



CODE OF CONDUCT
For Selected segments of the
Aquaculture Industry in Bangladesh

March 2011

Prepared jointly by

Department of Fisheries
Government of Bangladesh
&



Bangladesh Shrimp and Fish Foundation



FOREWORD

Date: March 23, 2011

I have great pleasure to announce that the Ministry of Fisheries and Livestock adopts nine sets of Code of Conduct for nine of the important segments of the shrimp based industry value chain. These segments are: (i) Black tiger shrimp (Bagda) *Penaeus monodon* hatchery, (ii) *Macrobrachium* shrimp (Galda) hatchery, (iii) Black tiger *Penaeus monodon* shrimp farm, (iv) Galda shrimp (*Macrobrachium*) farm, (v) Shrimp depot, (vi) Ice plants, (vii) Fishing boats, (viii) Fish carrier transport van / vessel and (ix) Shrimp / Fish feed mill. All the stakeholders of these categories will be expected to strictly comply with their respective Code.

There are suggestions that Codes are also necessary for four more segments of the shrimp industry value chain; these are: (i) Shrimp and fish auction centre, (ii) Shrimp/fish feed retailing shops, (iii) Aquaculture drug retailing shops and (iv) Fish markets.

Since the international market demand for the qualitative aspects of the of the shrimp is a dynamic process, we will be required to adjust the Codes from time to time in keeping with any changes in the international requirements.

I sincerely thank the Department of Fisheries (DoF) and Bangladesh Shrimp and Fish Foundation (BSFF) experts for their immense contributions towards formulating the Codes. We believe strict compliance with Codes will increase the accessibility of our fisheries products in the international market, thereby elevating the image of Bangladesh. Besides, compliance with the Codes will also help ensure food safety for the domestic consumers.

Ujjwal Bikash Dutta

Secretary

Ministry of Fisheries and Livestock

Government of Bangladesh

CODES OF CONDUCT

For Various Segments of Aquaculture-based Industry in Bangladesh

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INTRODUCTION

Background

Due to natural and varied man-made changes, the open water fish production from the world oceans and inland waters is now declining. Aquaculture has been receiving more and more attention for increasing fish production. In 1950, about 3% of the global fish production was of aquaculture origin. By 2004, aquaculture production accounted for 38% of the global total production. Nearly 80% of the aquaculture production came from Asian countries, including Bangladesh. Bangladesh Fisheries Sector Road Map 2015 projects a total production of 3.54 million metric tons of fish of which 57 percent will be of aquaculture origin. Out of the total export earnings from shrimp export, aquaculture products contribute at least 90 percent.

Despite its significant contribution to the global food production and economy, aquaculture is not beyond criticism, often for valid reasons. The main points of concern relate to:

- Environmental
- Social
- Resource-use conflicts and
- Food safety

The **environmental issues** relate mainly to:

- (i) Mangrove destruction,
- (ii) Bio-diversity destruction by mass collection of shrimp post-larvae along with myriad of miscellaneous non-target aquatic organisms from the sea-shore and brackish water rivers; the latter are just wasted.
- (iii) Effluent discharge often with heavy loads of silts and organic matter offsetting the balance of the aquatic environment
- (iv) Releasing prohibited or harmful chemicals used in the shrimp or fish farms
- (v) Releasing diseased farm animals or exotic species from the farm into the open environment

Social issues and resource use conflicts mainly include:

- (i) Obstruction of common property wetlands and flowing rivers and canals for aquaculture
- (ii) Salt water intrusion in agricultural lands affecting agricultural crops
- (iii) Unauthorized use of others' land
- (iv) Using child labour

Food safety issues chiefly relate to:

- (i) Use of agricultural pesticides that may access to aquaculture areas
- (ii) Prohibited or restricted drugs and chemicals often used as preventive, curative or growth promoting agents in the farm feed or water, eventually gain access into the shrimp and fish and ultimately into human consumers.

Many countries now realize the problems and appreciate the need of applying modern science, aquaculture techniques, experience, and good governance to rectify the problems and harness the full benefits of aquaculture. International organizations, including FAO/UN has suggested a number of principles for responsible aquaculture to address and rectify the problems stated above. Many countries have now formulated Laws to protect environment and health of the people. Some countries have prepared Codes of Conduct for aquaculture.

What is a code of conduct?

A Code in the field of aquaculture industry is a set of prescribed rules and practices that one or all individuals of an organization or facility must properly comply to achieve a certain desired goal. The principal objectives of the present work is to prepare a set of code of conduct for various segments of the shrimp aquaculture industry in Bangladesh to help ensure (i) food safety by minimizing biological and chemical risks and hazards that are likely to affect human health, (ii) traceability of the food, (iii) environmental sustainability and bio-diversity, (iv) (v) labour standard and (vi) social harmony at each step of the value chain. All these issues are very important for sound and sustainable development of the industry providing safe, environmentally sustainable, and socially acceptable shrimp and other fisheries products for domestic consumption as well as export.

BSFF, in collaboration with DoF, has prepared Codes of Conduct for the following segments of the shrimp industry:

- (1) Black tiger or Bagda shrimp (*Penaeus monodon*) hatchery
- (2) Galda (*Macrobrachium*) shrimp hatchery
- (3) Black tiger or Bagda shrimp (*Penaeus monodon*) farm
- (4) Galda shrimp (*Macrobrachium*) farm
- (5) Shrimp / Fish feed mill
- (6) Shrimp collection and service centre or depot
- (7) Ice plants
- (8) Fishing boats
- (9) Shrimp or fish carrier transport van / vessel

Reference documents used

Preparations of the above Codes have been based on the review of the following documents:

1. International Principles of Responsible Aquaculture UN/FAO/UNEP/World Bank-Netherland funded WWF- 2003
2. EU and US FDA food safety regulations
3. Best Aquaculture Practices formulated by Global Aquaculture Alliance (GAA)
4. Code of Conduct: Seal of Quality Program of USAID/ATDP-II
5. Good Aquaculture Practices(GAqPs) – JIFSAN
6. Fish & Fish Products’ Inspection and Quality Control Ordinance 1983
7. Fish & Fish Products’ Inspection and Quality Control Rules 1997 and Rules Amended in 2008
8. Bangladesh Labour Law 2006
9. Fish and Shrimp Hatchery Law 2010
10. Fish and Animal Feed Law 2010

While developing the Codes, the EU and US FDA food safety requirements and international buyers’ demands were particularly kept in mind

1. Black tiger or Bagda shrimp (*Penaeus monodon*) hatchery

1. LEGAL OWNERSHIP AND RIGHT TO THE USE OF THE HATCHERY LAND AND INFRASTRUCTURE

- 1.1 The hatchery operator must have a legal document that he has legal rights to use the hatchery either as an owner or as a leaseholder
- 1.2 In case the hatchery operator is a leaseholder, he will have to have a lease money clearance certificate from the hatchery owner
- 1.3 Both hatchery owner and lessee must a copy of the lease document with details of lease conditions and signed by each party and at least one witness for each party

2. HARMONY WITH THE COMMUNITY

- 2.1 Hatchery shall work in harmony with the local community
- 2.2 Hatchery shall not create any obstacles for the local communities to access the public mangrove areas, fishing grounds or other public resources
- 2.3 Hatchery shall not interfere with other normal activities of the place

3. ENVIRONMENTAL PROTECTION AND SUSTAINABILITY

3.1 Site selection saving mangrove and public wetlands

- Site selection for a marine hatchery shall be done in an environmentally suitable location.
- The hatchery site shall be outside any mangrove area
- Hatchery construction and operations shall not result in any loss of mangroves or affect sensitive coastal ecosystems or sanctuaries.
- The site must permit easy transportation of hatchery inputs and outputs
- The site must have easy access to good quality sea water and fresh water
- Operation of a marine shrimp hatchery shall not interfere with the natural environment and other normal activities of the place
- Hatchery operation shall not pollute the environment
- Hatchery must have opportunities for waste water disposal in an environment friendly way

