Canadian Food Inspection Agency
Agence canadienne d'inspection des aliments

FISH PRODUCTS STANDARDS AND METHODS MANUAL

Canada

TO: All Holders of the Fish Products Standards and Methods Manual

SUBJECT: UPDATE TO GENERAL FRESH AND FROZEN FINFISH PRODUCT STANDARD

The purpose of this bulletin is to advise manual holders of an update to Chapter 3, Standard 3 - Fresh and Frozen Finfish Product Standard - of the manual.

Please change Section 7. Examination Methods, number 7.5 to read (modified text is indicated by a double underline):

> "In the case of whole or dressed fish, the entire sample unit is to be examined in its presented form, using the criteria outlined in Section 5, for the determination of taint, decomposition and unwholesomeness. A thorough examination is to be made of the belly walls for evidence of perforated or broken bellies caused by enzymatic action of the stomach content (autolysis). <u>If the fish are not eviscerated, the inspector must cut open the belly cavity and remove the entrails in order to examine the belly walls.</u> Should there be evidence of perforated or broken belly walls or other signs of decomposition then the entire unit is further examined for flesh odours by tearing or making a cut across the back of the neck such that the exposed surface flesh can be evaluated for decomposition or taint.
>
> Where no broken or perforated bellies are encountered, a minimum of at least 10% of the declared weight of each unit, or a minimum of 10 fish, whichever is greater, will be further examined for flesh odours by tearing or making a cut across the back of the neck."

The standard will be amended shortly to reflect the above modification.

Cameron Prince
Director
Fish, Seafood, and Production Division

TO: All Holders of the Fish Products Standards and Methods Manual

SUBJECT: PARASITE TOLERANCE FOR FRESH AND FROZEN GROUNDFISH AND FINFISH

Note: This bulletin supersedes bulletin no. 2 of 18/03/94

The purpose of this bulletin is to advise manual holders of an interim change to the parasite tolerance for fresh and frozen groundfish and finfish. This change is based on the draft Codex General Standard For Quick Frozen Fish Fillets. This will only apply to the detection of nematode and copepod parasites. Effective immediately the following criteria are to be followed when assessing these products for parasites.

Only nematodes or copepod parasites having a capsular diameter of greater than 3 mm, or if not encapsulated, a length of greater than 10 mm will be considered in determining whether the lot is acceptable with respect to parasites.

a) For packs less than 1 Kg, an average greater than or equal to 2 parasites per Kg from the total sample will result in rejection of the lot. This will be determined by dividing total number of parasites found in all sample units by the total weight of all sample units.

   Example: a sample of 6 units of 400g each would be rejected if 5 or more parasites were found.
   Total weight = 6 X 400 g = 2.4 kg
   Parasites per kilogram = 5 ÷ 2.4 = 2.08

b) For packs of 1 kg or greater, a sample unit will be considered unacceptable when the number of parasites per kilogram detected is greater than or equal to 2. The lot will be considered to be unacceptable when the number of unacceptable sample units exceeds the acceptance number found in the sampling plan.

Cameron Prince
Director
Fish, Seafood, and Production Division

TO: All Holders of the Fish Products Standards and Methods Manual

SUBJECT: COMMENSAL/PARASITIC CRABS - NEW ZEALAND MUSSELS

The purpose of this bulletin is to inform manual holders of the tolerance for instances of commensal/parasitic crabs which have occasionally been found in shipments of frozen New Zealand mussels. These small crabs, which are known as pea crabs, reside naturally inside New Zealand mussels. They do not pose a health threat but they could be considered aesthetically offensive to the consumer.

The following tolerance will be applied to all future shipments of New Zealand Mussels:

> A unit of New Zealand mussels will be considered defective for the presence of foreign material if any crabs are found during the course of an inspection.
>
> The lot will be considered unacceptable if the total number of sample units found defective for the presence of crabs exceeds the acceptance number for the sample size designated in the sampling plans.

When the Fresh/Frozen Molluscan Shellfish Product Standard is finalized the above tolerance will be integrated in the standard.

David Rideout
Director General
Inspection Directorate

TO: All Holders of the Fish Products Standards and Methods Manual

SUBJECT: EXTRANEOUS MATERIAL IN SEMI-PROCESSED SHRIMP

The purpose of this bulletin is to inform all manual holders of the tolerance for extraneous material in semi-processed shrimp destined for further processing and labelled as such.

A unit will be considered defective if:

4 or more pieces of seaweed (singly or in combination) which exceed 25 mm in total length are found in a 1 kg sample unit. This tolerance is to be prorated for sample-unit sizes other than 1 kg; or

a sample unit contains 5% or more, by weight, of juvenile fish or shellfish.

