as applied on board, a register containing that person's comments and the temperature recordings that may be required.

2. The general conditions of hygiene applicable to areas and equipment shall be those laid down in Chapter III, section II (A), of this Annex.

3. The general conditions of hygiene applicable to staff shall be those laid down in Chapter III, section II (B), of this Annex.

4. Heading, gutting and filleting must be carried out under the conditions of hygiene laid down in Chapter IV, section I (2), (3) and (4) of this Annex.

5. On-board processing of fishery products must be carried out under the conditions of hygiene laid down in Chapter IV, sections III, IV and V of this Annex.

6. Fishery products must be wrapped and packaged under the conditions of hygiene laid down in Chapter VI of this Annex.

7. On-board storage of fishery products must be carried out under the conditions of hygiene laid down in Chapter VIII, points 1 and 2, of this Annex.

CHAPTER II

REQUIREMENTS DURING AND AFTER LANDING

1. Unloading and landing equipment must be constructed of material which is easy to clean and disinfect and must be kept in a good state of repair and cleanliness.

2. During unloading and landing, contamination of fishery products must be avoided. It must in particular be ensured that:

   — unloading and landing operations proceed rapidly;

   — fishery products are placed without unnecessary delay in a protected environment at the temperature required on the basis of the nature of the product and, where necessary, in ice in transport, storage or market facilities, or in an establishment;

   — equipment and handling practices that cause unnecessary damage to the edible parts of the fishery products are not authorized.

3. Parts of auction or wholesale markets where fishery products are displayed for sale must:

   (a) be covered and have walls which are easy to clean;

   (b) have waterproof flooring which is easy to wash and disinfect and laid in such a way as to facilitate the drainage of water and have a hygienic waste water disposal system;

(c) be equipped with sanitary facilities with an appropriate number of wash basins and flush lavatories. Wash basins shall be supplied with materials for cleaning the hands and single use hand towels;

(d) be well lit to facilitate the inspection of fishery products provided for in Chapter V of this Annex;

(e) when they are used for display or storage of fishery products, not be used for other purposes; vehicles emitting exhaust fumes which may impair the quality of the fishery products not be admitted to markets; undesirable animals must not be admitted;

(f) be cleaned regularly and at least after each sale; crates must, after each sale, be cleaned and rinsed inside and outside with drinking water or clean seawater; where required, they must be disinfected;

(g) have displayed in a prominent position signs prohibiting smoking, spitting, eating and drinking;

(h) be closeable and be kept closed when the competent authority considers it necessary;

(i) have facilities to provide adequate water supplies satisfying the conditions laid down in Chapter III, section I, point 7 of this Annex;

(j) have special watertight receptacles made of corrosion-resistant materials for fishery products which are unfit for human consumption;

(k) insofar as they do not have their own premises on-the-spot or in the immediate vicinity on the basis of the quantities displayed for sale, have, for the purposes of the competent authority, an adequately equipped lockable room and the equipment necessary for carrying out inspections.

4. After landing or, where appropriate, after first sale, fishery products must be transported without delay, under the conditions laid down in Chapter VIII, of this Annex, to their place of destination.

5. However, if the conditions laid down in point 4 are not fulfilled, the markets in which fishery products may be stored before being displayed for sale or after being sold and pending transport to their place of destination must have sufficiently large cold rooms which satisfy the conditions laid down in Chapter III, section I, point 3 of this Annex. In such cases, fishery products must be stored at a temperature approaching that of melting ice.

6. The general conditions of hygiene laid down in Chapter III, section II — with the exception of point B 1(a) — of this Annex shall apply *mutatis mutandis* to the markets in which fishery products are displayed for sale or stored.

7. The wholesale markets in which fishery products are displayed for sale or stored shall be subject to the same conditions as those laid down in points 3 and 5 of this Chapter and to those set out in points 4, 10 and 11 of Chapter III, section I of this Annex.

The general conditions of hygiene laid down in Chapter III, section II of this Annex shall apply *mutatis mutandis* to wholesale markets.

CHAPTER III

GENERAL CONDITIONS FOR ESTABLISHMENTS ON LAND

1. General conditions relating to premises and equipment

Establishment shall afford at least the following facilities:

1. working areas of sufficient size for work to be carried out under adequate hygienic conditions. Their design and layout shall be such as to preclude contamination of the product and keep quite separate the clean and contaminated parts of the building;

2. in areas where products are handled, prepared and processed:

(a) waterproof flooring which is easy to clean and disinfect and laid down in such a way as to facilitate the drainage of the water or provided with equipment to remove water;

(b) walls which have smooth surfaces and are easy to clean, durable and impermeable;

(c) ceilings or roof linings which are easy to clean;

(d) doors in durable materials which are easy to clean;

(e) adequate ventilation and, where necessary, good steam and water-vapour extraction facilities;

(f) adequate natural or artificial lighting;

(g) an adequate number of facilities for cleaning and disinfecting hands. In work rooms and lavatories taps must not be hand-operable. These facilities must be provided with single use hand towels;

(h) facilities for cleaning plant, equipment and utensils;

3. in cold rooms where fishery products are stored:

— the provisions set out under point 2 (a), (b), (c), (d) and (f);

— where necessary, a sufficiently powerful refrigeration plant to keep products at temperatures prescribed in this Directive;

4. appropriate facilities for protection against pests such as insects, rodents, birds, etc.;

5. instruments and working equipment such as cutting tables, containers, conveyor belts and knives made of corrosion-resistant materials, easy to clean and disinfect;

6. special watertight, corrosion-resistant containers for fishery products not intended for human consumption and premises for the storage of such containers if they are not emptied at least at the end of each working day;

7. facilities to provide adequate supplies of drinking water within the meaning of Directive 80/778/EEC, or alternatively of clean seawater or seawater treated by an appropriate system, under pressure and in sufficient quantity. However, by way of exception, a supply of non-drinking water is permissible for the production of steam, fire-fighting and the cooling of refrigeration equipment, provided that the pipes installed for the purpose preclude the use of such water for other purposes and present no risk of contamination of the products. Non-drinking-water pipes must be clearly distinguished from those used for drinking water or clean seawater;

8. hygienic waste water disposal system;

9. an adequate number of changing-rooms with smooth, water-proof, washable walls and floors, wash basins and flush lavatories. The latter may not open directly onto the work rooms. The wash basins must have materials for cleaning the hands and disposable towels; the wash basin taps must not be hand-operable;

10. if the volume of products treated requires regular or permanent presence an adequately equipped lockable room for the exclusive use of the inspection service;

11. adequate facilities for cleaning and disinfecting means of transport. However, such facilities are not compulsory if there is a requirement for the means of transport to be cleaned and disinfected at facilities officially authorized by the competent authority;

12. establishments keeping live animals such as crustaceans and fish must have appropriate fittings ensuring the best survival conditions provided with water of a quality such that no harmful organisms or substances are transferred to the animals.

II. General conditions of hygiene

A. *General conditions of hygiene applicable to premises and equipment*

1. Floors, walls and partitions, ceilings or roof linings, equipment and instruments used for working on fishery products must be kept in a satisfactory state of cleanliness and repair, so that they do not constitute a source of contamination for the products.

2. Rodents, insects and any other vermin must be systematically exterminated in the premises or on the equipment; rodenticides, insecticides, disinfectants and any other potentially toxic substances must be stored in premises or cupboards which can be locked; their use must not present any risk of contamination of the products.

3. Working areas, instruments and working equipment must be used only for work on fishery products. However, following authorization by the competent authority they may be used at the same time or other times for work on other foodstuffs.

4. Drinking water, within the meaning of Directive 80/778/EEC, or clean seawater must be used for all purposes. However, by way of an exception, non-drinking waster may be used for steam production, fire-fighting and the cooling of refrigeration equipment, provided that the pipes installed for the purpose preclude the use of such water for other purposes and present no risk of contamination of the products.

5. Detergents, disinfectants and similar substances must be approved by the competent authority and used in such a way that they do not have adverse effects on the machinery, equipment and products.

B. *General conditions of hygiene applicable to staff*

1. The highest possible standard of cleanliness is required of staff. More specifically:

(a) staff must wear suitable clean working clothes and headgear which completely encloses the hair. This applies particularly to persons handling exposed fishery products;

(b) staff assigned to the handling and preparation of fishery products must be required to wash their hand at least each time work is resumed; wounds to the hands must be covered by a waterproof dressing;

(c) smoking, spitting, eating and drinking in work and storage premises of fishery products must be prohibited.

2. The employer shall take all the requisite measures to prevent persons liable to contaminate fishery products from working on and handling them, until there is evidence that such persons can do so without risk.

When recruited, any person working on and handling fishery products shall be required to prove, by a medical certificate, that there is no impediment to such employment. The medical supervision of such a person shall be governed by the national legislation in force in the Member State concerned or in the case of third countries by specific guarantees to be fixed under the procedure set out in Article 15.

CHAPTER IV

SPECIAL CONDITIONS FOR HANDLING FISHERY PRODUCTS ON SHORE

I. **Conditions for fresh products**

1. Where chilled, unpackaged products are not dispatched, prepared or processed immediately after reaching the establishment, they must be stored or displayed under ice in the establishment's cold room. Re-icing must be carried out as often as is necessary; the ice used, with or without salt, must be made from drinking water or clean seawater and be stored under hygienic conditions in receptacles provided for the purpose; such receptacles must be kept clean and in a good state of repair. Prepacked fresh products must be chilled with ice or mechanical refrigeration plant creating similar temperature conditions.

2. If they are not carried out on board, operations such as heading and gutting must be carried out hygienically. The products must be washed thoroughly with drinking water or clean seawater immediately after such operations.