3.2 Brood-stock origin

- Hatchery shall use only local species collected from local environment and shall not import any shrimp or use any exotic species without documented approval from the national authorities and observing the national quarantine rules for import of live animals
- Hatchery animals shall be adequately contained and shall not have access to open water environment
- Hatchery shall use only mature brood shrimp collected from outside the 40 m zone with specially designed and equipped brood shrimp collection crafts, not with commercial trawlers

3.3 Brood-stock health

- Hatcheries shall establish health monitoring and control procedures to minimize the risk of disease.
- Hatchery shall not use any unchecked or PCR-positive, that is, virus-infected brood shrimp for hatchery use
- Hatchery shall not throw infected or dead shrimp indiscriminately; it shall either burn or bury the infected or dead shrimp

3.4 Safe discharge of waste liquids and solids

- Hatcheries shall monitor effluent water at least bi-monthly to confirm that the hatchery effluent water has the following qualities:
- pH: 6 – 9
- Total suspended solids (mg/L): Not more than 50
- Soluble phosphorus (mg/L): 0.3 or less
- Total ammonia nitrogen (mg/L): 3 or less
- 5-day biochemical oxygen demand (mg/L): 30 or less
- Hatchery shall treat the waste water before discharging it into any open water system to assure that the BOD of the discharged water is not in excess of that of the open water
- Dissolved oxygen (mg/L): 5 or more

[**Biochemical oxygen demand** or **BOD** is a chemical procedure for determining the amount of dissolved oxygen needed by aerobic biological organisms in a body of water to break down organic material present in a given water sample at certain temperature over a specific time period. It is not a precise quantitative test, although it is widely used as an indication of the organic quality of water. It is most commonly expressed in milligrams of oxygen consumed per litre of sample during 5 days of incubation at 20 °C.]

- Discharged water shall not contain any uncertified chemical residues
- Dead shrimp or PL shall be burned or responsibly buried into the soil

3.5 Storage and Disposal of Hatchery Supplies

- Fuel, lubricants, and agricultural chemicals shall be stored and disposed of in a safe and responsible manner.
- Paper and plastic refuse shall be disposed of in a sanitary and responsible way.

4. FOOD SAFETY

4.1 Drug and Chemical Management

- Banned antibiotics, drugs and other chemical compounds shall not be used.
- Other therapeutic agents may be used as directed on product labels for control of diagnosed diseases or required management, not general prophylactic or preventive purposes

5. REGISTRATION WITH AND LICENSE FROM AN APPROPRIATE ORGANIZATION

5.1 The hatchery must be registered with the Department of Fisheries or any GoB authorized organization

5.2 License to the hatchery will be given only if the hatchery is in compliance with the country's set regulations in respect of food safety, social responsibilities, environmental sustainability and local development plans

6. SELLING AND TRANSPORTATION OF PL

6.1 Minimum age for sale of PL

Hatchery shall not sell PL younger than PL-10 to farmers

6.2 Techniques to be used

- Hatchery shall sell PL only in polyethylene bags supplied with adequate oxygen
- Hatchery shall use insulated carrier and ice for long distance transportation of the PL to maintain a relatively low and stabilized (20 – 22 C) temperature of the water containing the PL

- Hatchery shall adjust the PL close to the salinity of the farming areas
- Hatchery shall ensure that the water used in the oxygen bag is free from prohibited chemicals
- Hatchery must mention on PL bags: (i) Age of the PL in days, (ii) Adjusted salinity level, (iii) Declaration that the PL are not infected with WSSV or YHV and free from prohibited antibiotics and other prohibited chemicals

7. WORKERS' HEALTH AND HYGIENE ISSUES

- 7.1 All workers handling brood-stocks and PL shall have a valid medical certificate that they are not suffering from any contagious or communicable disease
- 7.2 A person with a contagious or communicable disease shall not be permitted access into the hatchery
- 7.3 Workers shall be instructed and/ or trained in food hygiene matters related with their work activities
- 7.4 Workers shall be provided with adequate training in the application of the HACCP principles and good hygiene practices
- 7.5 Workers shall wear neat and tidy dress while working in the hatchery
- 7.6 The hatchery shall have an adequate number of flush lavatories; lavatories are not to open directly into the working areas
- 7.7 Shall have adequate number of wash basins with hand cleaning agents
- 7.8 Shall have disinfecting foot baths at the entry of the hatchery

8. LABOUR STANDARD COMPLIANCE

- Hatchery shall comply with National Labour Law applicable to hatcheries
- Shall not employ child labor

9. TRACEABILITY RECORDS

- 9.1 Hatchery shall systematically record sources (geographical areas), suppliers and dates of brood- stocks received
- 9.2 Shall maintain records of all drugs used, sources of drugs, reasons for use and dates and dosages of application
- 9.3 Shall maintain records of the sources of feeds, dates and quantities used
- 9.4 Shall maintain records of the buyers' names and addresses along with dates, PL number and lot number of the PL sold to each buyer

2. Galda (*Macrobrachium*) Shrimp hatchery

1. LEGAL OWNERSHIP OR RIGHT TO THE USE OF THE HATCHERY AND INFRASTRUCTURE

The hatchery operator must have a legal document that he has legal rights to use the hatchery either as an owner or as a leaseholder

In case the hatchery operator is a leaseholder, he will have to have a lease money clearance certificate from the hatchery owner

Both hatchery owner and lessee must a copy of the lease document with details of lease conditions and signed by each party and at least one witness for each party

2. HARMONY WITH THE COMMUNITY

Hatcheries shall work in harmony with the local community

Hatchery shall not deny local communities access to public mangrove areas, fishing grounds or other public resources

Hatchery shall not interfere with other normal activities of the place

3. ENVIRONMENTAL PROTECTION AND SUSTAINABILITY

Hatchery construction and operations shall not cause any harm to mangroves or affect sensitive coastal ecosystems or sanctuaries.

3.1 Site selection

- Site selection for a *Macrobrachium* or Galda shrimo hatchery must be at an environmentally suitable location.
- The hatchery site shall be outside any mangrove area
- The site shall have easy access to road or water ways
- Hatchery construction and operations shall not result in any loss of mangroves or affect sensitive coastal ecosystems or sanctuaries.
- The site must permit easy transportation of hatchery inputs and outputs
- The site must have easy access to good quality saline water and fresh water
- Operation of the hatchery shall not interfere with the natural environment and normal activities of the place
- Hatchery operation shall not pollute the environment
- Hatchery must have opportunities for waste water disposal in an environment friendly way

3.2 Brood-stock origin

Hatchery shall use only local species collected from local environment and shall not import any shrimp or use any exotic species without documented approval from the national authorities and observing the national quarantine rules for import of live animals

3.3 Brood-stock health

- Hatcheries shall establish health monitoring and control procedures to minimize the risk of disease.
- Hatchery shall test all brood stocks for pathogens and preserve records on all tests conducted
- Hatchery shall not use any unchecked or disease infected brood-stocks for hatchery use
- Hatchery shall not throw infected or dead shrimp indiscriminately; it shall either burn or bury the infected or dead shrimp

3.4 Safe discharge of waste liquids

- Hatchery shall not discharge saline water into any non-saline land or non-saline open water bodies
- Hatchery shall treat the waste water before discharging it into any saline open water system to assure that the BOD of the discharged water is not in excess of that of the open water
- Discharged water shall not contain any uncertified chemical residues
- Dead shrimp or PL shall be burned or responsibly buried into the soil

3.5 Storage and Disposal of Hatchery Supplies

- Fuel, lubricants, and agricultural chemicals shall be stored and disposed of in a safe and responsible manner.
- Paper and plastic refuse shall be disposed of in a sanitary and responsible way.