B.J. Emberley
Director General
Inspection and Enforcement Directorate

Fish Products Standards and Methods Manual

24/06/05

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DEFINITIONS

Ammonia	The odour/flavour stimulus usually associated with ammonia production from such processes as protein breakdown and illustrated by ammonia-based cleaning compounds.
Bilge	The odour/flavour stimulus associated anaerobic bacterial growth and which is illustrated by the intense rank odour of bilge water.
Blocks	Cohering fish flesh consisting of fillets, pieces of fillets or minced fish flesh which have been frozen in uniform rectangular shapes for further processing.
Boned	Fish fillets in which a major effort has been made to remove bones including pin bones.
Boneless	Fish fillets in which the processor has removed all bones including pin bones from the product.
Broken	With respect to fresh and frozen shrimp, a portion of shrimp containing less than five segments for counts less than 150/kg (70/lb) and less than 4 segments for counts greater than 150/kg (70/lb). Also known as pieces.
Candling	The process used in the detection of parasites by placing fillets on a clear translucent lighted surface.
Cartilage	With respect to crustaceans, this term is used to refer to hard or pliable chitinous endoskeletal structures such as tendons or connective tissues.
Chalky Texture	Dry and powdery, leaving the sensation of a chalky solution in the mouth.
Defrosted Fish	A process by which fish is changed from the frozen state to a thawed state under controlled time and temperature conditions such that the internal product temperature does not exceed 4°C after the thawing has been completed.

Dehydration	A white or yellow abnormality on the surface of frozen fish which masks the colour of the flesh and penetrates below the surface. This defect caused by the sublimation process can only be removed with a knife or other sharp instrument.
Distinct*	Capable of being readily perceived (by sight, smell, touch or taste) through a sharp clear unmistaken impression, not blurred, obscured or indefinite.
Faecal	The odour/flavour stimulus such as that associated with sewage.
Feedy	The odour/flavour stimulus resulting from the food consumed by the fish.
Fillets	Slices of fish flesh of irregular size and shape have been removed from the carcass of the fish by cuts made parallel to the backbone, and from which all internal organs, head, fins, bones, except intramuscular or lateral bones and all discolored flesh have been removed; or, slices of fish flesh described above that have been cut into sections.
Fresh	Natural raw fillets or minced fish which has not been changed to any other state by freezing, cooking, curing, etc.
Frozen	Fish that has been changed from the natural (fresh) state to that in which the thermal centre of the product has been frozen to a temperature of -21°C or colder, and the fish is maintained at a temperature of -26°C or colder.
Fruity	The odour/flavour stimulus such as that associated with citrus fruits.
Head	With respect to shrimp, the cephalothorax, or any portion thereof large enough to contain an eye.
Honeycombing	A condition characterized by decomposition of the flesh resulting in pitting of the meat, occurring sometimes on the surface of the cut of the meat, but more often in between the layers of fish flesh and corroborated by the presence of histamine.

Hydrogen Sulphide	The odour/flavour stimulus associated with rotten eggs. A reference is hydrogen sulphide gas.
Iodoform	The odour/flavour stimulus associated with some iodine compounds, and having a chemical-like or medicinal quality. A reference is triiodomethane.
IQF (FSI)	An acronym for individually quick frozen fillets.
Jelly	Fish flesh which has an abnormally high moisture content of 86% or more by weight resulting in the flesh having a gelatinous texture and a glossy translucent appearance.
Layer Pack	A fillet pack where the fillets are individually separated by cellowrap.
Liver Stain	A discolouration ranging from yellow to dark brown caused by intestinal contents contacting the flesh of shrimp.
Mealy Texture	Soft, dry and friable (easily crumbled), like meal.
Minced Fish	Particles of fish flesh that have been separated from clean, sound fish material free from internal organs, heads and discolored flesh.
Musty	The odour/flavour stimulus associated with the presence of mold or mildew decay of wood. A reference is geosmin.
Oxidized Oil	The odour/flavour stimulus associated with the oxidation of fats or oils.
Persistent*	Existing without significant change; not fleeting.
Pungent	A sharp or stinging sensation of an odour such as that of aldehyde.
Putrid	The odour/flavour stimulus associated with the advanced decay of protein.
Rancid	The odour/flavour stimulus associated with oxidized oil or an oil such as linseed oil.

Readily Detectable	Visible under normal inspection conditions and procedures; not requiring artificial aids such as magnification.
Saltfish-like	The odour/flavour stimulus such as that associated with saltfish.
Sickly-sweet	An odour/flavour stimulus having an unpleasant or cloying sweetish characteristic, such as that of chloroform.
Sour	The odour/flavour stimulus associated with acidic compounds such as vinegar and characterized by a pungent sensation.
Sour Milk-like	The odour/flavour stimulus associated with the bacterial breakdown of milk.
Vegetable	The odour/flavour stimulus associated with certain vegetables such as turnips or cabbage.
Vein	With respect to shrimp, the visible intestinal tract which runs dorsally along the abdomen.
Yeasty	The odour/flavour stimulus associated with the primary fermentation process as illustrated by the production of wine or the rising of bread.