3. Operations such as filleting and slicing must be carried out in such a way as to avoid the contamination or spoilage of fillets and slices, and in a place other than that used for heading and gutting operations. Fillets and slices must not remain on work tables any longer than is necessary for their preparation. Fillets and slices to be sold fresh must be chilled as quickly as possible after preparation.

4. Guts and parts that may constitute a danger to public health must be separated from and removed from the vicinity of products intended for human consumption.

5. Containers used for the dispatch or storage of fresh fishery products must be designed in such a way as to ensure both their protection from contamination and their preservation under sufficiently hygienic conditions and, more particularly, they must provide adequate drainage of melt water.

6. Unless special facilities are provided for the continuous disposal of waste, the latter must be placed in leakproof, covered containers which are easy to clean and disinfect. Waste must not be allowed to accumulate in working areas. It must be removed either continuously or as soon as the containers are full and at least at the end of each working day in the containers or to the premises referred to in Chapter III, section I, paragraph 6 of this Annex. The containers, receptacles and/or premises set aside for waste must always be thoroughly cleaned and, if appropriate, disinfected after use. Waste stored there must not constitute a source of contamination for the establishment or of pollution of its surroundings.

II. Conditions for frozen products

1. Plants must have:

(a) freezing equipment sufficiently powerful to achieve a rapid reduction in the temperature so that the temperatures laid down to in this Directive can be obtained in the product;

(b) freezing equipment sufficiently powerful to keep products in storage rooms at a temperature not exceeding those laid down in this Directive, whatever the ambient temperature may be.

However, for technical reasons related to the method of freezing and to the handling of such products, for whole fish frozen in brine and intended for canning, higher temperatures than those laid down in this Directive are acceptable although they may not exceed −9 °C.

2. Fresh products to be frozen or quick-frozen must comply with the requirements of section I of this Chapter.

3. Storage rooms must have a temperature recording device in a place where it can easily be read. The temperature sensor of the recorder must be located in the area furthest away from the cold source, i.e. where the temperature in the storage room is the highest.

Temperature charts must be available for inspection by the supervisory authorities at least during the period in which the products are stored.

III. Conditions for thawing products

Establishments that carry out thawing operations must comply with the following requirements:

1. fishery products must be thawed under hygienic conditions; their contamination must be avoided and there must be adequate drainage for any melt water produced.

During thawing, the temperature of the products must not increase excessively;

2. after thawing, fishery products must be handled in accordance with the requirements of this Directive. When they are prepared or processed, these operations must be carried out without delay. If they are put directly onto the market, particulars as to the thawed state of the fish must be clearly marked on the packaging in accordance with Article 5 (3) of Council Directive 79/112/EEC of 18 December 1978 on the approximation of the laws of the Member States relating to the labelling, presentation and advertising of foodstuffs (1).

IV. Conditions for processed products

1. Fresh, frozen and thawed products used for processing must comply with the requirements of sections I or II of this Chapter.

2. Where the processing treatment is carried out to inhibit the development of pathogenic micro-organisms, or if it is a significant factor in the preservation of the product, the treatment must be scientifically recognized by the law in force, or in the case of a treatment of products referred to in Chapter I Section 1 (b) and (c) of Directive 91/492/EEC which have not been relayed or purified, such treatment must be approved, in accordance with the procedure laid down in Article 15 of this Directive, within four months of receipt of a request from a Member State.

The person responsible for an establishment must keep a register of the processing carried out. Depending on the type of process employed, heating time and temperature, salt content, pH, water content, etc., must be monitored and controlled. Records must be kept at least for the expected storage life of the products and be available to the competent authority.

(1) OJ No L 33, 8. 2. 1979, p. 1. Directive last amended by Directive 91/72/EEC (OJ No L 42, 16. 1. 1991, p. 22).

3. For products which are preserved for a limited period by a treatment such as salting, smoking, drying or marinading, the appropriate conditions for storage must be clearly marked on the packaging, in accordance with Directive 79/112/EEC.

In addition, the following conditions shall be complied with.

4. *Canning*

In the case of fishery products which have been subjected to sterilization in hermetically sealed containers:

(a) the water used for the preparation of cans must be drinking water;

(b) the process used for the heat treatment must be appropriate, having regard to such major criteria as the heating time, temperature, filling, size of containers, etc., a record of which must be kept; the heat treatment must be capable of destroying or inactivating pathogenic organisms and the spores of pathogenic micro-organisms. The heating equipment must be fitted with devices for verifying whether the containers have in fact undergone appropriate heat treatment. Drinking water must be used to cool containers after heat treatment, without prejudice to the presence of any chemical additives used in accordance with good technological practice to prevent corrosion of the equipment and containers;

(c) further checks must be carried out at random by the manufacturer to ensure that the processed products have undergone appropriate heat treament, *viz.*:

— incubation tests: incubation must be carried out at 37 °C for seven days or at 35 °C for ten days, or at any other equivalent combination;

— microbiological examination of contents and containers in the establishment's laboratory or in another approved laboratory;

(d) samples must be taken of production each day at predetermined intervals, to ensure the efficacy of sealing. For that purpose, appropriate equipment must be available for the examination of cross-sections of the can-seams;

(e) checks are carried out in order to ensure that containers are not damaged;

(f) all containers which have undergone heat treatment under practically identical conditions must be given a batch identification mark, in accordance with Council Directive 89/396/EEC of 14 June 1989 on indications or marks identifying the lot to which a foodstuff belongs (1).

5. *Smoking*

Smoking must be carried out in separate premises or a special place equipped, if necessary, with a ventilation system to prevent the smoke and heat from the combustion from affecting other premises or places where fishery products are prepared, processed or stored.

(a) Materials used to produce smoke for the smoking of fish must be stored away from the place of smoking and must be used in such a way that they do not contaminate the products.

(b) Materials used to produce smoke by burning wood that has been painted, varnished, glued or has undergone any chemical preservation treatment must be prohibited.

(c) After smoking, products must be cooled rapidly to the temperature required for their preservation before being packaged.

6. *Salting*

(a) Salting operations must take place in different premises and sufficiently removed from the premises where the other operations are carried out.

(b) Salt used in the treatment of fishery products must be clean and stored in such a way as to preclude contamination. It must not be re-used.

(c) Any container used for salting or brining must be constructed in such a way as to preclude contamination during the salting or brining process.

(d) Containers or areas used for salting or brining must be cleaned before use.

(1) OJ No L 186, 30. 6. 1989, p. 21.

7. *Cooked crustacean and molluscan shellfish products*

Crustaceans and molluscan shellfish must be cooked as follows:

(a) any cooking must be followed by rapid cooling. Water used for this purpose must be drinking water or clean seawater. If no other method of preservation is used, cooling must continue until the temperature approaching that of melting ice is reached;

(b) shelling or shucking must be carried out under hygienic conditions avoiding the contamination of the product. Where such operations are done by hand, workers must pay particular attention to the washing of their hands and all working surfaces must be cleaned thoroughly. If machines are used, they must be cleaned at frequent intervals and disinfected after each working day.

After shelling or shucking, cooked products must immediately be frozen or kept chilled at a temperature which will preclude the growth of pathogens, and be stored in appropriate premises;

(c) every manufacturer must carry out micro-biological checks on his production at regular intervals, complying with the standards to be fixed in accordance with Chapter V, Section 4 of this Annex.

8. *Mechanically recovered fish flesh*

The mechanical recovery of fish flesh must be carried out under the following conditions:

(a) mechanical recovery of gutted fish must take place without undue delay after filleting, using raw materials free of guts. Where whole fish are used, they must be gutted and washed beforehand;

(b) the machinery must be cleaned at frequent intervals and at least every two hours;

(c) after recovery, mechanically recovered flesh must be frozen as quickly as possible or incorporated in a product intended for freezing or stabilizing treatment.

V. **Conditions concerning parasites**

1. During production and before they are released for human consumption, fish and fish products must be subject to a visual inspection for the purpose of detecting and removing any parasites that are visible.

Fish or parts of fish which are obviously infested with parasites, and which are removed, must not be placed on the market for human consumption.

The detailed rules for this inspection shall be adopted in accordance with the procedure laid down in Article 15 of this Directive, on a proposal from the Commission to be submitted before 1 October 1992.

2. The fish and fish products referred to in point 3 which are to be consumed as they are must, in addition, be subjected to freezing at a temperature of not more than – 20 °C in all parts of the product for not less than 24 hours. Products subjected to this freezing process must be either raw or finished.

3. Fish and products subject to the conditions in point 2:

(a) fish to be consumed raw or almost raw, e.g. raw herring 'maatje';

(b) the following species, if they are to undergo a cold smoking process at which the internal temperature of the fish is less than 60 °C:

— herring,

— mackerel,

— sprat,

— (wild) Atlantic and Pacific salmon;

(c) marinated and/or salted herring where this process is insufficient to destroy the larvae of nematodes.

This list may be amended, in the light of scientific data, in accordance with the procedure laid down in Article 15 of this Directive. In accordance with the same procedure, criteria will be laid down which must enable the processes which are deemed sufficient or insufficient to destroy nematodes to be defined.

4. Manufacturers must ensure that fish and fish products listed in point 3 or the raw materials for use in their manufacture are subjected to the treatment described in point 2, prior to their release for consumption.

5. The fishery products listed in point 3 must, when they are placed on the market, be accompanied by a document from the manufacturer stating the type of process they have undergone.

CHAPTER V

HEALTH CONTROL AND MONITORING OF PRODUCTION CONDITIONS

I. General monitoring

Arrangements for checking and monitoring must be made by the competent authorities in order to establish whether the requirements laid down in this Directive are complied with.

