



agriculture, forestry & fisheries

Department:
Agriculture, forestry & fisheries
REPUBLIC OF SOUTH AFRICA

SOUTH AFRICAN AQUACULTURED MARINE FISH MONITORING AND CONTROL PROGRAMME

Branch: Fisheries Management

Chief Directorate: Aquaculture & Economic Development

Directorate: Sustainable Aquaculture Management

Issue 3: January 2016

Contents

1	Introduction	4
1.1	Scope	4
1.2	Application	4
1.3	Background information	4
1.4	Definitions	5
1.5	Acronyms	7
2	Administration	8
2.1	Records kept by the Fish Monitoring and Control Programme	8
2.2	Document control	8
3	Related legislation.....	9
4	Site selection.....	9
5	Construction and hygiene standards	10
5.1	Production area.....	10
5.2	Services	11
5.3	Dispatch facilities	11
5.4	Packing material.....	11
5.5	Cleaning and sanitation areas	11
5.6	Personnel hygiene.....	12
5.7	Comfort areas and ablution facilities	12
5.8	Pest control	13
5.9	Animals.....	13
5.10	Relevant legislation	13
6	Water supply.....	14
6.1	Production water	14
6.2	Potable water supply	14
6.3	Clean seawater.....	14
6.4	Ice.....	14
6.5	Relevant legislation	14
7	Husbandry requirements.....	14
7.1	Relevant legislation	15
8	Feed management and monitoring	15

8.1	Farmer responsibility	15
8.2	Feed producer responsibility	16
8.3	Relevant legislation	16
9	Drug management	17
9.1	Relevant legislation	18
10	Sampling requirements.....	18
11	Testing requirements.....	19
11.1	Relevant legislation	20
12	Reporting of test results	20
13	Harvesting and slaughter	20
13.1	Relevant legislation	21
14	Transport and vessels	21
14.1	Relevant legislation	21
15	Temperature control.....	22
16	Labelling and traceability	22
16.1	Relevant legislation	23
17	Recall procedures.....	23
18	Contingency measures for contaminated product.....	23
19	References	24

Appendices

Appendix I: Contaminant sampling standards.....	28
Appendix II: Prohibited drugs	29
Appendix III: Contingency plan following non-compliance with regulatory limits	30

Forms

Form 1: Sampling Form	31
-----------------------------	----

Part A

1 Introduction

1.1 Scope

This Manual addresses the public health concerns related to production, harvesting, packaging, dispatch, transporting, labelling and the traceability of aquacultured fish and associated products intended for human consumption. It furthermore addresses limited processing carried out post-harvest, which is limited to gilling and gutting, in facilities that are situated on the production site. Hatcheries and nurseries are not subject to public health requirements provided the product is more than 6 months from minimum market size. Processing is dealt with in another process.

The manual includes the monitoring activities required for audit of aquaculture production facilities and establishments in the interests of public health. These activities will be managed and controlled by the Department of Agriculture, Forestry and Fisheries (DAFF) under the Marine Living Resources Act, 1998 (Act No. 18 of 1998) and the Department of Health under the National Health Act, 2003 (Act No. 61 of 2003) and the Municipal Structures Act, 1998 (Act No. 117 of 1998); in cooperation with the National Regulator for Compulsory Specifications (NRCS) (the appointed body for administering the various Compulsory Standard Specifications for fishery products in South Africa and the recognised Competent Authority by certain countries for the trade and export of fisheries products).

The South African Fish Monitoring and Control Programme shall be enforced in terms of the Marine Living Resources Act, 1998 (Act No. 18 of 1998) and the permit conditions by the Fishery Control Officer (FCO) from the Directorate: Compliance.

1.2 Application

The requirements of this programme apply to those areas of a facility:

- where fish, are produced and held in a live state; or
- where equipment, packaging materials or protective clothing used in relation to the production facility are stored;
- where the fish are gilled and gutted;
- where the fresh fish are packed, dispatched from, or
- which are used for personal hygiene of product handlers.

1.3 Background information

This Manual has been prepared by the Department of Agriculture Forestry and Fisheries (DAFF) and the Department of Food and Associated Industries (FAI) of the National Regulator for Compulsory Specifications (NRCS), with the purpose of developing an official manual for South African operators which will provide the necessary guarantees to foreign buyers and Governments as well as to local consumers that the risk of disease and poisoning through the consumption of aquacultured fish is adequately managed and minimised.

1.4 Definitions

“Acceptable” for the purposes of the Manual means acceptable to the Competent Authority for the approval and licensing of fish production and harvesting waters and for the Competent Authority inspecting and certifying such product for export.

“Accredited laboratory” for the purposes of the Manual means any laboratory as contemplated in the Accreditation for Conformity, Assessment, Calibration and Good Laboratory Practice Act 2006 (Act No. 19 of 2006).

“Adverse pollution conditions” for the purposes of this Manual means conditions determined by changes in meteorological, hydrographic, seasonal and point source pollution conditions that have been historically demonstrated to unfavourably impact on a particular production area. Examples include, but are not limited to, unusual climatic conditions, long periods without rain, unusually hot temperatures, consecutive days of light rainfall, heavy rainfall, tidal effects, salinity and wind effects.

“Batch” for the purposes of this Manual means fish harvested from a particular identifiable area at a particular time (i.e. no more than one day).

“Central file” for the purposes of this Manual means the file system maintained by the persons responsible for management and administration of this programme at DAFF.

“Certificate of Acceptability” means a certificate of acceptability referred to in Regulation 962 of Regulations Governing General Hygiene Requirements for Food Premises and the Transport of Food published under Government Gazette No. R.962 of 23 November 2012 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act 54 OF 1972)

“Clean ice” for the purposes of this Manual means ice made from potable water or clean seawater and that has been stored hygienically prior to use.

“Clean seawater” for the purposes of this Manual means water from any marine source where harmful microbiological contamination, substances and/or toxic plankton are not present in such quantities as may affect the health and quality of fish and fishery products.

“Closed facility” for the purposes of this Manual means a production facility where the harvesting of fish is temporarily or permanently not permitted.

“Comfort Facilities” includes but is not limited to ablution facilities, catering facilities and staff quarters.

“Competent authority” for the purposes of this Manual refers to the authority authorised by the importing country that is responsible for providing the guarantees to the importing country that the fish and fishery products destined for export from South Africa meets the importing country’s import requirements.

“Fishery Control Officer” means any person appointed as a fishery control officer in terms of section 9 of the Marine Living Resources Act, 1998 (Act No. 18 of 1998).

“Dispatch facility” for the purpose of this Manual means any installation for the reception, washing, grading, packaging and forwarding of fresh aquacultured fish for human consumption or forwarded for further processing.

“Establishment number” refers to the official approval number for a production facility or processing facility. The establishment number of a production facility is obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the establishment number for packaging and processing is obtained from the Food Standards Division of the National Regulator for Compulsory Specifications in Cape Town. This number may also refer to a permit number issued by the DAFF for a specific cultivation area.

“Fish” for the purposes of this Manual, applies to all aquacultured marine finfish and crustaceans cultured for human consumption and excludes marine molluscs as defined in the Marine Living Resources Act, 1998 (Act No. 18 of 1998).