* Persistent and distinct are not applicable to trace or slight odours such as slight fruit, slight vegetable or slight salt fish-like, or slight musty.

SAMPLING POLICY AND PROCEDURES

1. SCOPE

This document outlines the regulations, policy and procedures governing sampling of fish and fish products subject to inspection by the Canadian Food Inspection Agency (CFIA).

2. AUTHORITIES

Fish Inspection Act (FIA), R.S.C. 1970, c. F.-12
Fish Inspection Regulations (FIR), C.R.C., c.802, Part I, General.

Consumer Packaging and Labeling Act (CPLA), 1970-71-72,c.41, s.1.
Consumer Packaging and Labeling Regulations (CPLR)

Food and Drug Act (FD and A), C.R.C. c. 869
Food and Drug Regulations (FD and R)

Weights and Measures Act (WMA), C.R.C. c. 1605
Weights and Measures Regulations (WMR)

Part 1, sect.3.i (FIA)

The governor in council may, for the purpose of regulating the export or import of fish and containers make regulations [,] i) prescribing the manner in which samples of any fish can be taken.

Part 1, sect.4.1.c (FIA)

Subject to subsection (1.1), an inspector may at any time [,] c) take any samples for inspection.

Section 3 (FIR)

Subject to subsection (2), these regulations apply only in respect of fish and containers intended for export or import.

Section 4 (FIR)
All fish are subject to inspection and an inspector may take samples of fish free of charge for the purpose of inspection.

Section 5 (FIR)
The owner of fish or a person acting on his behalf shall make readily accessible to an inspector any fish or containers for which inspection or reinspection is required under these regulations. All fish are subject to inspection and an inspector may take samples of fish free of charge for the purpose of inspection.

3. DEFINITIONS

Aseptic Sampling - sampling performed using sterile apparatus and methodologies to prevent microbiological contamination of the sample.

Attribute Sampling Plan - the decision to accept or reject a lot is dependent on the number of sample units which have or do not have a particular attribute, property or characteristic.

Container - any type of receptacle, package, wrapper, or confining band used in packing or marketing fish.

Consumer - the final user of a product.

Cull - removal of non-compliant units from a lot.

Destructive Inspection - an inspection in which the container or product is destroyed, modified or rendered unusable.

Inspector - a person designated as an Inspector pursuant to Section 17 of the Fish Inspection Act.

Lot - with respect to fish, other than fresh fish, means a shipment or part of a shipment of fish that is of the same species, is processed in the same manner by the same producer, is packaged in the same size of container and bears the same label. A lot of fresh fish refers to a shipment or part of a shipment of fish which has been processed in the same manner by the same producer in a 24-hour period. For fresh fish, the lot may contain more than one species of fish.

Lot size - the number of units of product in a lot.

Non-destructive Inspection - an inspection in which the container is not destroyed.

Pre-packaged product - any product packaged in a container in such a manner that it is ordinarily sold to, or used or purchased by a consumer without being re-packaged.

Random Sample - one in which all elements in the lot have an equal and independent chance of being included in the sample.

Representative Sample - one in which the sample units selected for the sample exhibit all the attributes of the lot proportionately.

Sample - a collection of one or more sample units selected from a lot for inspection. The sample comprises all of the sample units drawn for examination or testing purposes from a particular lot.

Sampling Plan - specifies the number of sample units required to make an accurate inspection decision (acceptance or rejection) on a lot. The number of sample units required may depend upon the net weight of the units, the number of units in the lot, and the type of hazard associated with the inspection analysis being performed.

Sample Size (n) - the number of sample units comprising the total sample drawn from a lot or production.

Sample Unit - one of a number of individual containers, or a portion of a fish or primary container examined or evaluated as a single unit.

4. POLICY

4.1 General

Only samples drawn in accordance with current, approved procedures by CFIA inspectors or other authorized personnel will be acceptable for Agency evaluation.

Any intervention or interference during sampling must be noted and reported because it may invalidate sampling.

A lot shall not consist of more than one species of fish with the exception of lots comprised of fresh fish.

Sample continuity is essential. Samples should be assigned a unique number, labeled with all pertinent information, and logged for

continuity purposes.

The integrity and condition of samples must be protected to ensure proper evaluation of the sample. Analyses will not be performed on product which has been compromised (damaged or deteriorated) in a manner which would result in an improper evaluation.

The selection of a sample for inspection should result in an official Inspection Report being issued to the owner or representative of the lot upon completion of the inspection.