Such arrangements will include, in particular:

1. a check on the fishing vessels, on the understanding that such a check may be carried out during the stay in port;

2. a check on the conditions of landing and first sale;

3. an inspection at regular intervals of establishments to check, in particular:

   (a) whether the conditions for approval are still fulfilled;

   (b) whether the fishery products are handled correctly;

   (c) the cleanliness of the premises, facilities and instruments and staff hygiene;

   (d) whether identification marks are put on correctly;

4. an inspection of the wholesale and auction markets;

5. a check on storage and transport conditions.

II. Special checks

1. *Organoleptic checks*

Without prejudice to the dérogations provided for by Council Regulation (EEC) No 103/76 of 19 January 1976 laying down common marketing standards for certain fresh or chilled fish [1], each batch of fishery products must be submitted for inspection by the competent authority at the time of landing or before first sale to check whether they are fit for human consumption. This inspection comprises an organoleptic check carried out by sampling.

Fishery products complying, as far as the freshness criteria are concerned, with the common marketing standards already laid down pursuant to Article 2 of Regulation (EEC) No 3796/81 are considered to fulfil the organoleptic requirements necessary for compliance with the provisions of this Directive.

The Commission may, where necessary, in accordance with the procedure referred to in Article 15 of this Directive, lay down specific organoleptic requirements for fishery products not harmonized under Regulation (EEC) No 3796/81.

The organoleptic examination must be repeated after the first sale of fishery products, if it is found that the requirements of this Directive have not been complied with or when considered necessary. After the first sale, fishery products must at least comply with the minimum freshness requirements of the aforementioned Regulation.

If the organoleptic examination reveals that the fishery products are not fit for human consumption, measures must be taken to withdraw them from the market and denature in such a way that they cannot be re-used for human consumption.

If the organoleptic examination reveals any doubt as to the freshness of the fishery products, use may be made of chemical checks or microbiological analyses.

2. *Parasite checks*

Before they are released for human consumption, fish and fish products must be subject to a visual inspection, by way of sample, for the purpose of detecting any parasites that are visible.

[1] OJ No L 20, 28. 1. 1976, p. 29. Regulation last amended by Regulation (EEC) No 33/89 (OJ No L 5, 7. 1. 1989, p. 18).

Fish or parts of fish which are obviously infested with parasites, and which are removed, must not be placed on the market for human consumption.

The detailed rules for this inspection shall be established in accordance with the procedure laid down in Article 15.

3. *Chemicals checks*

A. Samples must be taken and subjected to laboratory analysis for the control of the following parameters:

(a) TVB-N (Total Volatile Basic Nitrogen) and TMA-N (Trimethylamine-Nitrogen)

The levels of these parameters must be specified for each category of species in accordance with the procedure laid down in Article 15 of this Directive.

(b) Histamine

Nine samples must be taken from each batch. These must fulfil the following requirements:

— the mean value must not exceed 100 ppm;

— two samples may have a value of more than 100 ppm but less than 200 ppm;

— no sample may have a value exceeding 200 ppm.

These limits apply only to fish species of the following families: Scombridae and Clupeidae. However, fish belonging to these families which have undergone enzyme ripening treatment in brine may have higher histamine levels but not more than twice the above values. Examinations must be carried out in accordance with reliable, scientifically recognized methods, such as high-performance liquid chromatography (HPLC).

B. Contaminants present in the aquatic environment

Without prejudice to the Community rules concerning water protection and management, and in particular those concerning pollution of the aquatic environment, fishery products must not contain in their edible parts contaminants present in the aquatic environment such as heavy metals and organochlorinated substances at such a level that the calculated dietary intake exceeds the acceptable daily or weekly intake for humans.

A monitoring system must be established by the Member States to check the level of contamination of fishery products.

C. In accordance with the procedure laid down in Article 15 of this Directive, the following shall be decided on by not later than 31 December 1992:

(a) the methods of analysis to be used to check the chemical parameters, as well as the sampling plans;

(b) the acceptable levels for the chemical parameters.

4. *Microbiological analyses*

In accordance with the procedure laid down in Article 15 of this Directive, microbiological criteria, including sampling plans and methods of analysis, may be laid down when there is a need to protect public health. The Commission will to this end submit appropriate proposals for measures by 1 October 1992.

CHAPTER VI

PACKAGING

1. Packaging must be carried out under satisfactory conditions of hygiene, to preclude contamination of the fishery products.

2. Packaging materials and products liable to enter into contact with fishery products must comply with all the rules of hygiene, and in particular:

— they must not be such as to impair the organoleptic characteristics of the fishery products;

— they must not be capable of transmitting to the fishery products substances harmful to human health;

— they must be strong enough to protect the fishery products adequately.

3. With the exception of certain containers made of impervious, smooth and corrosion-resistant material which are easy to clean and disinfect, which may be re-used after cleaning and disinfecting, packaging materials may not be re-used. Packaging materials used for fresh products held under ice must provide adequate drainage for melt water.

4. Unused packaging materials must be stored in premises away from the production area and be protected from dust and contamination.

CHAPTER VII

IDENTIFICATION MARKS

Without prejudice to the requirements laid down in Directive 79/112/EEC, it must be possible to trace for inspection purposes the establishment of dispatch of consignments of fishery products, by means of either labelling or the accompanying documents. For that purpose, the following information must appear on the packaging or in the accompanying documents:

— the country of dispatch;

— identification of the establishment by its official approval number or, in the case of separate registering of auction or wholesale markets as laid down in Article 7 (1), third subparagraph of this Directive, the registration number of the auction or wholesale market.

CHAPTER VIII

STORAGE AND TRANSPORT

1. Fishery products must, during storage and transport, be kept at the temperatures laid down in this Directive and in particular:

   — fresh or thawed fishery products and cooked and chilled crustacean and molluscan shellfish products must be kept at the temperature of melting ice;

   — frozen fishery products, with the exception of frozen fish in brine intended for the manufacture of canned foods, must be kept at an even temperature of – 18 °C or less in all parts of the product, allowing for the possibility of brief upward fluctuations of not more than 3 °C, during transport;

   — processed products must be kept at the temperatures specified by the manufacturer, when the circumstances so require, prescribed in accordance with the procedure laid down in Article 15 of this Directive.

2. Where frozen fishery products are transported from a cold-storage plant to an approved establishment to be thawed on arrival for the purposes of preparation and/or processing and where the distance to be covered is short, not exceeding 50 km or one hour's journey, the competent authority may grant a derogation from the conditions laid down in point 1, second indent.

3. Products may not be stored or transported with other products which may contaminate them or affect their hygiene, unless they are packaged in such a way as to provide satisfactory protection.

4. Vehicles used for the transport of fishery products must be constructed and equipped in such a way that the temperatures laid down in this Directive can be maintained throughout the period of transport. If ice is used to chill the products, adequate drainage must be provided in order to ensure that water from melted ice does not stay in contact with the products. The inside surfaces of the means of transport must be finished in such a way that they do not adversely affect the fishery products. They must be smooth and easy to clean and disinfect.

5. Means of transport used for fishery products may not be used for transporting other products likely to impair or contaminate fishery products, except where the fishery products can be guaranteed uncontaminated as a result of such transport being thoroughly cleaned and disinfected.

6. Fishery products may not be transported in a vehicle or container which is not clean or which should have been disinfected.

7. The transport conditions of fishery products to be placed on the market alive must not adversely affect the products.

CHAPTER IX

POINTS OF ANNEX I WHICH MAY BE SUBJECT TO DEROGATIONS AND POSSIBLE CONDITIONS APPLICABLE IN THE CASE OF DEROGATIONS

Re Chapter I Part I of the Annex

1. *Point 1 (a)*

   provided products are sheltered from the sun and the elements and from any source of dirt or contamination.

2. *Point 1 (c)*

   provided any contamination of the products is prevented.

3. *Point 1 (d), first sentence*

   provided the finished products are stored on board at the required temperature.

4. *Point 1 (g), last sentence*

   provided products cannot be contaminated by waste water, waste or engine coolant.

5. *Point 1 (h)*

   provided staff handling fishery products can wash their hands after using the toilet.

6. *Point 2 (a)*

   provided floors are properly cleaned and disinfected.

7. *Point 2 (b), (c) and (d)*

8. *Point 2 (g) on taps and towels*

9. *Point 3*

   provided equipment and tools are well maintained.

Re Chapter II of the Annex

10. *Point 3 (a)*

    provided the walls are kept clean.

11. *Point 3 (b)*

    provided the flooring is kept clean after every sale.

12. *Point 3 (c), first sentence*

13. *Point 3 (e): vehicles emitting exhaust fumes*

    provided products contaminated by exhaust fumes are withdrawn from the market.

14. *Point 3 (j)*

    provided that products which are not fit for human consumption cannot contaminate or be mixed with fishery products.

15. *Point 3 (k)*

16. *Point 7*

insofar as it refers to point 3 of the same Chapter and point 10 of Chapter III, section I.

Re Chapter III Part I of the Annex

17. *Point 1*

provided finished products cannot be contaminated by raw materials or waste.

18. *Point 2 (a)*

provided the flooring is cleaned and disinfected accordingly.

19. *Point 2 (b)*

provided the walls are kept clean.

20. *Point 2 (c)*

provided the ceiling is not a source of contamination.

21. *Point 2 (d)*

22. *Point 2 (e)*

provided products cannot be spoilt or contaminated by the steam.

23. *Point 2 (g)*

provided there are facilities available for staff to wash their hands.

24. *Point 3*

25. *Point 5*

insofar as it relates to corrosion-resistant materials provided instruments and working equipment are kept clean.

26. *Point 6*

provided products cannot be contaminated by waste or leakage therefrom.