4. FOOD SAFETY

Drug and Chemical Management

- Banned antibiotics, drugs and other chemical compounds shall not be used.
- Other curative agents may be used as directed on product labels for control of diagnosed diseases or required management, not prophylactic or preventive purposes
- Feed to be used at hatchery either for brood shrimp or for larval stages shall be free from prohibited drugs or excessive levels of other hazardous chemicals (procuring safe feed is the responsibility of the hatchery operator)

5. REGISTRATION WITH AND LICENSE FROM AN APPROPRIATE ORGANIZATION

- The hatchery must be registered with the Department of Fisheries or any GoB authorized organization
- License to the hatchery will be given only if the hatchery complies with the country's set regulations in respect of food safety, social responsibilities, environmental sustainability and local development plans

6. SELLING AND TRANSPORTATION OF PL

5.1 Hatchery shall not sell PL younger than PL-10 to farmers

5.2 Transportation techniques

- Hatchery shall sell PL only in polyethylene bags supplied with adequate oxygen
- Hatchery shall use insulated carrier and ice during long distance transport to maintain a relatively low and stabilized temperature (20 – 22 C) of the water containing the PL
- Hatchery shall fully adjust the PL to freshwater or close to the salinity of the farming areas
- Hatchery shall ensure that the water used in the oxygen bag is free from prohibited chemicals
- Hatchery must mention on PL bags: (i) Age of the PL in days, (ii) Adjusted salinity level, (iii) Declaration that the PL are not infected with any disease and free from prohibited antibiotics and other prohibited chemicals

7. WORKERS' HEALTH AND HYGIENE ISSUES

- All workers handling brood-stocks and PL shall have a valid medical certificate that they are not suffering from any contagious or communicable disease
- A person with a contagious or communicable disease shall not be permitted access into the hatchery

- Workers shall be instructed and/ or trained in food hygiene matters related with their work activities
- Workers shall be provided with adequate training in the application of the HACCP principles and good hygiene practices
- Workers shall wear neat and tidy dress while working in the hatchery
- The hatchery shall have an adequate number of flush lavatories; lavatories are not to open directly into the working areas
- Shall have adequate number of wash basins with hand cleaning agents
- Shall have disinfecting foot baths at the entry of the hatchery

8. LABOUR STANDARD COMPLIANCE

- Hatchery shall comply with National Labour Law
- Shall not employ child labour

9. TRACEABILITY RECORDS

[Traceability is a system by which fish (or any other food products) and any inputs that may have been incorporated into the fish can be traced from its origin to the consumer level. Providing traceability records is mandatory to export fish to EU countries]

- Hatchery shall systematically record sources (geographical areas), suppliers and dates of brood- stocks received
- Shall maintain records of all drugs used, sources of drugs, reasons for use and dates and dosages of application
- Shall maintain records of the sources of feeds, dates and quantities used
- Shall maintain records of the buyers' names and addresses along with dates, PL number and lot number of the PL sold to each buyer
- Record keeping should be done as per the format to be given by the Competent Authority

3. Black tiger or Bagda shrimp (*Penaeus monodon*) farm

1. LEGAL OWNERSHIP OR RIGHT TO THE USE OF THE FARM LAND AND INFRASTRUCTURE

- 1.1 The farm owner must have a legal document that he has legal rights to use the farm either as an owner or as a leaseholder
- 1.2 In case the farmer is a leaseholder, he will have to have a lease money clearance certificate from the land owner
- 1.3 Both land owner and lessee must a copy of the lease document with details of lease conditions and signed by each party and at least one witness for each party

2. COMMUNITY HARMONY

- 2.1 Farm shall work in harmony with the local community
- 2.2 Farm shall not create any obstacles for the local communities to have access to public mangrove areas, fishing grounds or other public resources

3. ENVIRONMENTAL PROTECTION AND SUSTAINABILITY

3.1 Site selection saving mangrove

- Any new farm shall be outside the mangrove area and shall not cause any damage to neighboring mangrove cover
- Any existing farm in a mangrove area shall plant mangrove plants on the strip of land, if existing and available to him, in between the adjacent river and the riverward dike of the farm
- The farm shall not occupy any part of common property wetland or obstruct or interfere with the flowing canal

3.2 Design, construction and operation

- Design and construction of the farm dikes, intake or drainage canals or the sluice gates shall not result in loss of any mangrove or erosion of river banks or neighboring land
- Shall not obstruct or change the flow of any neighboring canals
- Pond construction shall not expose any acid-sulphate soil
- Shall not cause soil erosion
- Water from one pond shall not have access to another pond
- Pond's effective depth will be 1.0 – 1.3 meter

3.3 Water Conservation

- Pond will use only surface water, no underground water
- Farm shall not draw underground water for farming purpose
- Farm construction and operations shall not allow any saline water to seep into neighboring agricultural land

3.4 PL source

- Farmer shall not use PL of wild sources for the sake of environmental sustainability, bio-diversity and traceability, but will use PL from a certified hatchery
- Farmer shall use only PCR-negative and disease-free healthy hatchery PL
- Farm shall comply with government regulations regarding the importation of native and exotic shrimp seed stocks

3.5 Effluent Management

Farm shall monitor effluent water at least bi-monthly to confirm the following:

- pH: 6 – 9
- Total suspended solids (mg/L): Not more than 50
- Soluble phosphorus (mg/L): 0.3 or less
- Total ammonia nitrogen (mg/L): 3 or less
- 5-day biochemical oxygen demand (mg/L): 30 or less
- Hatchery shall treat the waste water before discharging it into any open water system to assure that the BOD of the discharged water is not in excess of that of the open water
- Dissolved oxygen (mg/L): 5 or more

3.6 Sediment Management

Farms shall contain sediment from ponds, canals, and settling basins and not throw them into open water or others' land causing ecological or social problems.

3.7 Storage and Disposal of Farm Supplies

- Fuel, lubricants, and agricultural chemicals shall be stored and disposed of in a safe and responsible manner
- Paper and plastic refuse shall be disposed of in a sanitary and responsible way.

4. REGISTRATION WITH AND LICENSE FROM AN APPROPRIATE ORGANIZATION

4.1 The farm must be registered with the Department of Fisheries or any GoB authorized organization

4.2 License for farm operation will be given or renewed only if the farm complies with the Code of Conduct approved by the Competent Authority for the Bagda farms.

5. FOOD SAFETY

5.1 Microbial Sanitation

- Cow dung, poultry litter and human wastes shall not be used as fertilizers in ponds
- No animal or bird pets shall be allowed inside the farm premises
- No run off water likely to carry pathogenic bacteria shall be allowed to enter the ponds

5.2 Drug and Chemical Management

- Do not use a land having a history of agricultural pesticide contamination
- Do not allow use of pesticides on the agricultural crop in the aquaculture field
- Agricultural pesticides with long residual effect shall not be used in the field used for agriculture-aquaculture rotation
- Banned antibiotics, drugs and other chemical compounds shall not be used
- Therapeutic or curative agents may be used as directed on product labels for control of diagnosed diseases or required management
- Prophylactic or preventive drugs shall not be
- Withdrawal period as prescribed by the pharmaceutical company for any curative medicine shall be followed

5.3 Feed and feed management

- Feed or feed ingredients not certified by the manufacturers to be free from non approved antibiotics, drugs or other chemicals including artificially formulated growth hormones , shall not be used (procuring safe feed is the responsibility of the farm operator)
- Any uncooked feed ingredients of animal origin shall not be used
- Feed that contains shrimp or crab shell, shall not be used
- Any oversupply of feed shall be strongly discouraged to avoid water pollution, besides wastage of expensive feed

5.4 Shed and shrimp dumping facilities at harvesting points

- The farm shall have a clean shed with a raised and smooth cemented or mosaic floor for dumping shrimp after harvest; if such a platform not possible, place shrimp on a thick and clean plastic sheet spread under the shed
- Farms shall use only certified plastic baskets for holding shrimp
- Farm shall not use any bamboo baskets and mats of bamboo, jute or other plant materials

5.5 Water supply

- Farm shall have adequate supply of clean water for washing shrimp and all other facilities
- Farm shall have supply of drinking water for the workers

5.6 Ice supply

- Farm shall have adequate ice storage facilities made of materials that can be effectively cleaned and disinfected regularly
- Ice shall be procured only from those factories that are certified by appropriate authorities to have used water free from arsenic or excessive iron and is of acceptable microbiological standard