4.2 Sampling Plans and Inspection Levels

Sampling plans are necessary to query one or more characteristics of a lot because not every unit in a large lot can be inspected. Sampling plans are designed to ensure defensible, statistically valid decision making regarding the acceptance or rejection of a lot.

For **sensory, chemical indicator, package integrity and net content** analyses, CFIA has adopted the FAO (Food and Agriculture Organization of the United Nations)/WHO (World Health Organization) Codex Alimentarius Sampling Plans for Prepackaged Foods (CAC/RM 42-1969). See Appendix A for details.

Selection of the appropriate Inspection Level is dependent on the current stage of inspection. Inspection Level I is chosen when the quality of the lot is not in question as in initial inspections. Inspection Level II is used when the quality of goods is in question and a referee method is required for the examination or re-examination of the lot (re-inspection). **An increased number of sample units affords greater protection against the inherent risk associated with sampling**.

The sampling plan for **Container Integrity** analysis was adopted from the Visual Inspection Protocol (VIP) developed by the Department of Fisheries and Oceans, Agriculture and Agri-Food Canada, and Health Canada.

The sampling plan for **microbiology and chemistry** was adopted from the International Commission on Microbiological Specifications for Foods (ICMFS).

5. PROCEDURES

The purpose of this section is to assist the inspector in the tasks of lot identification, equipment selection, sample selection, sample unit determination, sample storage and transportation, and sample labeling. The concepts of sample integrity and continuity are also addressed in the following sections.

5.1 Required Equipment

Use equipment, materials and apparatus which are appropriate for maintaining the condition of the sample in sample collection.

When drawing samples, ensure there is no potential for cross-contamination from equipment, materials and apparatus (e.g., aseptic for micro).

List of suggested equipment, materials and apparatus:

- forms as appropriate (master carton label report, Fish Inspection Worksheet, Visual Can Inspection Worksheet, Permission to Move Fish Under Detention form)
- Notice of Detention/Notice of Release/Held tags
- inspector notebook
- hand coverings (plastic gloves, rubber gloves)
- safety boots and rubber boots (for plant inspections), hard hat, coveralls, hairnet
- adhesive CFIA tape and clear adhesive tape
- utility knife
- marker
- hand towels
- plastic bags (various sizes), tags and labels
- flashlight
- thermometer
- sanitizer and saw
- cooler and ice packs

5.2 Locating and Identifying the Lot

Ensure all containers of product are available and accessible for sampling. Where applicable, obtain the following information prior to inspection to ensure the correct lot is being sampled:

- reason for inspection (e.g., initial inspection)
- location of the lot
- name and address of agent/owner
- lot size (number of cases, containers per case)
- lot codes and their interpretation
- brand name
- product type and style of pack
- container type and unit weight
- processing establishment
- country of origin or destination
- requirements for importing country when an export certificate is being issued.

5.3 Defining the Lot

Define the lot in accordance with the definition given in Section 3.0.

When dealing with fish or fish products which possess the same label, but are packaged in different styles (e.g., different sauces) consider the different styles to be of one lot.

5.4 Defining a Sample Unit

Define the sample unit according to the following instructions:

a) When a lot consists of pre-packaged product, each package and the package thereof constitutes a sample unit.

b) For fresh and frozen groundfish block and groundfish fillet or fresh and frozen finfish, the sample unit shall consist of a container of fish and the contents thereof.

c) Use one of the following three approaches when sampling from **bulk packages**:

   i) the sample shall consist of the bulk package and the contents thereof;

   ii) for fresh or individually frozen whole or dressed finfish or fresh or individually frozen finfish fillets, the individual fish or fillet may be considered as a representative sub-sample;

iii) for scenarios other than described in section ii), a 1 kg sub-sample of product obtained from the bulk pack may be considered a representative sample.

Note: Refer to the sampling section of the individual product standard for further guidance.

d) In lots consisting of salt or pickled fish packed in boxes or barrels, the container constitutes the sample unit. Inspect the entire contents of the container.

e) When a lot of fresh fish consists of more than one species, all of the sample units used to form a sample shall consist of one species type.

f) When inspecting large fish, each fish constitutes a sample unit. When an inspector has confidence a representative sub-sample may be obtained from a large, whole fish, the sub-sample becomes the sample unit. The sub-sample must be obtained in a manner which does not compromise the integrity of the sample.

To obtain a representative sub-sample from large, whole fish for chemical and microbiological analysis, take three 1" slices from each of the following areas: 1) behind the pectoral fins, 2) halfway between the first slice and the vent, and 3) behind the vent. These three slices form the sample unit, representing the large fish.

When sampling for sensory analysis, the three slice method described above is recommended. If in the inspector's view, fewer or more slices are required to make an accurate decision on the quality of the lot, the inspector may exercise his/her discretion to decide what constitutes a representative sample unit for that fish. If the inspector decides only one slice is required as a representative sub-sample from the fish, the one slice should not be taken from behind the vent because this slice does not usually exhibit signs of early decomposition.