27. *Point 10*

Re Chapter IV of the Annex

28. *Part I, point 1*

in respect of the requirement for products being held over to be put in the establishment's cold room provided the products are re-iced as often as necessary during a period not in excess of 12 hours or that a nearby cold room not belonging to the establishment can be used.

29. *Part I, point 6*

in respect of the requirement for waste to be put in leakproof covered containers provided products cannot be contaminated by waste or leakage therefrom.

30. *Part IV, point 5, first paragraph*

provided that every precaution is taken to prevent fishery products that are being prepared or stored from being affected by the smoke.

31. *Part IV, point 6 (a)*

provided fishery products that are being prepared or stored are not affected by salting operations.

ANNEX I

Appendix 8.4

NOTE ON JAPAN IMPORT REGULATIONS FOR FISH PRODUCTS BY ITC

EXPORT QUALITY CONTROL

INTERNATIONAL TRADE CENTRE UNCTAD/GATT

No. 30 **ITC** *September 1991*

*Technical regulations for the import of marine products into Japan **

In view of the rapid increase in Japanese fish imports in recent years and the increasingly important role of imported fish in the Japanese diet, the health authorities are becoming acutely aware of the question of sanitary regulations. As a result of this, Japan has formulated specific requirements as to quality, form, shape, temperature, foreign substance, additives, antiseptic, smell, flesh conditions, bacteria count, packaging etc., which have to be met before the product will be permitted on the Japanese market. Such requirements are set forth in the Japanese Food Sanitation Laws. The following are important factors to be considered prior to exporting marine products to Japan:

1. Inspection

The consignments are usually checked for the following factors:

(a) Whether consignments are rotten and give off a bad smell.

(b) Whether consignments are free from foreign matter or not.

2. Grading

Sum of score points in accordance with the specified scoring standard shall average above 3 and shall not be 1.

3. Temperature

The temperature shall be below -18°C at the core of the product.

4. Net weight

The net weight of the product shall not be less than the declared (labelled) weight.

5. Packaging materials

Packaging material shall be hygienic and strong enough to protect the product from any damage by external force.

6. Labelling

Name and nature of the product should be labelled.

7. Extraneous substance

There shall be no extraneous substance either on the surface or inside the product.

8. Freshness

The product shall not be decomposed. The VN-N (volatile basic nitrogen) content shall be below 25mg/100mg.

9. Size

The size of the shrimps shall conform to the size labelled or contracted.

10. Net weight

(a) Thawing

A block of the sample is put in a bag made of water proof material such as polythene film. The bag is soaked in flowing or still potable water until each of the individual shrimp can be easily separated from the blocks.

(b) Weighing

The bag is emptied into a sieve. After draining for about 2 minutes the sieve is weighed. The temperature of the internal

This note on Export Quality Control has been prepared, without formal editing, as a service to exporters and industries in developing countries by Mr. E. Sierra, Senior Adviser on Export Quality Control, International Trade Centre UNCTAD/GATT, 54-56 rue de Montbrillant, CH-1202 Geneva, Switzerland. Tel. (4122) 7300111; cables: INTRADCEN; telex: 414119 ITC CH; fax: (4122) 733 4439. (Postal address: International Trade Centre UNCTAD/GATT, Palais des Nations, CH-1211 Geneva 10, Switzerland.)

centre of the product shall be measured just before and after thawing. Shrimps are also checked for conformity to the weight.

Examination of size assortment

Weigh a unit of 1 lb (454 g) of shrimp taken at random from the sample and examined for:

(a) The conformity of the number of shrimps (prawns) per lb to the contracted number.

(b) The conformity of the weight of each of the individual shrimps (prawns) to the specifications as shown in table 1.

Sampling and inspection

The inspection is conducted under the provisions of marking specification, based on samples drawn at random under specified sampling rates in proportion to the sizes of lots undergoing inspection. Any single unit of the sample shall be regarded as defective if the unit count does not exceed the count specified in the column A (passed) and there is no major defect (e.g. temperature, labelling, extraneous substance and freshness) in the sample, as shown in tables 2 and 3.

Microbiological standards and tolerance limits for marine products

Marine products should not be contaminated with pathogenic micro organism injurious to human health.

Microbiological standards for fresh and live products are as follows:

V. cholerae	- should be nil
Faecal coliform	- should be nil
Staphylococcus	- should be nil
TPC (frozen/fresh/live marine products for raw consumption)	- 100 000

Inspection is very stringent for the above standards.

Chemical standards and tolerance

The presence of chemicals are not regularly checked. Whenever serious incidents in food occur, special checks start with severe standards.

SO2 Residue: maximum limits 100 ppm

Antibiotic residue: should be nil (especially in cultured eel)

Boric acid: should not be used

PCB: 0.5 ppm

Mercury (Hg): 0.4 ppm

Packing standards

Packages used for fish shall comply with the standards for container packages used for general foods under the Japanese Food Sanitation Law.

Labelling and marking standards

Labelling regulations are more specific and detailed for certain products than others. The label must contain the date of manufacture or the date of importation as well as the location of the manufacturing plant or the name and location of the importer. Nutrients such as vitamins and amino acids contained in food, are regarded as additives when they are applied to food to enrich it. Goods should be labelled and marked according to normal commercial practice. Fishery products must have a sticker

***Table 1*: size assortment of shrimps**

No. of shrimps per pound	Weight of each shrimp (g)
10 or less	43 or more
11 - 15	29 - 43
16 - 20	22 - 29
21 - 25	18 - 22
26 - 30	15 - 18
31 - 35	13 - 15
36 - 40	11 - 13
41 - 50	9 - 11
51 or more	9 or less

Table 2: score table for judgement
(when weight of a unit is more than 1 kg)

Size of lot	Count of samples	Count of defective unit for judgement	
		A (passed)	B (defective)
1 - 10	All	0	1
11 - 100	10	1	2
101 - 500	15	1	2
501 - 1,000	25	2	3
1,001 - 5,000	50	4	5

Table 3: score table for judgement
(when weight of a unit is below than 1 kg)

Size of lot	Count of samples	Count of defective unit for judgement	
		A (passed)	B (defective)
35 - 1,000	35	3	4
1,000 - 5,000	50	4	5
5,000 - 10,000	75	6	7
10,000 - 20,000	110	10	11
20,000 - 50,000	150	10	11
more than 50,000	225	14	15

attached to each package after importation showing in Japanese a detailed description of contents, including artificial colourings or preservatives, name and address of importer and date of importation. Containers of canned frozen fish must be marked and labelled in metric units, even though responsibility for metric measure rests with the Japanese distributor.

Import inspection procedures

Health and Welfare (MHW) is responsible for inspecting all incoming seafood products as well as other foodstuff. This inspection is mandatory under the Japanese Food Sanitation law.

The Japanese Food Sanitation Law stipulates that no imported food stuff is allowed to pass through customs without a written permit issued by the Food Sanitation Inspector of the MHW. Once permitted entry, the goods are treated no differently from domestic products.

Immediately upon arrival of a consignment, the importer submits the notification along with necessary documents to the Ministry of Health and Welfare through the Food Sanitation Inspection Office at the port of entry. One of these documents is a declaration of the name of synthetic chemical compounds contained as preservatives or colouring agent in the food. The inspector then decides whether or not to conduct sampling inspection. Less than about 10 percent of the incoming food products are inspected for freshness, various types of bacteria including intestinal types and Salmonella, whole-someness, food additives etc. If the inspection is passed, the permission for importation is granted and the consignment is allowed to proceed to customs.

Although the MHW inspection is mandatory, voluntary inspection by the Japan Frozen Foods Inspection Corporation or the Japan Canned Food Inspection Corporation are also performed upon request by the importer.

Certification requirements

All consignments accompanied by health certificates from Government Agencies certifying that the products are free from Vibrio cholera, deleterious chemicals, fish poison etc. are easily allowed through quarantine. Such health certificates also lead to easy customs clearances.

* The author of this article, Mr. V.D. Ramamurthy, is Joint Director of Marine Products Export Development Authority (MPEDA), Government of India. This article, which was published in INFOFISH International (FAO) No. 2/90, is also partly based on the ITC publication "Shrimps: a survey of the world market" (ITC, Geneva, 1983).

Note: Additional information on fish and fishery products' standards and quality control regulations in selected markets may be obtained from:

INFOFISH
P.O. Box 10899
50728 Kuala Lumpur, Malaysia
Tel: 291 4466
Tlx: INFISH MA 31560
Fax: (603) 291 6804

Regional Offices

Latin America, Caribbean
INFOPESCA,
Apartado 6-4894, Estafeta
El Dorado, Panama R P
Tel: 693477
Tlx: 2582 INFPESCA PG

Africa
INFOPECHE
Fax: (507)64-6589
BP 1747
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The Marine Products Export Development Authority of India (MPEDA)
MPEDA House,
Panampilli Avenue
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EXTRAORDINARY

The Sind Government Gazette

PUBLISHED BY AUTHORITY

KARACHI, THURSDAY, JANUARY 24, 1980

PART I

GOVERNMENT OF SIND

LAW DEPARTMENT

NOTIFICATION

Karachi, the 24th January, 1980

No. S.Legis.1(3)/80.—The following Ordinance by the Governor of Sind is hereby published for general information:—

THE SIND FISHERIES ORDINANCE, 1980

SIND ORDINANCE NO. III OF 1980

AN

ORDINANCE

to amend and consolidate the law relating to fisheries in the Province of Sind.

WHEREAS it is expedient to amend and consolidate the law relating to fisheries in the Province of Sind. Preamble.

NOW, THEREFORE, in pursuance of the Proclamation of the fifth day of July, 1977 and the Laws (Continuance in Force) Order, 1977, the Governor of Sind is pleased to make and promulgate the following Ordinance:—

1. (1) This Ordinance may be called the Sind Fisheries Ordinance, 1980. Short title and commencement.