“Fish handling” for the purposes of this Manual means the treatment of a product by gutting, removal of gills, removing the head and / or chilling.

“Fish Management Committee” for the purposes of this Manual means the board of management of the Department, in co-operation with the Department of Health, NRCS, and Industry, whose primary role it is to review the management actions proposed in this manual with regard to public health on an annual or more frequent basis.

“Fish Processing Establishment (FPE)” means any vehicle, vessel, premises or place where any substance or article is produced from fish by any method, including the work of cutting up, dismembering, separating parts of, cleaning, sorting, lining and preserving of fish, or where fish are canned, packed, dried, gutted, salted, iced, chilled, frozen or otherwise for sale in or outside the territory of the Republic, as defined in the Marine Living Resources Act, 1998 (Act No. 18 of 1998).

“Harvester” for the purpose of this Manual means a person who takes fish by any means from a production facility.

“Health authority” means the local authorities responsible for municipal health services as defined in the National Health Act, 2003 (Act No. 61 of 2003) and Municipal Structures Act, 1998 (Act No. 117 of 1998).

“Marine aquaculture” means the production of marine aquatic organisms including fish, molluscs, crustaceans and plants in control or selected marine aquatic environments with some form of intervention in the rearing process to enhance production such as regular stocking, feeding, protection from predators etc. Aquaculture also implies individual or corporate ownership of the stock being cultivated as defined by Nash (1995). For the purposes of this manual the controlled production of fish in natural and artificial seawater systems destined for the market as a foodstuff for human consumption in a production facility.

“Person” includes a trust as defined by the Marine Living Resources Act, 1998 (Act No. 18 of 1998). For the purposes of this Manual “person” means an individual, partnership, corporation, association or other legal entity.

“Pollution” means any change in the environment caused by (i) substances; (ii) radioactive or other wastes; or (iii) noise, odours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future; as defined by the National Environmental Management Act, 1998 (Act No.107 of 1998), as amended.

“Point source (of pollution)” for the purpose of this Manual means a discernible single source such as any pipe, ditch, channel, tunnel or conduit that carries a polluting substance or any other infrastructure used for the discharge or carrying of a polluting substance.

“Potable water” for the purposes of this Manual means water that is safe for human consumption and that complies with the requirements of SANS 241.

“Processing” for the purpose of this Manual means an activity where any substance or article is produced from fish by any method, including the work of cutting up, dismembering, separating parts of, cleaning, sorting, lining and preserving of fish or where fish are canned, packed, dried, smoked, gutted, salted, iced, chilled, frozen, value-adding or otherwise processed for sale.

“Processor” for the purposes of this Manual means a person who processes fish.

“Production area” for the purposes of this Manual means an area adjacent to the production facility that may have a bearing on the production facility.

“Production facility” for the purposes of this Manual means an artificial system that comprises of infrastructure, whether onshore or offshore, that supports or could support the propagation of live fish.

“Transaction Record” for the purposes of this Manual means a form used to document each purchase or sale of fish at the wholesale level.

1.5 Acronyms

BMP – Better Management Practices

CoA – Certificate of Acceptability

DAFF – Department of Agriculture Forestry and Fisheries

FAI – Department of Food and Associated Industries

FPE – Fish processing establishment

HACCP – Hazard Analysis and Critical Control Point

MRL – maximum residue limit

NRCS – National Regulatory for Compulsory Specifications

SAVC – South African Veterinary Council

2 Administration

2.1 Records kept by the Fish Monitoring and Control Programme

The following records are to be kept by the DAFF:

- Test results related to the relevant programmes
- Official correspondence with aquaculture facilities
- Aquaculture facility coordinates

2.2 Document control

Suggestions are welcomed for alterations, deletions or additions to this circular to improve it or to make it better suited to the needs of the fishing industry and inspection staff. Suggestions shall be forwarded to the co-ordinator, together with reasons for the change and any relevant experimental or documentary data. The document shall be reviewed on an annual basis.

Amendments are underlined in the latest amendment version document. A detailed record of all amendments shall be maintained and amended pages dated accordingly. The latest version will be made available on the DAFF website (<http://www.daff.gov.za/daffweb3/Branches/Fisheries-Management/Aquaculture-and-Economic-Development/aquaculture-sustainable-management/food-safety>) and at NRCS (14b Railway Road, Montague Gardens, 7441).

The co-ordinator of this programme is:

Environmental Officer Specialised Production: Aquatic Animal Health and Environmental Interactions
 Department of Agriculture Forestry & Fisheries
 Chief Directorate: Aquaculture and Economic Development
 Directorate: Sustainable Aquaculture Management
 Private Bag X2
 Roggebaai, 8012

Tel: 021 430 7003/7065

Fax: 021 434 2144

Email: JohnF@daff.gov.za

To update this manual when amendments are received, remove the appropriate outdated pages and replace with pages from the new issue. Sign and date this page in the table below.

Issue No.	Date	Sign	Issue No.	Date	Sign
1			6		
2			7		
3			8		
4			9		
5			10		

Part B

3 Related legislation

The following South African legislation and guidelines, but not limited to, apply:

- Animal Diseases Act, 1984 (Act No. 35 of 1984)
- Compulsory Specification for Frozen Fish, Frozen Marine Molluscs and Frozen Products derived there from. Regulation 979, 4 July 2003, in terms of the National Regulator for Compulsory Specifications Act, 2008 (Act No. 5 of 2008)
- Compulsory Specification for the Manufacture, Production, Processing and Treatment of Canned Fish, Canned Marine Molluscs and Canned Crustaceans. Regulation 790, 19 July 2004, in terms of the National Regulator for Compulsory Specifications Act, 2008 (Act No. 5 of 2008)
- Fertilizers Farm feeds & Remedies, 1947 (Act No. 36 of 1947)
- Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972)
- Health Act, 1977 (Act No. 63 of 1977)
- Marine Living Resources Act, 1998 (Act No. 18 of 1998)
- Medicines & Related Substances Control Act, 1965 (Act No. 101 of 1965)
- Municipal Structures Act, 1998 (Act No. 117 of 1998)
- National Health Act, 2003 (Act No. 61 of 2003)
- National Regulator for Compulsory Specifications, 2008 (Act No. 5 of 2008)
- NRCS HACCP Manual 005
- Regulations Governing General Hygiene Requirements for Food Premises and the Transport of Food. Regulation 962, 23 November 2012 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972)
- South African water quality guidelines viz. SANS 241
- Trade Metrology Act, 1973 (Act No. 77 of 1973)
- Veterinary and Para-Veterinary Professions Act, 1982 (Act No. 19 of 1982)

4 Site selection

The siting, design and construction of fish aquaculture facilities should follow principles of aquaculture practice appropriate to the species being cultivated.

Physical environmental conditions (i.e. temperature, current, salinity and depth) should also be taken into account as different species have different environmental requirements. Closed recirculation systems should be able to adapt the physical environment to the environment requirements of the aquacultured fish species.

Fish aquaculture facilities shall be located in areas where the risk of contamination by chemical, physical or microbiological hazards is minimal. Siting of the facilities should ideally be away from sources of pollution to avoid contamination of product.

Soil for the construction of earthen ponds and fertilizers, liming materials or other chemicals and biological materials shall not contain such concentrations of chemicals and other substances that may lead to the presence of contamination in fish that would exceed the regulatory limits.