5.5 Determining the Number of Sample Units Required

Determine the number of sample units required. The sample units needed for other analyses may be drawn from the units selected for sensory evaluation.

When a sample unit is drawn for more than one analysis, ensure the sample unit is of sufficient mass to perform all of the required analyses.

When microbiological analysis is required, submit the samples to the microbiological section for analysis first to ensure the integrity of the sample is not jeopardized.

For export certificates, there may be instances where the number of sample units required may be specified. Follow the directions associated with the export certificate.

5.5.1 Sensory, Net Content and Package Integrity

The sampling plan for these analyses is the Codex Alimentarius Sampling Plan for Pre-packaged Foods (CAC/RM 42-1969) found in Annex A. Decide which inspection level is appropriate (Level I for initial inspections and Level II for re-inspections).

Using the parameters of net weight per sample unit and the lot size (see Annex A), determine the number of sample units required for inspection. Note that the Sampling Plan in Annex A applies to destructive and non-destructive sampling for net content.

5.5.2 Container Integrity

When sampling, if any wet, stained or damaged cases are detected, stop sampling. Detain the entire lot until the source of the problem is determined. Once corrective action is taken, resume sampling.

If at any time during sampling, a leaker, swollen can or flipper is found, discontinue sampling until the lot has been evaluated to determine if the defect(s) is(are) due to under-processing or post-process contamination.

Initial Inspection

- Draw 200 sample units from a minimum of 40 cases with no more than 5 sample units being selected from each case.
- For lots with less than 200 sample units, inspect all units. Record the total number of containers on the report form.

Re-inspection

- Select a minimum of 250 cases. Draw 1250 cans from the cases but do not select more than 5 cans from one case.
- When there are fewer than 1250 units, examine each unit and record the number on the report form.

5.5.3 Sampling for Microbiological Analysis

5.5.3.1 General Procedures

It is essential that all samples accurately reflect microbiological conditions at the time that sampling is performed. To maintain sample integrity, follow the procedures listed below.

- Procure the samples aseptically so as to not contaminate the sample.
- Draw **five** sample units (minimum of 250 g per unit) per lot unless otherwise specified.

5.5.3.2 Sampling Running Water

- Collect the five sample units of water in clean containers of suitable size. Use a container with 100 to 200 mL capacity for routine water analysis.
- To obtain a representative sample from a tap, open the tap fully and allow the water to run for 2 or 3 minutes or a sufficient time to permit clearing of the service line.
- Leave sufficient head space in the water sampling container so the sample can be adequately mixed by shaking.

5.5.3.3 Procuring Ice Samples

- Take five sample units of ice from the ice storage area in sterile plastic jars or bags. Maintain the frozen state of the ice.

5.5.3.4 Sampling Raw Shellfish

- Examine samples of shellstock, shucked unfrozen shellfish, and live shellfish within 24 hours after collection. When analysis is unavoidably delayed beyond 24 hours, report the actual time elapsed between collection and analysis.

- Use heavy plastic bags (6 mil gauge) for shellstock collection to ensure that shells to do not puncture the plastic and compromise the sample integrity.
- Take 5 units of 12-18 shellfish per unit. This number should ensure the selection of 10 sound animals suitable for shucking. Ensure the shellfish yield approximately 200 g of meats and shell liquor.
- Aseptically transfer the shellfish to the sample jar with sterile forceps or alternatively, samples of the final product may be taken in the packing cans or containers.
- Consumer packages are acceptable for examination.

5.5.4 Sampling for Chemical Analysis

5.5.4.1 General Sampling

- See Annex B for descriptions of chemical analyses.
- Chemical analyses require five sample units for initial inspection. For re-inspections, a sample size of ten units is required. For re-inspections of chemical indices analysis, use Inspection Level II of the sampling plan given in Annex A.
- Perform chemical analyses on edible tissue.
- Sample units chosen for chemical analysis should not undergo any adulteration (such as rinsing with water) which may change the chemistry results.
- All chemical analyses are performed on the edible portion of the product.

5.5.4.2 Additive and Proximate Analysis

- Draw five sample units each consisting of a minimum of 100 g. For sample units which are less than 100 g, submit all of the available sample for analysis.

5.5.4.3 Product Safety Parameters and Drug Residues

- Draw five sample units each consisting of a minimum of 200 g.
- When sampling for drug residue analysis, sample 5 entire fish or full fillet.
- Ensure that samples submitted for drug residue analysis are not exposed to areas or equipment where medicated feed has been stored or used.