5.7 Synchronizing farm harvesting and shrimp transportation to depot/processing factory at the earliest to ensure freshness of the shrimp

- Farmer and depot or its agents will work together to synchronize harvesting of the farms, supplying adequate ice of good hygienic quality to the farms, transporting of the shrimp in ice to depot and then to factories within the shortest possible time to ensure shrimp freshness and more efficiently utilize the processing facilities
- The supplier or its agent will organize and supervise shrimp harvest, gather shrimp in the farm side shed, wash the shrimp in clean water and put the shrimp in ice water filled chill tank as soon after harvest as possible to cool the shrimp uniformly to temperature below 5C.
- Put the shrimp in shrimp box with layers of high quality flake or finely crushed block ice in 1:1 ratio.
- Transport the iced shrimp in insulated motor van / carrier vessel to depot soonest; in the absence of an insulated motor van, use a paddle van, but it must have a hood providing adequate shade to the shrimp boxes

5.8 Daily cleaning and sanitation

- Sweeping to remove solid wastes and dirt particles
- Rinse to remove fine particles of dirt
- Apply alkaline or chlorinated alkaline detergent, workout foam with a brush or 'green pad' and thoroughly clean shrimp dumping floor or plastic sheet, weighing balance, fish boxes, ice crushing box, iced water cooling tank, etc
- Rinse with safe water
- Apply sanitizer in the form of 100-200 ppm chlorine water to shrimp dumping floor, plastic sheet, shrimp boxes, ice crushing boxes, cooling tank weighing balance, etc
- After cleaning and sanitizing, completely dry all parts
- Keep lavatories clean and disinfected all the time
- No body with any contagious disease or wounds in hands should be allowed to handle shrimp

6. WORKERS' HEALTH AND HYGIENE ISSUES

6.1 All workers handling shrimp shall have a valid medical certificate that they are not suffering from any contagious disease; a person with a contagious disease shall not be permitted access into the farm

6.2 Workers shall be instructed and/ or trained in food hygiene matters related with their work activities

6.3 Workers shall be provided with adequate training in the application of the HACCP principles and good hygiene practices

6.4 The farm, singly or in a small group, shall have a sanitary lavatory

6.5 Shall have adequate workable facilities to clean their hands and feet with cleaning agents

7. LABOUR STANDARD COMPLIANCE

7.1 Farm should comply with national labour standard for the farming sector

7.2 Child labour shall not be employed

8. TRACEABILITY RECORDS

[Traceability is a system by which fish (or any other food products) and any inputs that may have been incorporated into the fish can be traced from its origin to the consumer level. Providing traceability records is mandatory to export fish to EU countries]

8.1 Farm shall systematically record data in the DoF prescribed Record Book

- Pre-stocking pond preparation data: Date and quantities of lime, fertilizers or other chemicals used
- Supply water sources and chemical and microbiological data
- Shall maintain records of all drugs used, sources of drugs, reasons for use and dates and dosages of application
- Shall maintain records of the sources of feeds, dates and quantities used
- Shall maintain records of sources of PL
- Shall maintain records of the shrimp buyers' names and addresses along with dates,

4. Galda (*Macrobrachium*) Shrimp Farms

1. LEGAL OWNERSHIP OR RIGHT TO THE USE OF THE FARM LAND AND INFRASTRUCTURE

- The farm owner must have a legal document that he has legal rights to use the farm either as an owner or as a leaseholder
- In case the farmer is a leaseholder, he will have to have a lease money clearance certificate from the land owner
- Both land owner and lessee must a copy of the lease document with details of lease conditions and signed by each party and at least one witness for each party

2. COMMUNITY HARMONY

- Farm shall work in harmony with the local community
- Farm shall not deny local communities access to public mangrove areas, fishing grounds or other public resources

3. ENVIRONMENTAL PROTECTION AND SUSTAINABILITY

3.1 Site selection saving mangrove and common property wetland

- Any new farm shall be outside the mangrove area and shall not cause any destruction to neighboring mangrove cover
- Any existing farm in a mangrove area shall plant mangrove plants on the strip of land, if existing and available to him, in between the adjacent river and the riverward dike of the farm
- The farm shall not occupy or obstruct any part of common property wetland or flowing canal

3.2 PL source

- Farmer shall not use PL of wild sources for the sake of environmental sustainability, bio-diversity and traceability, but will use PL from a certified hatchery
- Farmer shall use pathogen free and healthy hatchery PL
- Farmers shall not use any PL illegally brought into the country
- Farm shall comply with governmental regulations regarding the importation of any PL

3.3 Design, construction and operation

- Design and construction of the farm dikes, intake or drainage canals or the sluice gates shall not cause any harm to mangrove or erosion of river banks or neighboring land
- Pond shall not obstruct or change the flow of any neighboring canals
- Pond shall not obstruct any major natural course of monsoon run-off water
- Pond dyke shall not allow access of run-off water into the pond
- Pond, if tide-fed, will have adequate reservoir ponds for sedimentation and water treatment both for incoming water for filling in the grow out pond and as well as for outgoing water for discharge at the end of the culture period
- Pond shall have facilities for draining out any residual water from the pond at the end of culture operation
- Shall not allow any saline water to seep into neighboring agricultural land
- Pond's effective depth will be 1.0 – 1.3 meter
- Pond will not use any underground water for filling the pond

3.4 Effluent Management

- Organic load and the load of solid suspended materials of effluent water shall be less than those of the outside open water
- Effluent water having salinity higher than 1ppt shall not be released into any agricultural land

3.5 Sediment Management

Farms shall contain sediment from ponds and internal canals and not throw them into surrounding water or land of other farmers causing ecological or social problems.

3.6 Soil/Water Conservation

- Pond will use only surface water, no underground water
- Farm shall not draw underground water for farming purpose
- Farm construction and operations shall not allow any saline water to seep into neighboring agricultural land

3.7 Storage and Disposal of Farm Supplies

- Fuel, lubricants, and agricultural chemicals shall be stored and disposed of in a safe and responsible manner
- Paper and plastic refuse shall be disposed of in a sanitary and responsible way.

4. REGISTRATION AND LICENSE

4.1 The farm must be registered with the Department of Fisheries or any GoB authorized organization

4.2 License for farm operation will be given or renewed only if the farm is in compliance with the country's set regulations in respect of food safety, social responsibilities, environmental sustainability and local development plans

5. FOOD SAFETY

5.1 Avoidance of pesticide contamination

- Do not use a land having a history of agricultural pesticide contamination
- Do not allow use of pesticides on the agricultural crop in the aquaculture field

5.2 Microbial Sanitation

- Untreated human sewage shall not be released from the farm or neighborhood into local ecosystems or the ponds
- Cow dung, poultry litter and human wastes shall not be used as fertilizers in ponds
- No animal or bird pets shall be allowed inside the farm premises
- No run off water likely to be contaminated with pathogenic bacteria shall be allowed to enter the ponds

5.3 Drug and Chemical Management

- Banned antibiotics, dyes, hormones and other drugs and chemical compounds shall not be used
- Chemicals or drugs not banned but restricted due to their health hazard potentials shall be avoided
- Prescribed therapeutic agents may be used as directed on product labels for control of diagnosed diseases or required management
- Prescribed withdrawal period for any drug shall be followed

5.3 Feed and feed management

- Feed or feed ingredients not certified by the manufacturers to be free from non approved antibiotics, drugs or other chemicals including artificially formulated growth hormones, shall not be used (procuring safe feed is the responsibility of the farm operator)
- Any uncooked feed ingredients of animal origin shall not be used
- Feed that contains shrimp, crab or any other crustacean shell, shall not be used
- Any oversupply of feed shall be strongly discouraged to avoid water pollution, besides wastage of expensive feed

5.4 Shed and shrimp dumping facilities at harvesting points

- The farm shall have a clean shed with a raised and smooth cemented or mosaic floor for dumping shrimp after harvest; if such a platform not possible, place shrimp on a thick and clean plastic sheet spread under the shed