Ponds and tanks shall have separate inlets and discharge canals so that water supplies and effluent are not mixed.

All sites shall be operated so as not to cause adverse impacts on human health from the consumption of the aquacultured fish.

5 Construction and hygiene standards

The areas designated for:

- the production and holding of live product;
- slaughtering of fish;
- gilling and gutting; and
- storage, packing and dispatch

shall where applicable be separated by doors made of permanent material or adequate physical separation so that contamination is minimised. The ablution facilities as well as living areas for staff must not open directly on to any of the above designated areas.

The construction standards for the areas designated for storage, packing and gilling and gutting shall comply with the requirements of the Regulation 962 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972), henceforth referred to as R 962, or the Hazard Analysis and Critical Control Point (HACCP) requirements if the facility is HACCP approved.

A documented control program shall be implemented to guarantee that Construction and Maintenance and Good Hygiene Practices are in place for the aquaculture facilities.

Schedules shall be implemented to:

- prevent the build-up of waste and debris;
- protect the fish from contamination;
- dispose of any rejected material in a hygienic and legal manner;
- monitor personal hygiene and health standards;
- monitor the pest control programme;
- monitor cleaning and disinfecting programmes; and to
- monitor the quality and safety of water and ice supplies.

5.1 Production area

The areas where fish are produced must be designed, constructed and maintained in such a manner, and with such materials so as to

- minimise contamination of the live product and fish handling area; and
- facilitate cleaning and maintenance.

5.2 Services

Service lines such as cables and pipes must be arranged or protected in such a way so that the risk of contamination is minimised.

5.3 Dispatch facilities

The Fish Processing Establishments shall at a minimum have a Certificate of Acceptability (CoA) issued by the local municipality. Should the facility have a CoA the following additional requirements shall be adhered to. Certain of these requirements may also be applicable to HACCP facilities that have not considered the particular requirements in its HACCP system.

The premises and hygienic standards must comply with the General Standards and Requirements for Food Premises in terms of Regulation 962 of the Foodstuffs, Cosmetics And Disinfectants Act, 1972 (Act 54 of 1972) and must be inspected at least once annually and approved by a relevant Health authority.

Dispatch facilities shall be issued with a permit as for a processing establishment in terms of the Marine Living Resources Act, 1998 (Act No. 18 of 1998) if on a separate premises from a processing facility.

Fish accepted at a dispatch facility must have originated from an approved fish handling facility, production facility, or another dispatch centre. A record shall be kept of the condition of each batch received and accepted.

Refer to Section 15 of this programme for temperature control.

Fish shall be held in a protected location away from direct contact with the floor or from foot splash.

No chemicals that may contaminate the fish and pose a public health risk may be present in the room used for sorting or storing.

Fish from different production areas must be kept and packed separately to maintain identity.

5.4 Packing material

Subject to the relevant requirements of the Regulations promulgated under the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act 54 of 1972), packaging and wrapping materials for the unprotected product shall be unused (new), clean, non-toxic and inert and of low moisture-vapour permeability, and shall not contain substances deleterious to the product or harmful to health.

No packaging or wrapping material shall impart a flavour to, or in any way cause discoloration of, the product, or be itself discoloured by contact with the product. The fish product shall be packed in a dustproof and liquid-proof container.

5.5 Cleaning and sanitation areas

The following shall be provided at those entrances to the fish packing facilities or dispatch centres used by employees, and at other conveniently situated places in the areas where fish is handled within easy reach of the employees, and at the ablution facilities exits:

- an acceptable number of wash-hand basins, with an abundant supply of hot and cold or warm running water in the temperature range 40 to 50 °C and that complies with the requirements of Section 6.2;
- an ample supply of unscented liquid soap or acceptable detergent in active condition;
- disposable paper towels and/ or hot-air dryers;

- a receptacle for the collection of waste towels and
- taps operated by means other than the hands or elbows, for example knee-operated or foot operated taps, or remote sensing.

Disinfectant hand dips, where provided, shall be of such a design that they can be adequately cleaned. Access to hand-washing facilities shall at all times be unobstructed. The wash-hand basins shall be of a suitable corrosion-resistant material shall have a smooth finish and shall drain into a sewer system directly.

Equipment for washing waterproof clothing must be available in or near to the processing area and shall be located so that contamination is minimised. Any waste water from such a facility shall be directed towards the municipal sewage system.

5.6 Personnel hygiene

Food, a facility or a container shall not be handled by any person:

- who has on his or her body a suppurating abscess or a sore or a cut or abrasion, unless such abscess, sore, cut or abrasion is covered with a moisture proof dressing which is firmly secured to prevent contamination of the food; or
- who is or who is suspected of suffering from, or being a carrier, of a disease or condition in its contagious stage that can be transmitted by food as contemplated in Regulation 962 of 2012 of the Foodstuff, Cosmetics and Disinfectants Act, 1972 (Act no 54 of 1972), unless any such person immediately reports the disease or condition to the person in charge and a certificate by a medical practitioner stating that such person is fit to handle food is submitted.

Where necessary, adequate and appropriate protective clothing, head coverings and footwear shall be worn.

All persons working in a facility shall maintain a high degree of personal cleanliness and shall take all necessary precautions to prevent contamination.

Hand washing shall be carried out by all personnel working in a handling area:

- at the start of fish handling activities and upon re-entering a handling area; and
- immediately after using the ablution facilities.

The following shall not be permitted in handling areas:

- smoking
- spitting
- chewing or eating
- sneezing or coughing over unprotected food
- the adornment of personal effects, such as jewellery, watches or pins, or other items that, if dislodged, might pose a threat to the safety and suitability of the products.

5.7 Comfort areas and ablution facilities

Suitable change rooms with showers, baths, wash-hand basins whose taps operate as described in Section 5.5 are required. Ablution facilities (separate for each sex) and, where appropriate, urinals, shall be provided within practical distance from the processing areas. Shower baths shall connect direct to the change rooms. Comfort areas and ablution facilities shall not open directly into a fish handling area, packaging or storage area.

Ablution facilities shall be completely separate from change rooms, the only permissible access being through vestibule facilitated with close-fitting, self-closing doors. Ablution facilities shall have their own hand-washing facilities, separated from those provided in change rooms. A sufficient supply of toilet paper, hot and cold running water, nailbrushes, unscented liquid soap or an acceptable detergent solution, and disposable paper towels shall be available to employees. Receptacles shall be provided for used towels. Refuse bins of hygienic construction shall be provided.

Notices shall be posted requiring employees to wash their hands with soap or detergent after they have used the ablution facilities. Lockers or controlled clothes baskets shall be provided, and the layout and equipment shall be such as to permit proper cleaning and maintenance. The comfort facilities shall be kept clean and tidy. The comfort facilities shall be adequately ventilated. Change rooms and dressing rooms shall not be used as living quarters or for the preparation of meals. Staff dining rooms shall be separate from the change rooms or dressing rooms.

5.8 Pest control

There shall be a system in place to minimise the presence of pests in the facility. Species specific repellents shall be employed where possible.

Good hygienic practices shall be employed to avoid creating an environment conducive to pests.

Pest control programmes could include preventing access, eliminating harbourage and infestations, and establishing monitoring detection and eradication systems.