5.5.4.4 Chemical Contaminants

- For lots which contain fish or fish products of similar size, draw five sample units each consisting of a minimum of 100 g. **Mercury**: For lots which contain fish or fish products of varying sizes, draw five units which represent the size distribution in the lot.

5.5.4.5 Chemical Indicators

- The sampling plan for chemical indicators is analogous with that for sensory evaluation (Annex A). After performing the sensory evaluation, forward what remains of the sample to the chemistry laboratory immediately.

5.5.4.6 Other Chemical Testing

- For species identification testing, draw a minimum of **five** individual fish or fillets. Store the fish or fillets in five individual containers.
- For other types of chemistry sampling, draw five units of 100 g.

5.5.5 Sampling for Shellfish Toxin Analysis

5.5.5.1 Import and QMP samples

- Take 5 units of 12-18 shellfish per unit. This number should ensure the selection of 10 sound animals suitable for shucking. Ensure the shellfish yield approximately 200 g of meats and shell liquor.
- When sampling geoducks (*Panope generosa*), take three animals. Analysis is conducted on the viscera of the three animals.
- When sampling crabs, take three animals. Analysis is conducted on the viscera of the three animals.

5.5.5.2 Molluscan Shellfish Monitoring Program

- Take 1 unit of 12-18 shellfish. This number should ensure selection of 10 sound animals suitable for shucking. Ensure the shellfish yield approximately 200 g of meats and shell liquor.

5.6 Selecting Sample Units

Select a systematic random sample from the lot. Please refer to Annex C for further instruction. When an inspector thinks it is not possible to draw a true random sample, the inspector may draw a representative sample from the lot.

5.7 Labeling Samples

a) Record details of sampling in a notebook (i.e., lot location, no. of samples drawn, unique identification no., time of sampling, codes drawn).

b) Ensure all samples are accompanied by a completed sample information form. Include the following information where appropriate:

- type of analysis required (sulphite, net weight, etc.)
- country of origin
- collection date and time
- packer and packer code
- shipment identification number
- held tag number (if product is detained)
- lot size and unit weight
- samplers's name
- lake code (body of water and landmarks), statistical area and sub-area
- length and weight of fish (contaminant sampling)
- number of units sampled
- plant name and registration number
- harvest site (shellfish samples)
- harvest date (shellfish samples)
- processing date
- species and product type
- farm and pen information (farmed fish)
- inspection status and type (Alert, QMPR, random, etc.)
- name of importer
- analyses required for export certificate
- cost recoverable (yes/no)

c) Include any other relevant information when requesting **chemistry** analyses which would assist in performing the analysis or assessing the results, such as:

i) for packaged fish, a copy of the label;
ii) observations of abnormal odours, taste, colours, or texture; and
iii) for species identification, the common name as labeled on the package of the product and the suspected substituted species.

d) Mark or tag all samples using waterproof markers for identification purposes. In the case of large whole fish, tag each fish. Include the sample sheet in a separate plastic bag with the sample. Mark pre-packaged products as soon as the unit is drawn.

e) Analyze the samples as soon as is practical after collection.

5.8 Sample Storage and Transportation

5.8.1 Special considerations regarding sample **shipping** and **storing**:

a) **Microbiology**

i) Until the sample is analyzed, maintain the sample under conditions which will preserve the original bacterial flora as completely as possible. Maintain the sample at a maximum of 5 degrees Celsius. In some instances, samples must be frozen. Do not freeze samples unless the laboratory has been consulted. Freezing is undesirable because bacterial numbers may decrease in the sample.

ii) Fresh samples must be refrigerated (5 degrees Celsius) until analyzed. When storing samples, remember that analysis of unfrozen product should take place within 24h of sampling. Note the time of sampling and the time of analysis. Reports must state whether or not the samples have been frozen.

iii) Refrigerate (do not freeze) samples of shucked or live **shellfish** immediately after collection by packing in crushed ice and keeping them in ice until examined. The shellfish must not come into direct contact with ice. Care must be taken with these samples to minimize cold shock by insulating these samples from direct contact with refrigerant while still ensuring samples are chilled. For

example, frozen ice packs can be placed below and above the samples with insulating layers of newsprint or other food-quality insulating material placed between the refrigerant and the sample.

iv) **Water samples:** The bacterial examination of impure water and sea water samples must begin within six hours of collection. The storage of water samples should not exceed 24 hours. Should this time limit be exceeded, record the actual time between sampling and analysis.

b) **Proximate analysis and chemical indicators**

Curtailing bacterial growth and limiting autolytic spoilage is facilitated through temperature control. Keep the product at a temperature below -20 °C where possible. Do not leave thawed samples on bench for any long period of time. The growth of bacteria in the sample may influence the analysis of the product. For **proximate analysis**, prevent the dehydration of the sample.