(2) It shall come into force at once.

Definitions

2. In this Ordinance, unless there is anything repugnant in the subject or context -

(a) "collection centre" means a place close to the fishing waters where fish after being caught is collected;

(b) "Director" means the Director of Fisheries, Sind, and includes any other officer authorised by Government to exercise the powers of such Director;

(c) "fish" means all kinds of fish and includes molluses, crustaces and kelp-fish;

(d) "fishing" means taking or catching of fish by any means;

(e) "fishing craft" includes a vessel propelled or moved in any manner and used in fishing or for transport or processing of fish;

(f) "fishing gear" includes every appliance used in fishing;

(g) fixed engine" means any net, trap or other contravance fixed across the river, stream, canal, water channel including creeks for fishing;

(h) "Government" means the Government of Sind;

(i) "lease" means a lease granted under this Ordinance or rules made thereunder;

(j) "Inspector" means an Inspector of Fisheries appointed under this Ordinance;

(k) "licence" means a licence granted under this Ordinance or rules made thereunder;

(l) "market" means a place where fish is sold by auction or otherwise on commercial scale;

(m) "marketing" means handling, transporting, and storage by any means for commercial purposes and sale of fish;

(n) "permit" means a permit granted under this Ordinance or rule made thereunder;

(o) "prescribed" means prescribed by rules made under this Ordinance;

(p) "private waters" means any waters which are the exclusive property of any person, or in which any person has, for the time being, an exclusive right of fishing;

(q) "processing" means cutting, dressing, freezing, canning, curing, or conversion of fish into fish meal by any means;

(r) "public waters" means any waters other than the private waters and includes territorial waters.

Power of lease or issue of licences for fishing and fish trade.

3. (1) Government may, by general or special order, grant licence or lease for fishing in any public waters on such terms and conditions and on payment of such fees as may be prescribed.

(2) Where a lease has been granted under sub-section (1) the lease-holders may issue permits for fishing in the leased waters, in such form and subject to such conditions and on payment of such fees, as may be prescribed:

Provided that the permit issued under this sub-section shall cease to be valid upon the termination or cancellation of the lease.

Net, fixed engine, traps, etc. shall not be employed without a permit or licence.

4. No net, cage, trap, fixed engine or any other contravance shall be used or employed in any public water for taking or catching any species of fish specified in the second column of the First Schedule except during the period mentioned in respect of such species in the fourth column thereof and under a licence which may be issued by such authority on such conditions and on payment of such fees, as may be prescribed.

Fish not to be taken.

5. No person shall kill, capture or possess any species of fish specified in the second column of the First Schedule of a size less than that specified in the third column thereof.

Power to declare any waters to be a santuary for fish.

6. Government may, by notification, declare any public waters, demarcated in the prescribed manner, to be a sanctuary for the fish mentioned in the First Schedule for such period as may be specified in the notification and no fish from such waters shall be killed, captured or possessed during the said period without a special permit issued by the Director on payment of such fees, as may be prescribed.

Destruction of fish or aquatic life.

7. No person shall use dynamite or other explosive substances or put any poison, lime or noxious material in any waters with the intention of catching or destroying fish or aquatic life therein.

Discharge of factory effluence, waste or sewerage.

8. No effluence or waste of any factory or sewerage shall, unless it is treated and made harmless for fish and other aquatic life to the satisfaction of the Director, be discharged in any waters.

Marketing of fish.

9. (1) The fish caught for sale shall be collected and sold at such market or collection centre and on such terms and conditions as may be prescribed.

(2) No fish-dealer shall purchase fish from the prescribed market or collection centre without a licence granted by such authority and on payment of such fees, as may be prescribed.

Marketing at fish Harbour.

10. The marketing of fish at the Fish Harbour and other services including charging of fess connected therewith shall be managed and regulated in such manner and on such terms and conditions as may be prescribed.

Processing.

11. No factory or yard shall be set up for processing or curing fish except under a licence which may be granted by such authority on such terms and conditions and on payment of such fees as may be prescribed.

Use of fishing craft without licence prohibited.

12. No person shall, for the purpose of fishing, not being sport fishing, use or operate a fishing craft without licence which may be granted by such authority on such terms and conditions and on payment of such fees, as may be prescribed.

Explanation.—In this section "sport fishing" means fishing for recreation by red and line and not for commercial purpose or earning livelihood.

Appointment of Inspectors of Fisheries.

13. Government may, by notification, appoint such persons as it thinks fit to be Inspectors of Fisheries for such local limits, as may be specified in such notification.

Duty to produce licence or permit on demand made by employes of Fishries Department.

14. Every person shall, on demand of the Inspector or any other person authorised in this behalf by the Director, produce the licence or permit, in his possession before such Inspector or person.

Inspection by Fishery Officer.

15. The Inspector may, without a warrant from a Magistrate, search any person, vessel, vehicle, ship, boat, raft, package, receptacle, covering, processing factory, curing yard fish market or collection centre for satisfying himself whether or not an offence under this Ordinance has been committed.

Power of arrest, seizure and disposal.

16. (1) If the Inspector has reason to believe that any fishing craft and fishing gear has been used for fishing or marketing has been done in contravention of any provision of this Ordinance or the rules made thereunder, he may arrest without warrant, the owner or person or persons incharge of the vessel or the person in possession of the fish.

(2) The Inspector or any other person authorised by him in this behalf may seize any fish, fishing craft, or fishing gear used or suspected to have been used in contravention of any provision of this Ordinance.

(3) Any fish, fishing craft or fishing gear seized under sub-section (2) shall be disposed of in accordance with the decision of the Court; provided that if the fish seized is likely to perish, it shall, unless it is preserved or processed without delay, be sold by the Inspector or the person authorised by him and the sale proceeds shall be treated as seized property for the purpose of this sub-section

Powers of Magistrate to issue search warrant.

17. If a Magistrate of first class has reason to believe that an offence under this Ordinance has been or is being, or is likely to be, committed, he may issue a warrant for search of any place in which any fish, net, trap, cage or other contravance or fixed engine for catching or taking fish has been or is suspected to be kept or concealed.

Delegation of powers.

24. Government may, by notification, delegate all or any of the powers vested in any officer or authority under this Ordinance to any person.

Power of Government to add or exclude from First Schedule.

25. Government may, by notification—

(i) add to or exclude from the First Schedule any species of fish subject to such conditions as it may impose in each case;

(ii) alter the period during which any fish specified in the First Schedule may be killed or caught.

Power to compound certain offences.

26. Government may, by notification, empower an Inspector of Fisheries—

(a) to accept from any person concerning whom evidence exists which if unrebutted would prove that he committed any offence as described in the first column of the Second Schedule a sum of money not exceeding that mentioned against such offence in that Schedule, by way of composition for the offence with regard to which such evidence exists, and on the payment of such sum to the Inspector such person if in custody shall be discharged and no further proceedings shall be taken against him;

(b) to release any property having been seized and liable to confiscation on payment of the value thereof as estimated by the Inspector and no further proceedings shall be taken in respect thereof.

Power to make rules.

27. (1) Government may, by notification, make rules for the purpose of carrying into effect the provisions of this Ordinance.

(2) In particular and without prejudice to the generality of the foregoing power, such rules may prescribed for all or any of the following matters, namely:—

(a) the size of mashes;

(b) the size and the quantity of fish which may be caught by any fishing gear or processed at any time;

(c) regulation of the operation of fishing vessels;

(d) markets and the procedure and fee for marketing of fish;

(e) registration of fish processing plants, the manner and conditions of the operation or maintenance thereof;

(f) ways and means by which shrimps, fish and shell fish shall be handled on the vessels;

(g) inspection of vessels, markets and fish processing plants;

(h) issue of quality certificate for processed or unprocessed fish used for processing, domestic consumption or inter-provincial trade;

(i) fixation of royalty and other Government dues on vessels and fish catches;

(j) fixation and regulation of prices of all varieties and sizes of fish and shell fish;

(k) regulation of landing and marketing of fish taken, caught and landed at any place in the province;

(l) the form in which and the terms and conditions on which, a licence or a permit or a special licence or a special permit may be granted;

(m) the authority by which licences under this Ordinance may be granted;

(n) the fees to be charged for registration of any plant or for grant of any licence or permit or special licence or special permit;

(o) the conditions subject to which the Director may lease the right to catch fish under this Ordinance;

(p) the number and sex of any species of fish, that may be killed or caught under a licence;

(q) the rewards to person who render help in detection of offences under this Ordinance;

(r) the utilization of receipts recovered under this Ordinance;

(s) prohibition or regulation of all or any of the following matters:—

(i) the erection and use of fixed engines;

(ii) the construction of waters; and

(iii) the dimension and kind of nets, cages, traps or other contravances for taking fish to be used and the modes of using them.

28. The Sind Fisheries Ordinance, 1961, is hereby repealed. Repeal and Savings.

FIRST SCHEDULE

(SECTIONS 4 AND 5)

SPECIES OF FISH AND PROHIBITIONS

S. No.	Species of Fish	Size	Period during which taking of the fish by any net, cage, trap or fixed engine is prohibited
1.	Rohu. (Labio rohita)	12 Inches.	1st June to 31st July
2.	Mori (Cirrihina mrigala)	12 Inches.	1st June to 31st July.
3.	Thaila (Catla catla)	12 Inches.	1st June to 31st July.
4.	Calbasu (Labio calbasu)	12 Inches.	1st June to 31st July.

SECOND SCHEDULE

(SECTION 26)

MAXIMUM AMOUNT ACCEPTABLE BY WAY OF COMPOSITION FOR CERTAIN OFFENCES.