- Farms shall use only certified plastic baskets for holding shrimp
- Farm shall not use any bamboo baskets and mats of bamboo, jute or other plant materials

5.5 Water supply

- Farm shall have adequate supply of clean water for washing shrimp and all other facilities
- Farm shall have supply of drinking water for the workers

5.6 Ice supply

- Farm shall have adequate ice storage facilities made of materials that can be effectively cleaned and disinfected regularly
- Ice shall be procured only from those factories that are certified by appropriate authorities to have used water free from arsenic or excessive iron and is of acceptable microbiological quality

5.7 Daily cleaning and sanitation

- Sweeping to remove solid wastes and dirt particles
- Rinse to remove fine particles of dirt
- Apply alkaline or chlorinated alkaline detergent, workout foam with a brush or 'green pad' and thoroughly clean shrimp dumping floor or plastic sheet, weighing balance, fish boxes, ice crushing box, iced water cooling tank, etc
- Rinse with safe water
- Apply sanitizer in the form of 100-200 ppm chlorine water to shrimp dumping floor, plastic sheet, shrimp boxes, ice crushing boxes, cooling tank weighing balance, etc
- After cleaning and sanitizing, completely dry all parts
- Keep lavatories clean and disinfected all the time
- No body with any contagious disease or wounds in hands should be allowed to handle shrimp

6. WORKERS' HEALTH AND HYGIENE ISSUES

- All workers handling shrimp shall have a valid medical certificate that they are not suffering from any contagious disease; a person with a contagious disease shall not be permitted access into the farm
- Workers shall be instructed and/ or trained in food hygiene matters related with their work activities
- Workers shall be provided with adequate training in the application of the HACCP principles and good hygiene practices
- The farm, singly or in a small group of neighboring farms , shall have a sanitary lavatory
- Shall have adequate workable facilities to clean their hands and feet with cleaning agents before handling shrimp and ice

7. LABOUR STANDARD COMPLIANCE

- Farm owner shall comply with national labour standard for the farming sector
- Farm shall not use child labour

8. TRACEABILITY RECORDS

[Traceability is a system by which fish (or any other food products) and any inputs that may have been incorporated into the fish can be traced from its origin to the consumer level. Providing traceability records is mandatory to export fish to EU countries]

8.1 Farm shall systematically record data in the Record Book as prescribed by the DoF (Competent Authority)

8.2 Pre-stocking pond preparation data: Date and quantities of lime, fertilizers, or other chemicals used

- 8.3 Supply-water sources and chemical and microbiological data
- 8.4 Shall maintain records of all drugs used, sources of drugs, reasons for use and dates and dosages of application
- 8.5 Shall maintain records of the sources of feeds, dates and quantities used
- 8.6 Shall maintain records of sources of PL
- 8.7 Shall maintain records of the shrimp buyers' names and addresses along with dates,

5. FEED MILL

1. LEGAL OWNERSHIP AND RIGHT TO THE USE OF THE FEED MILL

- 1.1 The farm owner must have a legal document that he has legal rights to use the feed mill either as an owner or as a leaseholder
- 1.2 In case the feed miller is a leaseholder, he will have to have a lease money clearance certificate from the mill owner
- 1.3 Both mill owner and lessee must a copy of the lease document with details of lease conditions and signed by each party and at least one witness for each party

2. HARMONY WITH THE COMMUNITY

- 2.1 Feed mill shall work in harmony with the local community
- 2.2 Feed mill shall not deny local communities access to public mangrove areas, fishing grounds or other public resources.

3. ENVIRONMENTAL PROTECTION AND SUSTAINABILITY

- 3.1 Feed mill construction and operations shall not cause any harm to the mangrove
- 3.2 Shall not cause any threat to the neighboring wetland with the factory effluents
- 3.3 Shall not pollute or disturb the neighboring environment or any part of the ecosystem

4. LOCATION, LAYOUT DESIGN AND CONSTRUCTION

4.1 Location

- The site shall be above average monsoon flood or highest high tide line
- Feed mill shall be easily accessible by road and /or water transports for easy and quick transport of inputs to and finished feed from the feed mill for marketing
- Must have easy access to and ample supply of good quality water free from excessive iron, arsenic or other hazardous chemicals, silt and pathogenic bacteria loads
- The environment of the feed mill shall be neat and clean

4.2 Layout design and construction:

- The feed mill floor shall be at least 45 cm high above the ground level
- Floor, and the wall up to 6 ft height should be smooth and made of non-absorbent material fit for regular cleaning and disinfecting
- Permit adequate maintenance, cleaning and disinfection
- Avoid or minimize air-borne contamination
- Protect against insects, rodents, lizards, birds and pet animals that may contaminate feed ingredients and finished feed with pathogenic germs and filth
- Protect against the accumulation of dirt, contact with toxic materials, the shedding of particles into feed
- Provide adequate working space to allow hygienic performance of all operations

- Provide suitable handling and storage conditions of feed ingredients and feed at appropriate temperatures
- Provide an adequate number of flush lavatories that should not open directly into rooms in which ice is handled
- Provide an adequate number of washbasins suitably located and designated for cleaning hands
- Have foot dips with disinfectants before entering the feed making and handling areas
- Have adequate natural and/or artificial lighting and ventilation
- Have adequate drainage facilities designed and constructed to avoid the risk of contamination; waste does not flow from a contaminated area towards or into a clean area
- Ensure facilities for waste disposal in an environment friendly way
- Ensure storage area for cleaning agents and disinfectants is separated by a partition wall from the fish handling and storage areas
- Ensure that used water goes directly into the drain not overflowing the working areas
- Feed mill will have adequate solid waste disposal arrangements
- At the entry of the feed ingredient and finished feed storage and feed production area, there shall be a disinfecting foot-dip

4.3 Storage and Disposal of Supplies

- Fuel, lubricants and agricultural chemicals shall be stored and disposed of in a safe and responsible manner
- Paper and plastic refuse shall be disposed of in a sanitary and responsible way.

5 FOOD SAFETY

5.1 Use of Drug and Chemicals: Feed mill shall not use any prohibited antibiotics, growth hormones, steroids, pesticides or any other hazardous chemicals in the feed or feed ingredients, nor shall he use any feed ingredients already contaminated elsewhere with the above materials.

5.2 Feed mill shall not use shrimp, crab or other crustacean shell as a feed ingredient, since the crustacean shell is likely to contain high levels of nitrofurans, a group of prohibited antibiotics

5.3 Feed factory must have facilities and employed the facilities for disinfecting the ingredients by steaming

5.4 Maximum permissible level: Feed mill may use any permitted chemicals provided the feed does not contain the chemicals beyond the nationally and internationally set maximum permissible levels

5.5 Packaging and labeling

- No feed shall be marketed unless it is contained in an air tight packet or container with the declaration on it that the content is free from any prohibited antibiotics, growth hormones and steroids,
- The package or the box shall also provide the following information:
 - Declaration that the content of the packet is free from any prohibited antibiotics or other chemicals
 - Maximum Residue Level (MRL) of any restricted chemicals used
 - Manufacturer's name, address and Registration Number
 - Net weight of the feed in container
 - Names of ingredients used with percent composition of various nutrients
 - Names of the farmed shrimp, fish or other animals for which the feed is meant
 - Date of manufacture and date of expiry

- Recommended storage temperature and other specifications
- Traceability code

6 REGISTRATION WITH AND LICENSE FROM AN APPROPRIATE ORGANIZATION

- 6.1 The feed mill must be registered with the Department of Fisheries or the Competent Authority
- 6.2 Feed mill must have a license from the Competent Authority for manufacturing, marketing, distribution or holding of its own products
- 6.3 All vendors of fish and animal feed or feed ingredients must be licensed and conformed to the storage, marketing and transportation rules as set by the Competent Authority
- 6.4 An importer of feed ingredients or finished feed must have a license from the Competent Authority
- 6.5 All imported feed ingredients or finished feed must conform to the same conditions as laid down at section on Packaging Labeling as stated above.