Physical, chemical and biological agents shall be properly applied by appropriately qualified and certified personnel.

Pesticides shall not be used in work areas while preparation, processing and packaging are in progress, and precautions shall be taken to ensure that equipment and work surfaces are kept free from pesticide residues. Pesticides and cleaning chemicals shall at no time be allowed to come into contact with wrapping material, containers, raw materials or the product. The room in which pesticides are stored shall be kept locked and the materials contained in it shall be handled only by employees trained and certified in their use.

Records including a checklist shall be kept of all trap or poison stations. These stations shall be monitored on weekly predetermined basis. Traps and poison stations shall be of a design that will minimise the suffering of target species.

5.9 Animals

Except for the fish being handled, packed or dispatched, no other animals, including birds, shall be allowed in any part of the dispatch facility.

5.10 Relevant legislation

Regulation 962 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972).

6 Water supply

6.1 Production water

Water used for production shall be of suitable quality to maintain the product in its live and healthy state.

6.2 Potable water supply

A supply of potable water complying with SANS 241 shall be available.

An ample supply of cold and hot potable water under adequate pressure shall be provided where appropriate.

Water and where applicable ice that comes into contact with fish post harvesting, including depuration water, or water that comes in contact with equipment or surfaces, shall be monitored for compliance with SANS 241.

A register of the monitoring results shall be maintained, filed and be available for inspection.

6.3 Clean seawater

Clean sea water is sea water complying with the microbiological and monitoring requirements for potable water as in Section 6.2.

6.4 Ice

Any ice including slurry ice that may come in contact with the fish shall be made from water potable water or clean sea water that meets the microbiological and monitoring requirements of Sections 6.2 and 6.3. Ideally the seawater to ice ratio should be 1:2 and the temperature should be maintained at approximately -1.5 °C.

6.5 Relevant legislation

Regulation 962 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972)

National Water Act (36 of 1998)

SANS 241

7 Husbandry requirements

The water in which fish are raised shall be suitable for the production of products that are safe for human consumption.

The water quality shall be monitored regularly such that the health and sanitation of the fish is continuously maintained to ensure aquaculture products are safe for human consumption.

Appropriate design and construction of fish aquaculture facilities shall be adopted to ensure control of hazards and prevention of water contamination by but not exclusive to hazardous substances.

Diseased or injured fish shall be quarantined and treated, when required, by a qualified and registered veterinary or para-veterinary person.

Dead fish shall be disposed of immediately in a sanitary manner that will discourage the spread of disease and the cause of death shall be investigated.

Any dead or dying fish shall be removed from the land-based production water at least once a day and from a near-shore cage facility at each inspection if less frequent than once a day.

Dying fish shall be slaughtered and placed with the dead fish in a clean waterproof sealed container. The dead fish shall be quantified and transported within 24 hours to a registered landfill site unless frozen as waste in which case the fish shall be disposed of in a predetermined approved manner.

The fish aquaculture facilities shall have a management plan that includes a sanitation programme, monitoring and corrective actions, defined fallowing periods, appropriate use of agrochemicals, verification procedures for fish aquaculture operations and systematic records as well as a emergency management plan, which will include handling and management of the fish before, during and after any emergency incident.

Equipment such as cages and nets shall be designed and constructed to ensure minimum physical damage of the fish during the growing stage.

All equipment and holding facilities shall be easy to clean and to disinfect and shall be cleaned and disinfected regularly and as appropriate.

7.1 Relevant legislation

Regulation 962 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972)

8 Feed management and monitoring

Feed that is compounded industrially or at the fish aquaculture facility shall contain only such additives, growth promoting substances, fish flesh colouring agents; anti-oxidizing agents, caking agents or veterinary drugs that are permitted for fish by the DAFF.

Storage and transportation conditions shall conform to the specifications on the label.

8.1 Farmer responsibility

Feed and feed ingredients shall be obtained from feed producers or suppliers which are registered with the regulatory body. If, however the feed producer is an international company, the importer is required to register the feed on behalf of the international producer.

Ingredients shall meet acceptable, and where applicable, statutory standards for levels of undesirable substances that may give rise to human health hazards.

Medicated feed shall be stored separately, in order to avoid errors.

Farmers shall follow manufacturer instructions on the use of medicated feeds.

The feed and the ingredients of the feed shall be fully traceable to source and product tracing of all feed ingredients shall be assured by proper record-keeping.

Feed shall be registered with the DAFF and sourced from a supplier approved by the DAFF.

Each batch procured shall be recorded on Feed Batch Register, which is to be filed and be available for inspection. The register shall include at least:

- Brand name
- Batch Date (Date of manufacture)
- Date In
- Date Out of last bag

- Period in storage
- Supplier

Feed shall be handled on a first-in-first-out basis and each batch shall be kept separately and within the expiry date. If the expiry date is exceeded the producer shall ensure that the feed is safe for intended use by undertaking the appropriate tests.

Dry fish feeds shall be stored in cool and dry areas to prevent spoilage, mould growth and contamination. Moist feed shall be properly refrigerated according to manufacturer instructions.

The feed shall be kept off the ground to allow for ventilation to reduce contamination.

The store room shall be dry, well ventilated and kept clean.

Regarding the control of pests refer to Section 5.8.

There shall be no chemicals stored in the same store room or substances that are harmful to fish or humans.

8.2 Feed producer responsibility

Feed producers which supply feed to the aquaculture industry are required to be registered with the Department of Agriculture, Forestry and Fisheries. If, however the feed producer is an international company, the importer or local distributor would need to register the feed on behalf of the supplier.

The feed importer or local distributor shall ensure that a Certificate of Analysis accompanies the registration forms and that the product is safe for fish consumption.

Feeds and feed ingredients shall be properly labelled with an expiry date and production date. Their composition must fit the declaration on the label.

Labelling shall comply with relevant legislation.

Only approved additives and approved flesh colouring agents of the correct concentration shall be included in the feed.

Moist feed or feed ingredients shall be fresh and of adequate chemical and microbiological quality.

Fresh or frozen fish shall reach the aquaculture facility in an adequate state of freshness.

Fish silage and offal from fish, if used, shall be properly cooked or treated to eliminate potential hazards to human health.

Veterinary drug and other chemical treatments shall be authorised for use by the Medicines Control Council and shall be administered in accordance with recommended practices and comply with national regulations.

Medicated feeds shall be clearly identified on the package.

8.3 Relevant legislation

Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies, 1947 (Act No. 36 of 1947)

Medicines & Related Substances Control Act, 1965 (Act No. 101 of 1965)

9 Drug management

Prior to administering veterinary drugs, a system shall be in place to monitor the application of the drug to ensure that the withdrawal time for the batch of treated fish can be verified.

Products registered under Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947) and Medicines and Related Substances Control Act, 1965 (Act No. 101 of 1965) shall only be administered by veterinarians registered with the South African Veterinary Council, (SAVC) and / or on prescription by such a veterinarian.

Drugs listed in

Appendix II shall not be used and shall be monitored for in the fish.

All chemicals used for the treatment of fish or production water shall be adequately labelled.

Storage and transportation conditions shall conform to the specifications on the label.

Control of diseases with drugs shall be carried out only on the basis of an accurate diagnosis by a registered vet.