5.8.2 Sample Storage

Ensure that the integrity of the sample is maintained by proper storage. Maintain the state of the sample.

a) Keep <u>frozen</u> samples in a freezer (at -18 °C) or in a carton/cooler with ice packs and ship the sample as quickly as possible to ensure that the sample remains in the frozen state.

b) Store unfrozen samples at refrigeration temperatures (below 5 °C). When the time of storage is lengthy, it may be necessary to freeze the samples.

c) Keep cans at ambient room temperature.

5.8.3 Sample Shipping or Delivery

Samplers may have to ship samples to another location for testing or the samples may be delivered to other inspection personnel at the same location. When providing samples to other inspection staff at the same location, ensure the other staff are notified (with a hard copy of the sample sheet) and information regarding the location of the sample (freezer, cooler, etc.) when the sample is delivered.

When **shipping** a sample:

a) make arrangements with receiving person at the laboratory prior to shipping the sample;

b) address the shipment to the person and include the person's phone number;

c) ensure perishable samples are properly marked for handling by the carrier;

d) advise the laboratory of the estimated arrival time of the sample and the carrier information. If the inspector is not able to contact the laboratory or if the microbiology sample delivery cannot be completed within 24 hours, he/she should consider the merits of sampling at another time; and

e) take special precautions when transporting samples of canned product that are obviously swollen or under pressure. Place swollen cans in plastic bags and transport inside a box or cooler.

5.9 Receipt by Laboratory

Log in the samples upon arrival at the laboratory, noting the time received and the condition at the time of receipt (i.e., physical damage, temperature). If the condition compromises the sample integrity, the sample may be rejected.

Check the sample information form to ensure all pertinent information has been included. If the form contains insufficient information, contact the inspector for the missing information (additions to be dated and initialed).

6. SAMPLING FOR EXTERNAL ORGANIZATIONS

Fish Inspection personnel may receive requests to perform sampling for external groups or organizations (e.g., provincial governments, other federal government departments). In these instances, the external organizations may have sampling policy and procedures that differ from those specified in this document. Please follow the procedures

specified by the organization requesting the sample when it is for their purposes.

7. ANNEXES

Annex A - Sampling Plans

Annex B - Categorization of Chemical Analyses

Annex C - Systematic Random Sampling

ANNEX A

SAMPLING PLAN
(Inspection Level I)

Net weight is equal to or less than 1 kg (2.2 lb)

Lot Size (N)	Sample Size (n)
4,800 or less	6
4,801 - 24,000	13
24,001 - 48,000	21
48,001 - 84,000	29
84,001 - 144,000	48
144,001 - 240,000	84
more than 240,000	126

Net weight is greater than 1 kg (2.2 lb) but not more than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)
2,400 or less	6
2,401 - 15,000	13
15,001 - 24,000	21
24,001 - 42,000	29
42,001 - 72,000	48
72,001 - 120,000	84
more than 120,000	126

Net weight is greater than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)
600 or less	6
601 - 2,000	13
2,001 - 7,200	21
7,201 - 15,000	29
15,001 - 24,000	48
24,001 - 42,000	84
more than 42,000	126

SAMPLING PLAN
(Inspection Level II)

Net weight is equal to or less than 1 kg (2.2 lb)

Lot Size (N)	Sample Size (n)
4,800 or less	13
4,801 - 24,000	21
24,001 - 48,000	29
48,001 - 84,000	48
84,001 - 144,000	84
144,001 - 240,000	126
more than 240,000	200

Net weight is greater than 1 kg (2.2 lb) but not more than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)
2,400 or less	13
2,401 - 15,000	21
15,001 - 24,000	29
24,001 - 42,000	48
42,001 - 72,000	84
72,001 - 120,000	126
more than 120,00	200

Net weight is greater than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)
600 or less	13
601 - 2,000	21
2,001 - 7,200	29
7,201 - 15,000	48
15,001 - 24,000	84
24,001 - 42,000	126
more than 42,000	200

ANNEX B

CATEGORIZATION OF CHEMICAL ANALYSES

Chemical analyses of samples can be divided into five categories: (A) additives and proximate analysis, (B) product safety parameters and drug residue, (C) chemical contaminants, (D) chemical indicators, and (E) other chemistry testing. If categorizing the analysis proves difficult, consult the testing laboratory.

A) **Additives** are chemicals added to the product during processing in order to preserve it in some manner, modify the colour, modify the taste, or alter the characteristics of the product. The application methods for these substances may vary which affects the distribution of the substance in the product. Substances included in this category are sulphite (bleaching agent), benzoate (preservative), and saccharin (sweetener).

Proximate Analyses are those analyses used to determine the components of a product and the percentage of those components in a product including fat, protein, moisture.

B) **Product safety parameters** are those parameters which are used to curtail bacterial growth in a product and prolong the product shelf life. The parameters may be used in combination in a product or only one parameter may be controlled to prevent bacterial growth. Salt, water activity, and pH are included in this category.