7 WORKERS' HEALTH AND HYGIENE ISSUES

- 7.1 All workers handling feed ingredients and finished feed shall have a valid medical certificate that they are not suffering from any contagious disease
- 7.2 A person with a contagious or communicable disease shall not be permitted access into the feed mill
- 7.3 Workers shall be instructed and/ or trained in food hygiene matters related with their work activities
- 7.4 Workers shall be provided with adequate training in the application of the HACCP principles and good hygiene practices
- 7.5 Workers shall wear neat and tidy dress while working in the hatchery
- 7.6 The feed factory shall have an adequate number of flush lavatories; lavatories are not to open directly into the working areas
- 7.7 Shall have adequate number of wash basins with hand cleaning agents

8 LABOUR STANDARD COMPLIANCE

- 8.1 Labor standard compliance
 - Feed mill shall comply with country's Labor Law
 - Shall have all the essential labor-related documentations as per requirements under the Labor Law and keep them up to date
 - Shall strictly comply with the child labor law
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9 TRACEABILITY RECORDS

[Traceability is a system by which fish (or any other food products) and any inputs that may have been incorporated into the fish can be traced from its origin to the consumer level. Providing traceability records is mandatory to export fish to EU countries]

- 9.1 Feed mill shall systematically record detailed sources, dates and quantities of all imported or all locally procured feed ingredients, additives or any chemicals and drugs used in the feed preparations
- 9.2 Feed mill shall maintain a record of selling of feed along with the names and addresses of buyers, quantities of sales by dates and buyers, etc as per requirement of the country's Competent Authority
- 9.3 Shall maintain records of all drugs used, sources of drugs, reasons for use and dates and dosages of application

6. Shrimp Collection and Service Centre / Depot

1. LEGAL OWNERSHIP OR RIGHT TO THE USE OF THE DEPOT AND INFRASTRUCTURE

- The depot owner must have a legal document that he has legal rights to use the depot and the infrastructure either as owner or as a leaseholder
- In case the depot owner is a leaseholder, he will have to have a lease money clearance certificate from the depot owner
- Both depot owner and lessee must a copy of the lease document with details of lease conditions and signed by each party and at least one witness designated by each party

2. COMMUNITY HARMONY

- Depot shall work in harmony with the local community
- Depot shall not deny local communities access to public mangrove areas, fishing grounds or other public resources

3. ENVIRONMENTAL PROTECTION AND SUSTAINABILITY

3.1 Site selection saving mangrove and common property wetland

- Any new depot shall be outside the mangrove area and shall not cause any damage to neighboring mangrove cover
- Any existing depot in a mangrove area shall plant mangrove plants on the strip of land, if existing and available to him, in between the adjacent river and the depot
- The depot does not occupy or deny access to any part of common property: road, wetland or flowing canal
- Must have opportunities to discharge solid and liquid wastes from the depot in an environmentally friendly way

4. FOOD SAFETY

4.1 Location,

- Site must be above highest high tide level and monsoon flood level
- Depot shall be easily accessible by road and /or water transports for easy transport of ice to the shrimp farms, easy landing of shrimp from farms to the depot and easy and quick transport of the shrimp to the processing plants
- Must have easy access to and ample supply of good quality water free from hazardous chemicals and pathogenic bacteria loads
- Must have easy access to hygienically safe ice

4.2 Layout Design and Construction

- Depot floor shall be at about 45 cm above the ground level
- The floor, and the wall up to 6 ft height should be smooth and made of non-absorbent material fit for regular cleaning and disinfecting
- Shall have sufficient working spaces allowing efficient and hygienic operation and cleaning
- For dumping the shrimp, there shall be raised mosaic or tile-covered platforms, at least 30 cm high from the floor; this will protect the shrimp from being easily contaminated with dust or dirt

- For easy handling and sorting of the shrimp by the workers standing on foot, there shall be stainless steel tables
- Depot, along with its ice crushing area, will have an enclosure preventing entry of pet animals, birds and rodents
- Doors and windows will have insect and lizard proof screens
- Storage area for cleaning agents and disinfectants is to be separated by a partition wall from the fish handling and storage areas
- Used water should go directly into the drain not overflowing the working areas
- There should be an adequate number of flush lavatories; lavatories are not to open directly into the area in which fish is handled
- There should be an adequate number of washbasins; washbasins are to be provided with materials for cleaning and disinfecting hands
- Shall have adequate natural and artificial lighting arrangements
- Depot will have a good drainage system
- Depot will have adequate solid waste disposal arrangements
- At the entry of the shrimp area, there shall be a disinfecting foot-dip

4.3 Synchronizing farm harvesting and shrimp transportation to depot and then to factories at the earliest to ensure freshness of the shrimp

- Depot and shrimp suppliers or their agents will work together to synchronize harvesting of the farms, supplying adequate ice of good hygienic quality to the farms, transporting of the shrimp in ice to depot and then to factories within the shortest possible time to ensure shrimp freshness and more efficiently utilize the processing facilities
- The supplier or its agent will organize and supervise shrimp harvest, gather shrimp in the farm side shed, wash the shrimp in clean water and put the shrimp in ice water filled chill tank as soon after harvest as possible to cool the shrimp uniformly to temperature below 5C.
- Put the shrimp in shrimp box with layers of high quality flake or finely crushed block ice in 1:1 ratio.
- Transport the iced shrimp in insulated motor van / carrier vessel to depot soonest; in the absence of an insulated motor van, use a paddle van, but it must have a hood providing adequate shade to the shrimp boxes

4.4 Shrimp shall not be de-headed or de-shelled at farm or depot

- The supplier or their agent will not remove the shrimp head or shell anywhere at the field level; shrimp head or shell can be removed only at the processing factory premises under hygienic conditions
- Sorting of the shrimp either for grading or separating bad quality shrimp must be completed as soon as possible
- All handling of the shrimp must be done in hygienic flake or finely crushed ice
- Depot must use hygienic ice from certified ice factories
- Depot shall use only approved and sanitized plastic boxes for shrimp storage or transport
- Depot shall not use any bamboo baskets, Hogla or jute mats for storage or packaging of shrimp
- Shrimp must be repacked in layers of ice in certified plastic shrimp box carried in refrigerated / insulated/ covered carriers to the factories

4.5 Daily cleaning and sanitization at the end of work

- Sweep to remove solid wastes and dirt particles

- Rinse to remove fine particles of dirt
- Apply alkaline or chlorinated alkaline detergent, workout foam with a brush or ‘green pad’ and thoroughly clean shrimp dumping floor or plastic sheet, weighing balance, fish boxes, ice crushing box, iced water cooling tank, etc
- Rinse with safe water
- Apply sanitizer in the form of 100-200 ppm chlorine or 25 ppm iodine or 200 ppm quat sanitizer (quaternary ammonium) to shrimp boxes, plastic wares, gloves, ice crushing boxes, weighing balance, etc
- For floors, walls, foot-dips, toilets: Sanitizer concentration may be doubled
- After cleaning and sanitizing, completely dry all parts
- Keep lavatories clean and disinfected all the time
- No body with any contagious or communicable disease or wounds in hands shall be allowed to handle shrimp
- Clean the foot-dip everyday and refill with fresh disinfecting liquid (200 ppm chlorine water)

5. COMMUNITY HARMONY

- Farm shall work in harmony with the local community
- Farm shall not deny local communities access to public mangrove areas, fishing grounds or other public resources

5. LABOUR LAW

- Depot operators / Supplier will comply with the National Labour Law
- Depot shall not use child labour

6. REGISTRATION WITH AND LICENSE FROM AN APPROPRIATE ORGANIZATION

- Depot must be registered with the Department of Fisheries or any GoB authorized organization
- License for depot operation will be given or renewed only if the depot is in compliance with the country’s set regulations in respect of food safety, social responsibilities, environmental sustainability and local development plans

7. WORKERS’ HEALTH AND HYGIENE ISSUES

- **Medical fitness:** All workers handling shrimp must have a valid medical certificate that they are physically fit to ice
- **Restrictions related to worker’s health:** A person with a contagious or communicable disease and any wounds in hands should not be permitted to handle shrimp
- **Dress:** Workers should wear disinfected gum boot, hand gloves, neat and tidy dress, preferably apron and head gear, while handling shrimp
- Depot owners are to ensure that workers are supervised and instructed and/ or trained in HACCP principles and good hygiene practices related with their work activities.