S. No.	Description of Offences	Maximum amount which may be accepted as composition.
1.	Fishing with a net having a smaller mesh than the prescribed mesh.	One hundred rupees, plus cost of fish caught.
2.	Fishing without licence ..	Two hundred rupees plus cost of fish caught.
3.	Killing fish of a size less than the prescribed size, or more than prescribed number or during period other than permitted.	One hundred rupees plus auction cost of fish caught.
4.	Fishing with any gear or method other than permitted under the rules.	One hundred rupees plus cost of fish caught.

1	2	3
5.	Using at any one time more than two of either or any of the gears permitted under the rules.	Two hundred rupees plus cost of fish caught.
6.	Licence holder employing, or engaging non-licensees to help with this nets while fishing.	One hundred rupees plus cost of fish caught.
7.	Offering or exposing for sale or barter any fish in contravention of the provision of this Ordinance.	Two hundred rupees plus cost of fish caught.

LIEUTENANT GENERAL S. M. ABBASI
Governor of Sind.

KARACHI:
Dated the 20th January, 1980.

G. M. KOUREJO,
Secretary to Government of Sind.
Law Department.

Ext-I—34

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PUBLISHED BY AUTHORITY

KARACHI, THURSDAY, JULY 22, 1982

Separate paging is given to this Part in order that it may be filed as a compilation.

(1) Rules framed under the Acts of the Sind Assembly and the Acts of the National Assembly and

(2) Other Statutory rules framed by the Sind and National Assemblies

PART IV-A

GOVERNMENT OF SIND

AGRICULTURE LIVESTOCK AND FISHERIES DEPARTMENT

Karachi, the 13th July, 1982

NOTIFICATION

No. 5(2)SO(F)/76:II.—In exercise of powers conferred under section 25 of the Sind Fisheries Ordinance 1980, the Government of Sind are pleased to make following amendment in the first Schedul to the said Act.:—

AMENDMENT

After serial No. 4, the following entries shall be added:

"5.	Kalri, Jira and Kiddi (Shrimp).	Any Size	1st June to 31st July".

Secretary to Government of Sind.

L (iv) —IV-A—39 (101) [Price: 50 Paisa

KARACHI: PRINTED AT THE SIND GOVERNMENT PRESS.

(80) 22-7-1982—C.

QUALITY & COUNTRY OF ORIGIN

GESUNDHEITSBESCHEINIGUNG
GEZONDHEIDSCERTIFICAAT
CERTIFICAT SANITAIRE
HEALTH CERTIFICATE

SAMPLE

für Fischereierzeugnisse, die für die Europäische Wirtschaftsgemeinschaft bestimmt sind
voor visserijprodukten bestemd voor de Europese Economische Gemeenschap
relatif aux produits de la pêche destinés à la Communauté économique européenne
covering fishery products for import into the European Economic Community

Versandland : / Land van verzending :
Pays expéditeur : / Country of despatch : .....

Zuständige Behörde (¹) : / Bevoegde autoriteit (¹):
Autorité compétente (¹) : / Competent authority (¹) : .....

Inspektionsdienststelle (¹) : / Inspectiedienst (¹) :
Service d'inspection (¹) : / Inspection body (¹) : .....

Referenznummer der Gesundheitsbescheinigung : / Referentienummer van het gezondheidsscertificaat :
Numéro de référence du certificat sanitaire : / Reference number of health certificate : .....

I. Identifizierung der Fischereierzeugnisse / I. Identificatie van de visserijprodukten
I. Identification des produits de la pêche / I. Details identifying the fishery products

Beschreibung des Erzeugnisses : / Omschrijving van het produkt :
Description du produit : / Description :

— Art (wissenschaftlicher Name) : / — soort (wetenschappelijke naam) :
— espèce (nom scientifique) : / — Species (scientific name) : .....

— Stand (²) oder Art der Behandlung : / — staat (²) of aard van de behandeling :
— état (²) ou nature du traitement : / — State (²) or type of processing : .....

Art der Verpackung : / Aard van de verpakking :
Nature de l'emballage : / Type of packaging : .....

Zahl der Packstücke : / Aantal verpakkingseenheden :
Nombre d'unités d'emballage : / Number of packages : .....

Eigengewicht : / Nettogewicht :
Poids net : / Net weight : .....

Vorgeschriebene Lager- und Transporttemperatur : / Vereiste temperatuur bij opslag en vervoer :
Température d'entreposage et de transport requise : / Temperature required during storage and transport : .....

II. Herkunft der Fischereierzeugnisse / II. Herkomst van de visserijprodukten
II. Provenance des produits de la pêche / II. Provenance of the fishery products

Anschrift(en) und nationale Zulassungsnummer(n) des/der von der für die Ausfuhr zuständigen Behörde zugelassenen Zubereitungs- oder Verarbeitungsbetriebe(s):
Adres(sen) en nummer(s) van de inrichting(en) waar de produkten zijn bewerkt of verwerkt en die door de bevoegde autoriteit voor uitvoer is (zijn) erkend :
Adresse(s) et numéro(s) d'agrément national de l'(des) établissement(s) de préparation ou de transformation autorisé(s) par l'autorité compétente pour l'exportation:
Adress(es) and number(s) of preparation or processing establishment(s) authorized for exports by the competent authority :

.....
.....
.....
.....
.....

III. Bestimmung der Fischereierzeugnisse / III. Bestemming van de visserijprodukten
III. Destination des produits de la pêche / III. Destination of the fishery products

Die Fischereierzeugnisse werden versandt / De visserijprodukten worden verzonden
Les produits de la pêche sont expédiés / The fishery products are to be despatched

von / van
de / from ..... (Versandort / plaatts van verzending / lieu d'expédition /Place of dispatch)

nach / naar
à / to ..... (Bestimmungsort und -land / land en plaats van bestimming / pays et lieu de destination / Country and place of destination)

mit folgendem Beförderungsmittel : / per (vervoermiddel)
par lemoyen de transport suivant : / by the following means of transport : .....

Name und Anschrift des Versenders : / Naam en adres van de afzender :
Nom et adresse de l' expéditeur : / Name and adress of consignor .....

.....

Name des Empfängers und Anschrift des Bestimmungsortes : / Naam van de geadresseerde en adres van de plaats van bestemming :
Nom du destinataire et adresse du lieu de destination : / Name of consignee and adress at place of destination :

.....
.....
.....

(¹) Name und Adresse / (¹) Naam en adres
(¹) Nom et adresse / (¹) Name adress

(²) Lebend, zum direkten menschlichen Verzehr bestimmt, zubereitet, verarbeitet usw
(²) Levend rechtstreeks bestemd voor menselijke consumptie, bewerkt, verwerkt enz
(²) Vivant, destiné directement à l'alimentation humaine, préparé, transformé etc
(²) Live, intended for direct human consumption, prepared, processed, etc

IV. Gesundheitsbescheinigung
IV. Gezondheidsverklaring
IV. Attestation sanitaire
IV. Health attestation

Der unterzeichnende amtliche Inspektor bescheinigt, daß

1. die vorstehend beschriebenen Fischereierzeugnisse unter Bedingungen behandelt, zubereitet oder verarbeitet, gekennzeichnet, gelagert und befördert worden sind, die mindestens den Bedingungen der Richtlinie 91/493/EWG des Rates vom 22.Juli 1991 zur Festlegung von Hygienevorschriften für die Erzeugung und die Vermarktung von Fischereierzeugnissen gleichwertig sind;

2. gefrorene oder verarbeitete Muscheln in Erzeugungsgebieten geerntet worden sind, die Bedingungen unterliegen, die mindestens den Bedingungen der Richtlinie 91/492/EWG des Rates vom 15. Juli 1991 zur Festlegung von Hygienevorschriften für die Erzeugung und Vermarktung lebender Muscheln gleichwertig sind.

Ondergetekende, officeel inspecteur, verklaart dat :

1. de hiervoren omschreven visserijprodukten zijn behandeld, bewerkt of verwerkt, opgeslagen en vervoerd onder voorwaarden die ten minste gelijkwaardig zijn aan die welke zijn vastgesteld bij Richtlijn 91/493EEG van 22. juli 1991 tot vaststelling van gezondheidsvoorschriften voor de produktie en het in de handel brengen van visserijprodukten;

2. bovendien, wanneer het gaat om diepgevroren of verwerkte tweekleppige weekdieren, deze weekdieren zijn verkregen in produktiegebieden waarvoor eisen gelden die ten minste gelijkwaardig zijn aan die welke zijn vastgesteld bij Richtlijn 91/492/EEG van de Raad van 15. juli 1991 tot vastelling van gezondheids-voorschriften voor de produktie en het in de handel brengen van levende tweekleppige weekdieren.

L'inspecteur officiel soussigné certifie que :

1. les produits de la pêche désignés ci-dessus ont été manipulés, préparés ou transformés, identifiés, entreposés et transportés dans des conditions au moins équivalentes à celles fixées par la directive 91/493/CEE du Conseil, du 22. juillet 1991, fixant les règles sanitaires régissant la production et la mise sur le marché des produits de la pêche;

2. en outre, lorsqu'il s'agit de mollusques bivalves congelés ou transformés, ces mollusques ont été obenus de zones de production soumises à des conditions au moins équivalentes à celles fixées par la directive 91/492/CEE du Conseil, du 15 juillet 1991, fixant les règles sanitaires régissant la production et la mise sur le marché de mollusques bivalves vivants.

The undersigned official inspector hereby certifies that :

1. The fishery products described above have been handled, prepared or processed, identified, stored and transported under conditions at least equivalent to those laid down in Council Directive 91/493/EEC of 22 July 1991 laying down the health conditions for the production and the placing on the market of fishery products.