If aquacultured fish are monitored for drug residues and drug residue concentrations are found to be above the maximum residue limit (MRL) or the withdrawal limits have not been observed as indicated on the drug label, harvest of the batch shall be postponed until the batch complies with the MRL. After an assessment of the better management practices (BMP) regarding pre-harvest measures, appropriate steps shall be taken to modify the drug residue control system.

A post-harvest control shall reject all fish that do not comply with the requirements set for MRL.

Products registered under Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (act No. 36 of 1947) and Medicines and Related Substances Control Act, 1965 (Act No. 101 of 1965) shall only be procured from a registered veterinarian.

The administration of the substances listed in

Appendix II to food producing animals shall be prohibited.

The Drug Procurement Register shall contain at least the following information:

- Date purchased
- Suppliers name and contact details
- Name of drug
- Quantity purchased
- Batch number
- Expiry date
- Withholding period

The treatment of fish or production water shall only be undertaken under the supervision of a registered vet.

Records shall be maintained for the use of veterinary drugs in aquaculture production. A Treatment Register shall be maintained and shall include at least the following information:

- Date administered

- Batch of fish treated
- Name of the drug
- Amount used
- Withholding period
- Date fish safe for harvest
- Who administered the drug
- Reason for treatment

Withdrawal times shall be observed before fish is harvested for human consumption.

The Treatment Register shall be properly filed and available for inspection.

9.1 Relevant legislation

Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies, 1947 (Act No. 36 of 1947)

Medicines & Related Substances Control Act, 1965 (Act No. 101 of 1965)

Veterinary and Para- veterinary Professions Act, 1982 (Act No. 19 of 1982)

Commission Regulation (EU) No 37/2010

10 Sampling requirements

Official samples to test for hazardous substances including those stipulated in Appendix I and Appendix II are to be taken by the DAFF sanctioned personnel. Attending veterinarians may be used for the aquaculture facility's routine sampling and samples for auditing purposes shall be taken by state vets or other suitable DAFF sanctioned personnel.

A minimum of one sample shall be collected each year per 100 tonnes of annual production at a national level. The sample size shall be the amount of sample required to perform the analysis, though for heavy metals the sample sizes are listed in Appendix I, Table 2. The compounds sought and the samples selected for analysis should be selected according to the likely use of these substances.

The samples for the substances listed in Appendix I must be taken from fish which is ready to be placed on the market for human consumption. The aggregate sample must be representative of the next batch to be marketed.

The samples for the substances listed in Appendix II must be taken from fish at all stages of farming, including fish which is ready to be placed on the market for human consumption.

Samples shall be taken from a minimum of 10 % of production facilities.

The aggregate sample size per batch shall be at least 1 kg for the tests stipulated in Appendix I.

The sample shall be placed in a clean, inert container offering adequate protection from contamination, from loss of analytes by adsorption to the internal wall of the container and against damage in transit. Sample containers for microbiological analyses must be sterile.

The water samples shall be collected in clean, sterile, watertight glass or polypropylene containers of sufficient size to hold a minimum of 200ml with a head-space for shaking.

Each sample taken for official use shall be sealed at the place of sampling and shall be labelled with the production facility code, species and the date and time the sample was taken. A sample submission form provided by the relevant accredited laboratory shall accompany the sample to the said lab. The Sampling Form (Form I) is to be completed by the sampler and faxed to the DAFF within 48 hours and filed by the sampler.

A sampling schedule shall be drawn up and samples shall be taken accordingly unless there is a good reason that a sample could not be taken on a particular day. The sampling schedule shall be reviewed once a year.

Should there be no indication of a contaminant that is monitored twice within the first year, the implicated contaminant, shall be tested annually.

Fish samples for microbial testing are maintained in dry storage between 0 and 7°C until examined - as soon as possible after collection but not exceeding 24 hours. Coolers containing ice packs, not in direct contact with the sample, offer a convenient system. Samples shall not be frozen.

Samples for analysis of contaminants other than microbiological organisms are to be kept chilled if delivered within 24 hours, otherwise frozen for delivery to the laboratory.

Compliance's officials shall annually monitor where the samples are being taken and by whom. The South African Aquacultured Marine Fish Monitoring and Control Programme (SAAMFM&CP) office shall monitor the sampling frequency and what is sampled on a monthly basis.

Fish are considered as being of comparable size and weight if the difference in size and weight does not exceed about 50 %.

Should the batch to be sampled contain small finfish (individual fish weighing < about 1 kg), the whole finfish is taken as incremental sample to form the aggregate sample. In case the resulting aggregate sample weighs more than 3 kg, the incremental samples may consist of the middle part, weighing each at least 100 grams, of the fishes forming the aggregate sample. The whole part to which the maximum level is applicable is used for homogenisation of the sample. With regard to crustaceans the whole fish is sampled.

Should the lot to be sampled contain larger finfish (individual fishes weighing more than about 1 kg), the incremental sample consists of the middle part of the fish. The middle part of the finfish is where the centre of gravity is. This is located in most cases at the dorsal fin (in case the fish has a dorsal fin) or halfway between the gill opening and the anus. Each incremental sample weighs at least 100 grams.

For finfish of intermediate size (about 1-6 kg) the incremental sample is taken as a slice of the fish from backbone to belly in the middle part of the fish.

11 Testing requirements

Samples shall be tested at a DAFF approved laboratory.

The receiving laboratory must record:

- Condition (frozen, chilled) and number of individuals in the sample
- Sample temperature
- Date and time of sample collection and receipt at the laboratory

The samples shall be tested using a validated referenced method and a method that is either accredited or in the process of being accredited.

The DAFF shall implement a monitoring programme for contaminants in fish based on the risk associated with contaminants in the feed and the fish.

The requirements for the contaminants to be monitored are stipulated in the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act 54 of 1972). The frequency of sampling will be based on the associated risks and is prescribed by the SAAMFM&CP on yearly basis. Products to be exported shall meet the requirements of the importing country.

Production facilities shall only be monitored for microbial contamination during official surveillance of end-of-line product as long as the microbial contamination of end-product complies with regulatory limits.

Should the results from end-product testing above indicate non-compliance of a production facility, testing of the production system shall be conducted to determine the source of the contamination. The *E. coli* concentration in the production water shall be measured to indicate level of contamination.

The production areas shall be tested for caesium 134 and 137 every three years. Should there be a nuclear fall-out in South Africa or any of the test results exceed the regulatory limits, the production area shall be tested for caesium 134 and 137 on a risk basis.

Heavy metals as listed in Appendix I shall be tested on an annual basis. Should the test results exceed the regulatory limits, the facilities shall be tested on a risk basis. Arsenic, however, is not required to be tested for in Crustaceans intended for the local market.

The biotoxins viz. Amnesic Shellfish Poisoning, Diarrhetic Shellfish Poisoning and Paralytic Shellfish Poisoning toxins shall be tested in crustaceans on a risk basis.

11.1 Relevant legislation

Foodstuffs, Cosmetics and Disinfectants Act 1972, (Act No. 54 of 1972).

12 Reporting of test results

Should a test result exceed the regulatory limit, the laboratory shall inform DAFF via a Red Alert immediately after the results are obtained and the DAFF shall carry out the procedures outlined in the Standard Operating Procedure: Opening and Closing of aquaculture facilities.