8. TRACEABILITY

[Traceability is a system by which fish (or any other food products) and any inputs that may have been incorporated into the fish can be traced from its origin to the consumer level. Providing traceability records is mandatory to export fish to EU countries]

Shrimp Collection and Service Centre/Depot must obtain records from each supply farm or boat at least the following information:

- Farm/boat Registration Number,
- Name and address of the supply farm/boat and its owner,

- Date and geographical location of harvesting of the shrimp or fish,
- Type of gear used for harvesting,
- Shrimp/fish iced or not immediately after harvest,
- Source of ice and Registration number of the ice plant producing the ice,
- Date of receiving the shrimp/fish by species and quantity

The depot, on the other hand, must provide to the next buyer of the fish the above and the following information:

- (a) Name and address of the depot
- (b) Registration Number of the depot
- (c) Care provided to the fish
- (d) Date, quantity of fish by species sold,
- (e) Name and address of the buyer

7. ICE PLANTS

1. LEGAL OWNERSHIP OR RIGHT TO THE USE OF THE ICE PLANT LAND AND INFRASTRUCTURE

- 1.1 The ice plant owner must have a legal document that he has legal rights to use the ice plant and the infrastructure either as owner or as a leaseholder
- 1.2 In case the plant owner is a leaseholder, he will have to have a lease money clearance certificate from the ice plant and infrastructure owner
- 1.3 Both ice plant owner and lessee must a copy of the lease document with details of lease conditions and signed by each party and at least one witness designated by each party

2. ENVIRONMENT

2.1 Site selection saving mangrove and common property wetland

- Any new ice plant shall be outside the mangrove area and shall not cause any destruction to neighboring mangrove cover
- Any existing ice plant in a mangrove area shall plant mangrove plants on the strip of land, if existing and available to him, in between the adjacent river and the ice plant
- Must have opportunities to discharge solid and liquid wastes from the ice plant in an environmentally friendly way

2.1 Tidal and monsoon flood level

- Ice plant site shall be above the monsoon flood or highest high tide levels

3. COMMUNITY RELATIONSHIP

- 3.1 The ice plant shall not deny access to or occupy any part of common property: road, wetland or flowing canal
- 3.2 Shall operate in such a way as not to create any social conflict with the community

4. FOOD SAFETY

4.1 Location

- Site must be above highest high tide level and monsoon flood level
- Ice plant shall be easily accessible by road and /or water transports for easy and quick transport of the ice to the depot and farms
- Must have easy access to and ample supply of good quality water free from excessive iron, arsenic or other hazardous chemicals, silt and pathogenic bacteria loads
- Ice plant site shall be neat and clean

4.2 Layout design and construction

Layout design, construction, and size of ice plant are to

- Ensure that the ice plant floor is at least 45 cm high above the ground level
- Ensure that the floor, and the wall up to 6 ft height are made of non-absorbent material fit for regular cleaning and disinfecting
- Permit adequate maintenance, cleaning and disinfection
- Avoid or minimize air-borne contamination
- Protect against insects, birds and pet animals that may contaminate ice factories and the ice with germs and filth
- Protect against the accumulation of dirt, contact with toxic materials, the shedding of particles into ice
- Provide adequate working space to allow hygienic performance of all operations
- Provide suitable temperature-controlled handling and storage conditions of sufficient capacity for maintaining ice at appropriate temperatures
- Provide a raised platform of smooth and non-absorbent and non-toxic surface for keeping the ice blocks before their disposal; this will prevent any possible contamination from the floor
- Provide an adequate number of flush lavatories that should not open directly into rooms in which ice is handled
- Provide an adequate number of washbasins suitably located and designated for cleaning hands
- Have adequate natural and/or artificial lighting and ventilation
- Have adequate drainage facilities designed and constructed to avoid the risk of contamination; waste does not flow from a contaminated area towards or into a clean area
- Ensure facilities for waste disposal in an environment friendly way
- Ensure storage area for cleaning agents and disinfectants is separated by a partition wall from the ice handling and storage areas
- Ensure that used water goes directly into the drain not overflowing the working areas
- At the entry of the ice production and storage area, there shall be a disinfecting foot-dip

4.3 Daily cleaning and sanitization

- Cleaning and sanitization at the end of day's operation
- Perform dry cleaning by way of sweeping to remove solid wastes and dirt particles
- Rinse to remove fine particles of dirt
- Apply alkaline or chlorinated alkaline detergent, workout foam with a brush or 'green pad' and thoroughly clean all parts of the fish landing sites, fish handling tables, implements, weighing balance, fish boxes, etc
- Rinse with safe water

- Apply sanitizer
 - Processing, grading, packaging tables: 100-200 ppm chlorine or 25 ppm iodine or 200 ppm quat sanitizer (quaternary ammonium)
 - Floors, walls, food dips, toilets: Sanitizer concentration doubled
- After cleaning and washing, completely dry all parts
- Keep lavatories clean and disinfected all the time
- No body with any contagious or communicable disease or wounds in hands should be allowed to handle fish
- Ice plant shall not use any bamboo baskets, Hogla or jute mats for storage or packaging of ice
- Ice must be carried in refrigerated / insulated/ covered carriers
- All workers or visitors must disinfect his/her feet in foot-dip (200 ppm chlorine) and hands at the hand washing basins before entering the ice production and handling areas

5. REGISTRATION WITH AND LICENSE FROM AN APPROPRIATE ORGANIZATION

- The ice plant must be registered with the Department of Fisheries or any GoB authorized organization
- License for ice plant operation will be given or renewed only if the ice plant is in compliance with the country's set regulations in respect of food safety, social responsibilities, environmental sustainability and local development plans

6. LABOUR LAW

- Ice plant operators will comply with the National Labour Law
- Ice plant shall not use child labor

7. WORKERS' HEALTH AND HYGIENE ISSUES

- **Medical fitness:** All workers handling ice must have a valid medical certificate that they are physically fit to ice
- **Restrictions related to worker's health:** A person with a contagious or communicable disease and any wounds in hands should not be permitted to handle ice
- **Dress:** Workers should wear disinfected gum boot, hand gloves, neat and tidy dress, preferably apron and head gear, while handling ice
- Plant owners are to ensure that workers are supervised and instructed and/ or trained in HACCP principles and good hygiene practices related with their work activities.

8. TRACEABILITY

[Traceability is a system by which fish (or any other food products) and any inputs that may have been incorporated into the fish can be traced from its origin to the consumer level. Providing traceability records is mandatory to export fish to EU countries]

- Ice plant must be registered with an authorized organization
- Must have information on the sources of water and report on the quality analysis of the water with which ice has been made
- Ice plant must obtain records from each buyer the following information:
 - Name and address of the buyer farm/boat/depot and its owner and the dates of selling ice to them
 - Farm/boat/depot Registration Number of the buyers

8. FISHING BOATS AND VESSELS

1. LAYOUT DESIGN AND CONSTRUCTION

1.1. For all vessels

1.1.1 For ease of cleaning and disinfecting

- Vessels should be designed and constructed to minimize sharp inside corners and projections in order to avoid dirt traps.
- Construction should facilitate ample drainage.
- A good supply of clean water or potable water
- Fish landing deck or space must be of non-absorbent materials that can be easily and effectively cleaned & disinfected
- Surfaces with which fishery products come into contact must be of corrosion-resistant material that is smooth and easy to clean and disinfect
- Surface coatings must be durable and non-toxic
- Equipment and material used for working on fishery products be made of corrosion-resistant, easy to clean and disinfect