2. In addition, in the case of frozen or processed bivalve molluscs, the latter have been gathered in production areas subject to conditions at least equivalent to those laid down in Council Directive 91/492/EEC of 15 July 1991 laying down the health conditions for the production and the placing on the market of live bivalve molluscs.

Ausgefertigt in , am
Gedaan te ....., op .....
Fait à (Ort, plaats, lieu, place) , le (Datum, datum, date, date)
Done at , on

.....
(Unterschrift des amtlichen Inspektors)
Handtekening van de officiele inspecteur
(signature de l'inspecteur officiel)
Signature of official Inspector

.....
(Name in Großbuchstaben sowie Amtsbezeichnung)
(naam in Hoofdletters, titel en hoedanigheid van de ondertekenaar)
(nom en captales, titres et qualités du signataire)
(Name in capitals, capacity and qualifications)

FORM IX VALID UPTO 09TH APRIL, 1995.

[*See* Rule 14 (1)]

9/95-AQD(627)-6

GOVERNMENT OF PAKISTAN
MINISTRY OF FOOD AND AGRICULTURE,
LIVESTOCK DIVISION,
ANIMAL QUARANTINE DEPARTMENT.

No. _____

Date 21st March, 1995.

AT KARACHI

CERTIFICATE OF THE HEALTH OF SEAFOOD PRODUCTS FOR EXPORTATION

This is to certify that :

(i) the products described below were inspected and certified to be free from signs of contagious and infectious diseases.

(ii) the consignment conforms to the current rules and regulations of the importing country and

(iii) during the period beginning on 21st March, 1995. and ending on 9th April, 1995. transportation of the product is authorised.

From KARACHI (Place of departure) to XINGANG CHINA. (Place of destination)

By : Road Rail Sea Air

sea

Name/Number/Flight by sea

Description of the consignment

Product FROZEN WHOLE ROUND RIBBON FISH. Origin PRODUCT OF PAKISTAN.

Quantity =20,000=M.TONS. Marks 95NXPA-19007. XINGANG CHINA.

Packing =1920=(ONE THOUSAND NINE HUNDRED TWENTY) MASTER CARTONS. Boxes/bales/Cartons ~~M.CTNS.~~

Consignor PAK. EXPORTS. KARACHI.

Consignee TO WHOME IT MAY CONCERN.

GOODS ARE FIT FOR HUMAN CONSUMPTION.

Signature

Quarantine Officer,
Livestock Division,
Government of Pakistan
(Official Stamp).

C-40/N, North Nazimabad,
Karachi-33.
Quarantine Officer
Animal Quarantine Department
Government of Pakistan
Karachi.

GOVT. OF PAKISTAN Karachi A.Q.D.

GOVERNMENT OF PAKISTAN ANIMAL QUARANTINE DEPARTMENT

PRINTING CORPORATION OF PAKISTAN PRESS, KARACHI.

ACT NO. OF 1995

DRAFT

QUALITY CONTROL ACT

AN

ACT

to regulate quality and promote export of fish and fishery products in Pakistan. The purpose of this Act is to ensure wholesome production of fish and fishery products exported from Pakistan and to protect consumer's interest from health hazard which may be caused by consuming unwholesome fish and fishery products. The Act provides production of wholesome fish and fishery products conforming with good commercial practice and prescribed specifications and standards made under rules and regulations of this Act.

WHEREAS it is expedient to regulate quality and promote export of fish and fishery products to prevent export of unwholesome fish and fishery products and for matters connected therewith or ancillary thereto;

AND WHEREAS the National Assembly is in session and the President is satisfied that circumstances exist which render it necessary to take immediate action:

NOW, THEREFORE, in exercise of the powers conferred by Clause_____ of Articles of the Constitution of the Islamic Republic of Pakistan and of all other powers: it is hereby enacted as follows:

1. Short title, extent and commencement.-

(1) This Act may be called the Pakistan Fish Inspection and Quality Control Act, 1995.

(2) It extends to the whole of Pakistan.

(3) It shall come into force at once.

2. Definitions.- In this Act, unless there is anything repugnant in the subject or context,-

(a) "Fish" means all aquatic animals of inland, marine and brackish water fish, alive or dead, the term includes all cartilaginous and bony fishes, prawns, shrimps, lobsters, cray fish, crabs,

turtles, iced fish, chilled fish, frozen fish, edible oysters, molluscs, clams, scalops, preserved fish, canned fish and also any other fish and aquatic animal or animal product which the Director General, Marine Fisheries Department, by order or otherwise from time to time may declare to be fish for the purpose of this Act;

(b) "Fishery product" means any thing produced or made whether whole or in part from fish or from any part of fish;

(c) "Fresh fish" means freshly caught fish having no characteristics of decomposed fish;

(d) "Unwholesome" means fish which is unfresh or decomposed partially or wholly;

(e) "Fish processing" means chilling, cleaning, filleting, icing, packing, freezing, cold storage, cooking, canning, smoking, conversion into minced fishmeat or preparing fish in any other manner for marketing and export of fish;

(f) "Processed" means fish which is processed or preserved by icing, chilling, freezing, canning, smoking, extraction of fish oil, conversion into minced fishmeat, or any other approved or established process;

(g) "Fish processing plant" means establishment, place, premises where fish or fish product is processed for local consumption, export or stored;

(h) "Quality" means natural characteristics found in freshly caught fish or processed fish;

(i) "Quality control" means quality assurance of fish and fishery products conforming to standards prescribed under the provision and rules of this Act;

(j) "Certificate of quality and origin" means a certificate issued by the Director General, Marine Fisheries Department or an Officer authorized by Director General, Marine Fisheries Department, Karachi, in respect of fish indicating that fish is wholesome and fit for human consumption;

or for any other purpose;

(k) "Export" means export of fish and fishery products from Pakistan by any means to any place outside Pakistan;

(l) "Fish inspection" means inspection of fish and fishery products by a Fishery Officer for the purpose of assessing quality of fish by inspecting sanitary and hygienic conditions and physical, chemical and bacteriological examination of fish and fishery products;

(m) "Prescribed" means prescribed by rules made under this Act;

(n) "Fishery Officer" means an Officer duly authorized by the Director General, Marine Fisheries Department, of the Federal Government to exercise powers and perform functions for carrying on provisions under this Act;

(o) "Rules" means rules made under this Act;

(p) "Registeration of the fish processing plant" means registeration under this Act and "registered" shall be construed accordingly;

(q) "Registeration authority" means fishery Officer authorized by Director General, Marine Fisheries Department, by order in writing to register fish processing plants under this Act or the rules made thereunder:

(r) "Fish exporter" means an exporter engaged in carrying on business of fish or processed fish;

3. Fish inspection to ensure compliance with the provisions of this Act.-

(1) The Federal Government, Marine Fisheries Department may, for the purpose of carrying out provisions of this Act and the rules made thereunder have been complied with, appoint any person or persons, inspector or Officer of Marine Fisheries Department in this behalf may,-

(a) under the reasonable circumstances enter any place, premises, fish processing plant or go on board any vessel, ship, boat, railway car, truck, aircraft or any Vehicle used for storage and transportation of fish and

fishery products and inspect the same and if he believes that the container contains fish and fishery product to be unfresh, decomposed or unwholesome or fish processed in contravention of any provision of this Act or the rules thereof, may take sample or samples of fish or fish products for inspection free of cost; and

(b) obtain document or enforce production of any book, shipping bills, bills of lading, or other documents for inspection of fish and fishery products.

(2) No person shall obstruct, impede or refuse admittance or aid or assist in obstruction or refusal of admittance to an Inspector or any Officer empowered under sub-section (1), in the performance of his duties under this Act.

Fish export.- No person shall process and export or market for export or have in his possession for export or deal in, any fish or fish products intended for human consumption which is decomposed, unwholesome or contaminated with pathogenic organisms.

Handling of fish and fishery products.- No person who is suffering from leprosy, tuberculosis, polio or such other contagious disease as the Government may, by notification in the Official Gazette, specify, shall handle, carry, process fish or work in fish processing and packing plant and establishment.

Appeal.- (1) Any person aggrieved by an order passed by the Fishery Officer under this Act may [illegible] appeal to the Federal Government within 45 days from the date of issue of such order and the decision of the Federal Government shall be final.

(2) The Federal Government may on receipt of an application under sub-section (1) above, stay the operation of the order of the Fishery Officer till the disposal of the application.

Registeration of fish processing plants.- (1) Every fish processing plant engaged in processing fish at the commencement of this Act, shall, apply

to the registeration authority for registeration on payment of such fee as may be prescribed.

(2) No processing plant shall be registered unless it conforms to the prescribed provisions of registeration.

8. Registeration of fish exporters.- (1) Every exporter carrying on fish processing, packaging and storage for export purpose at the commencement of this Act, shall apply to the Registeration Authority for registeration on payment of such fee as may be prescribed.

(2) No fish exporter shall be registered unless the exporter conforms to the prescribed provision of registeration.

9. Power to regulate and prohibit operation of unregistered fish processing plant and fish export by unregistered exporter.- (1) No fish processing plant and the fish exporter which has not been registered with the registeration authority, shall carry on fish export business to regulate quality of fish and fishery product from Pakistan.

10. Inspection of fish processing plants.- (1) A Fishery Officer may inspect any fish processing plant to ensure the observance of the provisions of this Act and the rules made thereunder.

(2) A Fishery Officer, may, without any order from a Magistrate and without warrant arrest any person operating a fish processing plant without a valid registeration granted under Section 8 or refusing to produce on demand such registeration.

11. Quality evaluation of fish and fishery products.- All fish and fishery products found to be unwholesome shall be detained by the Fishery Officer and shall be dealt with according to the provisions and rules of this Act.