The test certificates shall include at least the following information:

- Facility code and production facility name
- Sample date
- Date Received
- Regulatory limits
- Test method used and whether or not it is accredited
- Contaminant tested for and the contaminant level

13 Harvesting and slaughter

Appropriate harvesting techniques shall be applied and appropriate equipment shall be used to minimize physical damage due to prolonged periods out of water in the live state.

Live fish shall not be subjected to extreme heat or cold conditions or sudden variations in temperature and salinity prior to the slaughter process.

Fish shall be free from excessive mud and weed soon after being harvested by washing with clean seawater or freshwater under suitable pressure.

Fish shall be purged, where necessary, to reduce gut contents and pollution of fish during further processing.

Fish shall be handled in a sanitary manner.

Harvesting shall be rapid so that fish are not exposed unduly to high temperatures or environmental conditions that may cause contamination of the fish.

Any dead or dying fish shall be removed from the production pond before the fish are harvested and handled as stipulated in Section 7.

Harvesting shall be undertaken efficiently and in a humane manner.

The fish are either removed from the production or purging water by net or fish pump and slaughtered in an approved manner.

The water used in the bins shall be potable water or clean sea water that meets the requirements of Sections 6.2 and 6.3.

All equipment and holding facilities shall be easy to clean and to disinfect and shall be cleaned and disinfected regularly and as appropriate. Bins used in the slaughtering process shall be clean and free of any source of contamination.

The temperature stipulated in Section 15 shall be achieved.

There shall be no incisions made into the fish, nor shall the fish be harmed and/or damaged in any way during harvesting.

Should any drugs be used for euthanasia, Section 9 shall be complied with.

13.1 Relevant legislation

Regulation 962 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972)

Fertilizers Farm feeds & Remedies, 1947 (Act No. 36 of 1947)

Medicines & Related Substances Control Act, 1965 (Act No. 101 of 1965)

14 Transport and vessels

Refer to Sections 4 of R962 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972) as a minimum.

All harvesting vessels and road transport vehicles shall comply with relevant legislation.

Fish shall not be transported live for prolonged period and/or under conditions that would cause injury or result in the fish becoming diseased.

14.1 Relevant legislation

Regulation 962 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972)

Marine Living Resources Act, 1988 (Act No. 18 of 1998)

15 Temperature control

Refer to Section 8 of R962 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972) as a minimum. A documented control program shall be implemented to guarantee that temperature monitoring is in place and that the requirements stipulated below are complied with.

Fish shall be kept chilled, handled and distributed with care and minimum delay.

Post harvesting the core temperature of the fish will be brought down to -2 to 4 °C within 8 hours and this temperature shall be maintained until marketing or further processing

Fish shall be stored in shallow layers and surrounded by finely divided melting ice.

Fish shall not be stored in refrigerated water systems to a density that impairs its working efficiency.

Vehicles used for the transport of fish shall be fitted with a thermometer that can be read unhampered.

Avoid unnecessary exposure to elevated temperatures during loading and unloading of fish

Chill rooms must be fitted with recorders constantly recording the temperature in the warmest place inside the store (air stream returning to the evaporator or air cooler). Records of the temperature shall be kept and shall be available for inspection

Refrigeration units, such as compressors, shall not be installed in an area where the product is handled, with the exception of equipment that is an integral part of a production unit. Where freezers, chill rooms and freezer storage rooms are located in processing areas, their floors shall either be an integral part of the floor of the processing area or adequately sealed to that floor. Any storage units shall be installed high enough above the floor to permit easy and adequate cleaning of the area under them.

The walls and floors shall be in good condition. The surfaces of ceilings, walls and floors shall be of suitable corrosion-resistant material, shall be impermeable to water and shall be smooth, and free from cracks, crevices and flaking of surface material. The floors shall be drainable, and the floors of chill rooms shall be sloped to effect complete draining.

The entrances to chill rooms shall be protected from the inflow of warm air by the provision of an anteroom or a mechanical air curtain or self-closing shutters.

All operational thermometers used post-harvest shall be checked for accuracy against a national standard reference at a frequency that shall identify temperature drift timeously and shall be recalibrated or replaced as necessary.

16 Labelling and traceability

All fish shall be traceable back to the production area during transport.

All packages or bins in a consignment of unprocessed fish shall bear a label or a sticker that reflect on and identify the original aquaculture facility or dispatch centre at all times during transport and distribution until processing or retail sale so that the original dispatch centre may be identified at all times during transport and distribution until retail sale. The label shall contain the following information in addition to other labelling requirements specified in the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972), Trade Metrology Act, 1973 (Act No77 of 1973), or importing country regulations:

- Dispatch establishment number, name and address.
- Date of packaging (day, month, year)

- Batch code that can trace the aquaculture facility from which the fish originated reflecting origin of product.
- Harvest date
- Production method and species name (e.g. cultivated fish – *Argyrosomus japonicas*).
- Requirements for storage or transport prior to use by consumer.
- Net mass in kilograms.
- Name and address of the food business operator to whom the food is dispatched
- Product of the Republic of South Africa.

The label or sticker must be durable and waterproof and the information presented must be legible and indelible.

A person operating the dispatch centre must keep a record of each consignment for a period of not less than 5 years to enable products to be traced and recalled if necessary.

If fish is repacked, handled or further processed in another establishment, the latter establishment must apply its own label to the product and maintain adequate records of origin and destination for 5 years. The aquaculture facility where the fish was cultured must be reflected on the label/sticker.

The food business operators have a system in place enabling them to identify their immediate supplier(s) where relevant and their immediate customer(s). The names and addresses of both the supplier of the fish product and the food business operator to whom the fish was supplied are needed. The requirement relies on the 'one-step back'-'one-step forward' approach.

16.1 Relevant legislation

Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972)

Trade Metrology Act, 1973 (Act No. 77 of 1973)

17 Recall procedures

Managers shall ensure effective procedures are in place to implement the complete product tracing and rapid recall of any lot of non-compliant fishery product from the market.

Appropriate records of handling, production and distribution shall be kept and retained for at least 2 years.

Each container of fish and their products intended for the final consumer or for further processing shall be clearly marked to ensure the identification of the producer and of the lot.

18 Contingency measures for contaminated product

Where a product is found to exceed the regulatory limits the following actions must be undertaken by the DAFF in collaboration with the relevant Health authorities and/or the NRCS (See Appendix III):

- Review all necessary documentation to trace and recall potentially contaminated fish products that are in the distribution system.
- Effect an immediate temporary closure to harvest from the facility.
- Conduct confirmatory testing of a randomly statistically drawn sample.

- Re-open to harvest if re-test samples are within regulatory limits.
- Maintain closed status and recall contaminated products if, at any instance, the contaminant in a re-test sample exceeds the regulatory limit. Where there is a health hazard, products produced under similar conditions, and likely to present a similar hazard to public health, shall be withdrawn. The need for public warnings are to be considered
- More extensive sampling shall be initiated to establish the extent of contamination within the production area.
- Recalled products shall be held under supervision until they are destroyed, used for purposes other than human consumption, or reprocessed in a manner to ensure their safety.

19 References

Animal Health Act, 2002 (Act No. 7 of 2002)

Codex Alimentarius. 2013. Code of practise for Fish and Fishery Products.