1.1.1 For minimizing contamination

- Vessels be so designed as not to cause contamination of the products with bilge-water, sewage, smoke, fuel, oil, grease or other objectionable substances
- Deck areas for handling fish be completely separated from storing areas for fuel, chemicals, cleaning materials
- Equipped with suitable holds, tanks or containers for the storage of fishery products on ice
- Fish hold to ensure that maximum stowage height of fish is 1 metre
- Surface coatings must be durable and non-toxic
- Equipment and material used for working on fishery products be made of corrosion-resistant, easy to clean and disinfect
- Water storage must be situated away from any contamination sources

1.2. Additional requirements for vessels making voyages of more than 24 hours and require to preserve fresh fishery products for voyage period

- Be equipped with suitable sanitary facilities and hand wash basin for the crew
- Adequate insulated holds for ice and iced fish with facilities for drainage of melt water from the iced fish holds
- Separate holds or tanks for storage of bait if the fishing vessel is a long liner
- Be equipped with a first aid box containing adequate antiseptic and waterproof wound dressings

1.3 Additional requirements for freezer and factory vessels (1/2)

- Must be designed to allow each successive catch to be separated
- Protect the products from the sun or any source of contamination
- Must have freezing equipment with sufficient capacity to lower the temperature rapidly so as to achieve a core temperature of minus 18°C
- Refrigeration equipment to maintain fishery products in the storage holds at or below minus 18°C
- Refrigerated hold must be equipped with an easily readable temperature-recording device
- Fish sorting, processing and packaging areas should be easy to clean and disinfect
- Should be provided with suitable wash hand basins, soap and paper towels or other means of hand drying

- Taps should be non-hand operable
- Hygienic storage and disposal of waste
- If waste is stored and processed on board, separate areas must be allocated for that purpose
- Separate holds for storage of by-products
- Separate areas for storage of i) packaging materials i) chemicals and iii) cleaning materials

2. FOOD SAFETY

2.1 Icing fish immediately after harvest

Action of the decomposing bacteria and enzyme can be greatly reduced by lowering down fish temperature around 0 – 5 C

- Fish should best be chilled in adequate ice, immediately after its harvest
- Put a layer of ice in the fish hold or fish box and then put a layer of fish and then again a layer of ice; continue this way until the box or the hold is full
- Proportion of ice and fish should be 1:1
- Use ice made of potable water free from pathogenic organisms, heavy metals, pesticides or other hazardous chemicals, filths and dirt
- Fish hold to ensure that maximum stowage height of fish is 1 metre to avoid crushing effect of off upper layers on bottom layers of fish

2.3 Handle fish carefully to avoid any physical injuries to the fish

- Easy bacterial contamination through injuries
- Fish with injuries will not be acceptable to export markets

2.4 Take precautionary measures to avoid contamination of the net with engine oil

2.5 Fishermen should avoid fishing in areas known to be heavily contaminated with hazardous chemicals

2.6 Cleaning and sanitization at the end of day's operation

- Perform dry cleaning by way of sweeping to remove solid wastes and dirt particles
- Rinse to remove fine particles of dirt
- Apply alkaline or chlorinated alkaline detergent, workout foam with a brush or 'green pad' and thoroughly clean all parts of the fish landing sites, fish handling tables, implements, weighing balance, fish boxes, etc
- Rinse with safe water
- Apply sanitizer
 - Processing, grading, packaging tables: 100-200 ppm chlorine or 25 ppm iodine or 200 ppm quat sanizer (quaternary ammonium)
 - Floors, walls, food dips, toilets: Sanitizer concentration doubled
- After cleaning and washing, completely dry all parts
- Keep lavatories clean and disinfected all the time
- No body with any contagious or communicable disease or wounds in hands should be allowed to handle fish

4. LABOUR STANDARD COMPLIANCE

4.1 The boat/trawler must comply with National Labour Law for the workers of the boat

4.2 Child labour shall not be employed

5. TRACEABILITY

[Traceability is a system by which fish (or any other food products) and any inputs that may have been incorporated into the fish can be traced from its origin to the consumer level. Providing traceability records is mandatory to export fish to EU countries]

5.1 Fishing boat must keep records of at least the following information and deliver the information to the buyer of the fish:

- (i) Boat Registration Number,
- (ii) Name and address of the owner of boat,
- (iii) Date and geographical location of harvesting of the fish,
- (iv) Quantity of fish harvested by species, date and geographical area,
- (v) Type of gear used,
- (vi) Fish iced or not immediately after harvest with ice of certified hygienic quality
- (vii) Source of ice,
- (viii) Date of delivering the fish by species and quantity,
- (ix) Name and address of the buyers

9. SHRIMP OR FISH CARRIER TRANSPORT VAN

1. DESIGN AND CONSTRUCTION

1.1 For transportation of iced products, insulated van and for frozen products refrigerated van shall be used.

1.2 Fresh and chilled fisheries products must be kept at melting ice temperature or at or less than 5 C; frozen products at or below a constant temperature of -18C

1.3 Fish transport van or vehicle must be suitably constructed and equipped to maintain a constant low temperature throughout the period of transport

1.4 The transport vehicle should be designed and constructed to minimize sharp inside corners and projections in order to avoid dirt traps.

1.5 The inside surfaces of the fish hold must be smooth and should be made of materials that are non-absorbent, non-corrodible and can be easily cleansed and sanitized for disinfecting

1.5 Fish should never be transported exposed to the sun

2. FOOD SAFETY

Keep fish transport vehicles, vessels and containers, boxes another implements clean and in good repairs and hygienic condition all the time

2.1 Routine cleaning and sanitization at the end of day's operation

- At the end of day's operation, brush all parts of the fish carrier vehicle or vessel, fish handling implements, fish boxes, etc. with chlorinated alkaline detergent, thoroughly wash with safe water
- Disinfect all parts with sanitizing agents
 - Shelves, shovels, boxes, etc: 100-200 ppm chlorine or 25 ppm iodine or 200 ppm quat sanitizer (quatarnary ammonium)

- Floors, walls, food dips: Sanitizer concentration doubled
 - After cleaning and washing, completely dry all parts
 - No body with any contagious disease or wounds in hands should be allowed to handle fish
 - Parking place of shrimp or fish carrier van must be clean and well maintained
5. Smoking, spitting, eating and drinking in the fish hold or storage must be prohibited

2.2 Transportation of non-fish items

Where transport carrier vehicle or vessel and/or containers have been used for transporting anything other than fish, there is to be effective cleaning and disinfecting between loads to avoid the risk of cross contamination

3. REGISTRATION WITH AND LICENSE FROM AN APPROPRIATE ORGANIZATION

3.1 The transport vehicle must be registered with the Department of Fisheries or any GoB authorized organization

3.2 License for transport vehicle will be given or renewed only if the vehicle complies with the country's set regulations in respect of food safety

4. LABOUR LAW

4.1 The transport vehicle operators will comply with the National Labour Law and shall not use child labour

5. WORKERS' HEALTH AND HYGIENE ISSUES

5.1 Medical fitness: All workers handling fish or shrimp must have a valid medical certificate that they are physically fit to handle fish

5.2 Restrictions related to worker's health: A person with a contagious disease and any wounds in hands should not be permitted to handle fish

5.3 Dress: Workers should wear neat and clean dress while handling fish

5.4 Training: (i) The transport operators must be trained in food hygiene and sanitation matters related with their work and (ii) Personal cleanliness and hygiene

6. TRACEABILITY

The transport operator must obtain the following information from the supplier:

- Name and address
- Registration Number
- Shrimp/fish iced or frozen
- Date and time of receiving the shrimp/fish
- Full traceability particulars of the shrimp or fish

The transport operator, on the other hand, must provide to the next buyer of the fish the above and the following information:

- (a) Name and address of the vehicle operator
- (b) Registration Number of the vehicle operator
- (c) Care provided to the fish
- (d) Date and quantities of fish or shrimp by species delivered to the buyer
- (e) Name and address of the buyer

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