12. Powers, duties and functions of Fishery Officer.- Subject to the provisions of this Act, the Fishery Officer, shall exercise following power.-

(a) to carry on inspection of the fish processing plants where fish and fishery products are processed for export purpose;

(b) to carry on inspection of fish and fishery products for export purpose;

(c) to register fish processing plants and exporters carrying on fish export business and issue registeration certificates;

(d) to issue certificate of quality and origin for fish and fishery products when the quality is found satisfactory upon inspection;

(e) to detain fish and fishery products when found to be unwholesome and unfit for human consumption upon inspection;

(f) to order for re-inspection; decide for carrying on tests as may be prescribed and release of the fish and fishery products for export after reinspection when the quality is found satisfactory;

(g) to order for disposal of fish and fishery products when found to be unwholesome and unfit for human consumption after reinspection;

(h) to prohibit export of fish or fishery product considered unfit for human consumption or unfit for animal feed; and

(i) to carry on such functions which may be necessary and laid down in the rules of this Act for successful operation, quality control, management, regulation and promotion of export of fish and fishery products.

13. Cognizance of offence.- No court shall take cognizance of any offence under this Act, except upon complaint in writing made by an Officer authorized by the Federal Government, Marine Fisheries Department in this behalf.

14. Penalties.- (1) Whoever contravenes or attempts to contravene any provision of this Act or the rules made thereunder, shall without prejudice to any penalty to which he may be liable for punishment without imprisonment for a term which may extend to one year or with fine which may extend to ten thousand rupees or with both.

(2) Any export of fish or fishery product which is not accompanied by a valid certificate of quality and origin, shall be detained, confiscated or disposed of by the Federal Government, Marine Fisheries Department, in such manner as may be prescribed under the provisions

and rules of this Act.

(3) Where the person contravening any provision of this Act or the rules is a company or other body corporate, every director, manager, secretary or other officer or agent thereof shall, unless he proves that the contravention was committed without his knowledge or that he exercised all due diligence to prevent such contravention, be deemed to be guilty of such contravention.

(4) Whoever attempts to contravene, or abets the contravention of, any provision of this Act or the rules shall be deemed to have contravened provisions of this Act or the rules.

15. Seizure and disposal.- (1) If any Fishery Officer has reason to believe that any fish processed in contravention of any provision of this Act or rules, he may arrest without warrant the owner of the processing plant, exporter or any person incharge of such fish consignment intended for export.

(2) An Officer making an arrest under sub-section (1) shall, within 60 hours, take or send the person arrested before a Magistrate having jurisdiction in the case for trial.

(3) Any fish seized under sub-section (1) shall be disposed of in accordance with the decision of the court before which the owner of the processing plant or fish exporter is prosecuted under sub-section (2).

(4) If the fish seized is unfresh and unwholesome, it may be disposed of or if it is sold for animal feed, its value shall be treated as seized property for the purpose of sub-section (3).

16. Appointment of fishery Officers and Staff.- The Federal Government, Marine Fisheries Department may appoint such number of Officers and such other staff as it may deem fit for carrying out the purposes of this Act.

17. Delegation of powers.- The Federal Government may, by notification in the Official Gazette, delegate to the Fishery Officer or any Officer or authority.

18. Power to make rules.- (1) The Federal Government, Marine Fisheries Department, may, by notification in the Official Gazette, make rules, necessary or expedient for ensuring quality of fish and fishery products for export and to carry out the purposes of this Act.

(2) In particular and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters namely;-

(a) prescribing quality standards of fish and fishery products;

(b) regulation of handling, processing, packaging, storage and marketing of fish and fishery products;

(c) prescribing requirements for equipment, machinery and construction of the fish processing plants.

(d) prescribing the fees for registeration of fish processing plants and inspection and laboratory analysis of fish and fishery product samples;

(e) prohibiting sale or offering for sale of fish and fishery products contravening provisions of this Act;

(f) prescribing the sample procedure and the manner in which samples of fish and fishery products are selected for laboratory analysis;

(g) prohibiting marketing or any attempt to market or export of fresh or processed fish or fishery products without obtaining certificate of quality and origin from Marine Fisheries Department;

(h) determining disposal procedure for fish and fishery products which do not conform with the prescribed requirements or is otherwise considered unwholesome or unsuitable for human consumption;

(i) the procedure of applying for registeration of fish processing plant;

(j) prescribing the fee to be charged for certificate of quality and origin for export of fish and fishery products;

(k) to hear appeal, application against refusal to issue registeration of exporter, fish processing plant and certificate of quality and origin.

(l) the forms for registeration and certificates of quality and origin;

(m) validation period for registered fish processing plants, fish exporters and the certificates of quality and origin; and

(n) any other matter which is to be or may be prescribed.

President.

Secretary.

List of participants on Seminars held in Karachi 2 and 3 March 1996 and "Seafood Quality Improvements"

PARTICIPANTS OF UNIDO SEMINAR ON 02-03-96

PROCESSORS.

1).	Kanpa International.	Mr. Rehman, Mr. Kabir & Allauddin
2).	Spectrum Fisheries.	Mr. Amin & Mr. Bashir Siddiq.
3).	Long Wharf Fisheries.	Mr. Hanif
4).	Thama Fisheries.	Mr. Asim, Dr. Siddique & Shahid.
5).	Son of The Sea.	Mr. Rehamat-ullah.
6).	Pak Exports.	Mr. Anis & Mr. Adnan.
7).	A.G. Fisheries.	Mr. Ashraf.
8).	Asha Enterprise.	Mr. Amin.
9).	Atif Corporation.	Mr. Atif
10).	AiLya Fisheries.	Mr. Saijad Mir & Ali Haider Baig.
11).	M.M. Mohammadi	Mr. Shamim Mohammadi.
12).	Malik Jamal & Sons	Mr. Shoukat Malik Jamal.
13).	Arabian Pride/Thama.	Mr. Miftah.
14).	Shabbir Fisheries.	Mr. Asad Ashraf.

BUYING AGENTS

1). Food Link.	Mr. Arif Razza.
2). Promotion Int'l.	Mr. Yousuf Haider.
3). Landauer Ltd.	Mr. Urfi.
4). T.T. Enterprise.	Mr. Ashfaq Hussain.
5). PTC Int'l.	Mr. Akter Jilani.

EXPORT PROMOTION BUREAU

1). V/C.	Mr. Abu Shamim Arif.
2). D/G.	Mr. Hasnan-uddin.
3). Policy Dept.	Mr. Sikender Ali.
4). Policy Officer	Mr. Masood Jafri
5). Daily Pakistan.	Mr. Tahir Naseer & Abdul Samad.

KARACHI UNIVERSITY

1). Dr. Rashida Ali	Food Dept.
2). Samina Kidwai	Fisheries Biologest.
3). Pervaz Rafi sheikh	food Dept.
4). Rehman-ullah Siddique	Food Dept.
5). M.M.Nazri	Food Technologest.
6). Dr. S.Aqadri	Food Dept.

PARTICIPANT OF UNIDO SEMINAR ON 03-03-96

PROCESSOR

1). Dilshad Fisheries.	Mr. Alam.
2). M.M. Mohammadi	Mr. Shammim Mohammadi.
3). Shabbir Fisheries	Mr. Shabbir Ali.
4). Thama Fisheries.	Mr. Atiq-ullah.
5). Pak Exports	Mr. Anis & Adnan.

COMPANIES

1). BOC Gases.	Mr. Zahid Farooq.
2). Glacier Ignis.	Mr. Shakil M. Affidi.
3). Al-Qasim.	Mr. Tahir S. Hussan.
4). Jibreel Int'l.	Mr. Dr. Sardar Ahmed.
5). Ailia Co.	Mr. Hani Baig.
6). T.T. Enterprices	Mr. Naushad.

UNIVERSITY

1). Dr. S.A. Qadri	R.R. Services.
2). Rehman-ullah Siddique	Food Dept.
3). Seema Naheed	Food Dept.

MOLE HOLDER

1). Haji Ghani.	Mole Holder.
2). Abdul Razzak.	Mole Holder.
3). Arsalan Khan.	Mole Holder.
4). Hali Babo.	Mole Holder.
5). Haji Hanif.	Mole Holder.
6). Mohd Hussain.	Mole Holder.

BOAT OWNERS

1). Mr. Hussain.	Boat Owner.
2). Mr. Farooq Butt	Boat Owner.
3). Mr. Abdul Hussaini	Boat Owner.
4). Mr. Ghulam ali.	Boat Owner.
5). Mr. Akber Ali.	Boat Owner.
6). Mr. Haji Ghulam Ali	Boat Owner.
7). Mr. Hussan Ali.	Boat Owner.

SURVEYORS

1). Mr. Sharyar Haider.	Mackinnons Lloyds.
2). Mr. Sikender	Mackinnons Lloyds.
3). Mr. Jalal Ahmed Khan.	Surveyor.

1). Mr. Mausoor Mirza.	PIA (OFFICER)

Appendix 11

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ADB	Review "Baluchistan Fisheries Project"
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"Upgrading of quality control and fishery products", PAK/88/034/A/01/12, Project Document, Islamabad, 1991

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ANNEX 12

COMMENTS OF THE BACKSTOPPING OFFICER

The two missions undertaken by Messrs. Nielsen and Hansen resulted in the full achievements of the project objectives.

The current situation of the fish industry was assessed and the problems identified. The recommendations made include:

- immediate measures consisting of awareness and training seminars about fish handling and preservation at the level of the fishing vessels, fish processing and management aspects by the public authorities concerned;

- Medium- and long-term measures for which the Pakistan Seafood Producers and Exporters need external assistance. This means follow-up activities to ensure that the measures recommended are put into practice.