Codex Alimentarius. Compendium of Methods of Analysis Identified as Suitable to Support Codex Mrls

Commission Decision 2004/0432 Amending Decision 2004/432 on the approval of residue monitoring plans submitted by 3rd countries in accordance with council directive 1996/23

Commission Decision 2007/363 Guidelines to assist Member States in preparing the single integrated multi-annual national control plan provided for in Regulation (EC) No 882/2004

Commission Decision 2008/407 Amending Decision 2004/432 on the approval of residue monitoring plans submitted by third countries in accordance with Council Directive 1996/23

Commission Regulation 1990/2377 Limits for vet medicines: laying down a Community procedure for the establishment of maximum residue limits of veterinary medicinal products in foodstuffs of animal origin

Commission Regulation 2000/104 Labelling & marketing: Organisation of markets in fishery & aquaculture products

Commission Regulation 2001/2065 Fishery & Aquaculture products: laying down detailed rules for the application of Council Regulation (EC) No 104/2000 as regards informing consumers about fishery and aquaculture products

Commission Regulation 2002/178 Traceability of foodstuffs Article 18: laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety

Commission Regulation 2004/852 Hygiene of foodstuffs regarding potential contaminants and record keeping

Commission Regulation 2004/853 Rules on the hygiene of foodstuffs of animal origin supplement to Regulation 2004/852

Commission Regulation 2004/854 Rules for the organisation of official controls on products of animal origin intended for human consumption regarding the 3rd countries controls that need to be in place to be able to export to the EU

Commission Regulation 2004/882 controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules

- Commission Regulation 2005/2073 Microbiological criteria for foodstuffs
- Commission Regulation 2005/2074 Implementation measures for products Amending 2008/853 & 854
- Commission Regulation 2005/2076 Transitional arrangement for 853_2004
- Commission Regulation 2006/1664 amending Regulation 2005/2074 as regards implementing measures for certain products of animal origin intended for human consumption and repealing certain implementing measures
- Commission Regulation 2006/1881 Setting maximum levels for certain contaminants in foodstuffs as amended by 2010/105 & 2008/629 & 2008/565 & 2007/333
- Commission Regulation 2006/1883 laying down methods of sampling and analysis for the official control of levels of dioxins and dioxin-like PCBs in certain foodstuffs
- Commission Regulation 2007/1441 amending Regulation (EC) No 2073/2005 on microbiological criteria for foodstuffs
- Commission Regulation 2007/333 methods of sampling and analysis for the official control of the levels of lead, cadmium, mercury, inorganic tin, 3-MCPD and benzo(a)pyrene in foodstuffs
- Commission Regulation 2008/1020 amending Annexes II and III to Regulation (EC) No 853/2004 of the European Parliament and of the Council laying down specific hygiene rules for food of animal origin and Regulation (EC) No 2076/2005 as regards identification marking, raw milk and dairy products, eggs and egg products and certain fishery products
- Commission Regulation 2008/1021 amending Annexes I, II and III to Regulation 2004/854 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption and Regulation 2005/2076 as regards live bivalve molluscs, certain fishery products and staff assisting with official controls in slaughterhouses
- Commission Regulation 2008/1022 amending Regulation 2005/2074 as regards the total volatile basic nitrogen (TVB-N) limits
- Commission Regulation 2008/1250 amending Regulation 2005/2074 as regards certification requirements for import of fishery products, live bivalve molluscs, echinoderms, tunicates and marine gastropods intended for human consumption
- Commission Regulation 2008/1251 implementing Council Directive 2006/88/EC as regards conditions and certification requirements for the placing on the market and the import into the Community of aquaculture animals and products thereof and laying down a list of vector species
- Commission Regulation 2008/565 amending Regulation 2006/1881 setting maximum levels for certain contaminants in foodstuffs as regards the establishment of a maximum level for dioxins and PCBs in fish liver
- Commission Regulation (EU) No 37/2010 on pharmacologically active substances and their classification regarding maximum residue limits in foodstuffs of animal origin
- Commission Regulation 2010/558 amending Annex III to Regulation (EC) No 853/2004 laying down specific hygiene rules for food of animal origin
- Compulsory Specification for Frozen Fish, Frozen Marine Molluscs and Frozen Products derived there from. Regulation 979, 4 July 2003, in terms of the NRCS Act (Act No. 5 of 2008)

- Compulsory Specification for the Manufacture, Production, Processing and Treatment of Canned Fish, Canned Marine Molluscs and Canned Crustaceans. Regulation 790, 19 July 2004, in terms of the NRCS Act, 2008 (Act No. 5 of 2008)
- Council Directive 1996/22 Prohibition on the use in stock farming of certain substances having a hormonal or thyrostatic action and of beta-agonists, and repealing Directives 81/602, 88/146 and 88/299
- Council Directive 1996/23 Measures to monitor certain substances and residues thereof in live animals and animal products and repealing Directives 1985/358 and 1986/469 and Decisions 1989/187 and 1991/664
- Council Directive 1998/83 Water quality criteria for food production & processing: quality of water intended for human consumption
- Council Directive 2006/88 Animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals
- Donovan TJ, Gallacher S, Andrews NJ, Greenwood MH, Graham J, Russel JE and R Lee (1998) Modification of the standard method used in the United Kingdom for counting *Escherichia coli* in live bivalve molluscs. Communicable Disease and Public Health 1: 188-196.
- EFTA Recommendation 2006/144 Reduction of the presence of dioxins, furans and PCBs in feedingstuffs and foodstuffs
- EFTA Recommendation 2007/199 Monitoring of background levels of dioxins, dioxin-like PCBs and non-dioxin-like PCBs in foodstuffs
- European Commission. 2009. Guidelines for the design and implementation of national regulatory food safety assurance programme associated with the use of veterinary drugs in food producing animals
- European Commission. 2012. Final report of an audit carried out in New Zealand
- European Commission. 2012.
http://ec.europa.eu/food/food/chemicalsafety/residues/third_countries_en.htm#5.6.3
- Export Help Desk. 2012.
http://www.exporthelp.europa.eu/thdapp/taxes/show2Files.htm?dir=/requirements&reporterId1=EU&file1=ehir_eu12_02v002/eu/main/req_heaveteres_eu_010_1006.htm&reporterLabel1=EU&reporterId2=FR&file2=ehir_fr12_02v002/fr/main/req_heaveteres_fr_010_1006.htm&reporterLabel2=France&label=Control+of+residues+of+veterinary+medicines+in+animals+and+animal+products+for+human+consumption&languageId=en&status=PROD
- Fertilizers Farm feeds & Remedies Act, 1947 (Act No. 36 of 1947)
- Food Safety (fishery Products and Live Shellfish) (Hygiene) Regulations 1998. Statutory Instrument 1998 No. 994.
- Foodstuffs, Disinfectants and Cosmetics Act, 1972 (Act No. 54 of 1972)
- Guide to regulatory requirements and examination procedures for fish and fish products exported from Canada to the European Union. Canadian Food Inspection Agency, Fish Seafood and Production Division. Sept 25, 2000.
- Health Act, 1977 (Act No. 63 of 1977)
- ISO 16140 (2004) Microbiology of food and animal feeding stuffs – Protocol for the validation of alternative methods.

ISO 6579 (2002) Microbiology of food and animal feeding stuffs – Horizontal method for the detection of *Salmonella* spp.

ISO/TS 16649-3 (2005) Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of beta-glucuronidase-positive *Escherichia coli* Part 3. Most probable number technique using 5-bromo-4-chloro-3-indolyl-D-glucuronide.

Marine Living Resources Act, 1998 (Act No. 18 of 1998)

Medicines & Related Substances Control Act, 1965 (Act No. 101 of 1965)

Municipal Structures Act, 1998 (Act No. 117 of 1998)

National Health Act, 2003 (Act No. 61 of 2003)

National Regulator for Compulsory Specifications, 2008 (Act No. 5 of 2008)

New South Wales Food Authority. 2009. Food Safety Program.

New Zealand Food Safety Authority. 2011. New Zealand Fishing Industry Agreed Implementation Standards

National Regulatory for Compulsory Specifications. 2009. NRCS Manual 570 MAN 005. Basic Requirements for Inspection Purposes Pertaining to the Implementation of HACCP Principles for Fishery Products.

Regulations Governing General Hygiene Requirements for Food Premises and the Transport of Food. Regulation 962 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972)

SANS 241:2001 (NRCS 241:2001) Drinking Water.

SANS 5221:2001 (NRCS SM 221:2001) Microbial analysis of water – General test methods.

Sanz, I. 1999. Imports of fishery products into the EC: Sanitary approval for third countries. EC Fisheries 6 Cooperation Bulletin 12: 4-6.

Trade Metrology Act, 1973 (Act No. 77 of 1973)

Appendix I: Contaminant sampling standards**Table 1: Contaminant, maximum levels permissible and samples size**

Contaminant	Standards	Regulation
Arsenic*	3.0 mg/kg	Reg 500/2004
Cadmium*	1.0 mg/kg	Reg 500/2004
Lead*	0.5 mg/kg	Reg 500/2004
Mercury*	0.5 mg/kg	Reg 500/2004
Pesticides (Organochlorine & organophosphorous)	0.01 mg/kg	Reg 246/ 1994
Antibiotics	0 mg/kg	Reg 692/1997
Caesium 134 & 137	600 Bq/kg	Reg 1931/1990

*For heavy metals the sample is related to batch size see Table 2 below.

Table 2: Sample size for testing heavy metals

Batch size (kg)	No of fish
< 50	3
≥ 50 and < 500	5
>500	10

Relevant Legislation

Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972)

Appendix II: Prohibited drugs

List of pharmacologically active substances for which no maximum levels can be fixed:

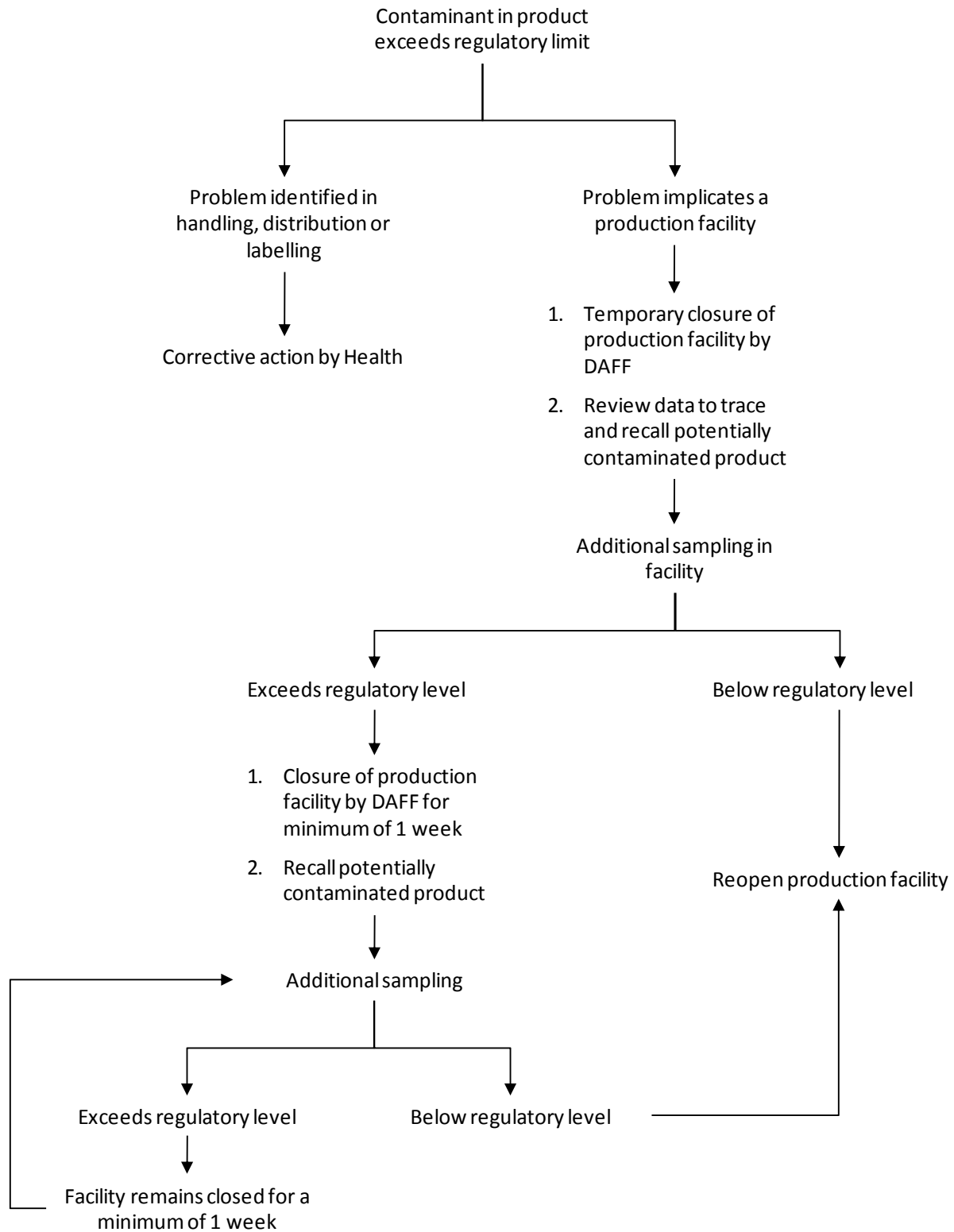
- Stilbenes, stilbene derivatives, and their salts and esters
- Steroids
- Aristolochia spp. and preparations thereof
- Chloramphenicol
- Chloroform
- Chlorpromazine
- Colchicine
- Dapsone
- Dimetridazole
- Metronidazole
- Nitrofurans (including furazolidone)
- Ronidazole

Relevant Legislation

Council Regulation (EEC) No 2377/90 of 26 June 1990.

Council Directive 96/23/EC of 29 April 1996

Appendix III: Contingency plan following non-compliance with regulatory limits



Form 1: Sampling Form

Surname and initial of sampler:								Date:	
Farm Name & Coast (E/S/W)	Sample Size		Submitted By (Surname & Initial)	Time Sampled	Lab	Received By (Surname & Initial)	*Time Received	Sample Condition	Temp (°C)
	Water (ml)	No animals							

* If date received at lab is different from sample date then include date & time