Drug Residue is residue that has resulted from the application of anti-biotics or similar substances to the fish to prevent or treat disease. Tetracyclines, sulfonamides, and chloramphenicol are included in this category.

C) **Chemical contaminants** are substances which are present in the fish products as a result of the environmental conditions to which the fish was exposed. Organic contaminants concentrate in the lipid portion of the fish whereas inorganic contaminants are more uniformly distributed throughout the muscle (protein) tissue. Mercury, PCBs, and Mirex are included in this category.

D) **Chemical Indicators** (quality indices) are substances which are produced from decomposition processes that are occurring in the fish. Chemical testing is often used to corroborate results from sensory analysis. Quality indices include histamine, indole, and total volatile base

nitrogen (TVBN).

E) **Other chemistry testing** refers to testing which does not correspond with one of the afore-mentioned categories. The tests contained in this category cannot be grouped with other tests. Species identification by electrophoresis is included in this category.

ANNEX C

SYSTEMATIC RANDOM SAMPLING

1. Identify the N units in the population to be sampled by serially numbering them from 1 to N.
2. If a sample of size n is desired, find an integer k, called the sampling interval, where k=N/n. (round up)
3. Randomly select a number j between 1 and k.
4. The required systematic sample is then produced by the population units corresponding to the numbers: j, j + k, j + 2k, ..., j + (n-1)k.

Example:

Lot of 2.2 kg packages of frozen, block shrimp

Number of cases: 2000
Boxes per case: 6
Lot Size (N): 12,000 cases
Number of sample units required (n): 13

Procedure:
1. Serially number the packages from 1 to 12,000 according to their placement on the skid.
2. Evaluate the sampling interval as k = N/n = 12,000/13 = 923.
3. Choose a random number (j) between 1 and 923, e.g., 11.
4. The packages of shrimp selected to make up a systematic sample of size 13 will then be those which position numbers are:

   j, j + k, j + 2k, ..., j + 12k
   11, 11 + 923, 11 + (2 x 923), ..., 11 + (12 x 923)
   11, 934, 1857 , ...,11087

   that is, select the 11th package and every 923rd package after that until thirteen packages have been identified.

SAMPLING PLAN 1

(Inspection Level I, AQL = 6.5)

Net weight is equal to or less than 1 kg (2.2 lb)

Lot Size (N)	Sample Size (n)	Acceptance No.	Number (c)*
4,800 or less	6	1	(0)
4,801 - 24,000	13	2	(1)
24,001 - 48,000	21	3	(2)
48,001 - 84,000	29	4	(3)
84,001 - 144,000	48	6	(4)
144,001 - 240,000	84	9	(6)
more than 240,000	126	13	(9)

Net weight is greater than 1 kg (2.2 lb) but not more than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)	Acceptance No.	number (c)*
2,400 or less	6	1	(0)
2,401 - 15,000	13	2	(1)
15,001 - 24,000	21	3	(2)
24,001 - 42,000	29	4	(3)
42,001 - 72,000	48	6	(4)
72,001 - 120,000	84	9	(6)
more than 120,000	126	13	(9)

Net weight is greater than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)	Acceptance No.	Number (c)*
600 or less	6	1	(0)
601 - 2,000	13	2	(1)
2,001 - 7,200	21	3	(2)
7,201 - 15,000	29	4	(3)
15,001 - 24,000	48	6	(4)
24,001 - 42,000	84	9	(6)
more than 42,000	126	13	(9)

* The figure in brackets under the Acceptance Number (c) indicates the Acceptance Number for decomposition.

SAMPLING PLAN 2
(Inspection Level II, AQL = 6.5)

Net weight is equal to or less than 1 kg (2.2 lb)

Lot Size (N)	Sample Size (n)	Acceptance No.	Number (c)*
4,800 or less	13	2	(1)
4,801 - 24,000	21	3	(2)
24,001 - 48,000	29	4	(3)
48,001 - 84,000	48	6	(4)
84,001 - 144,000	84	9	(6)
144,001 - 240,000	126	13	(9)
more than 240,000	200	19	(13)

Net weight is greater than 1 kg (2.2 lb) but not more than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)	Acceptance No.	Number (c)*
2,400 or less	13	2	(1)
2,401 - 15,000	21	3	(2)
15,001 - 24,000	29	4	(3)
24,001 - 42,000	48	6	(4)
42,001 - 72,000	84	9	(6)
72,001 - 120,000	126	13	(9)
more than 120,000	200	19	(13)

Net weight is greater than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)	Acceptance No.	Number (c)*
600 or less	13	2	(1)
601 - 2,000	21	3	(2)
2,001 - 7,200	29	4	(3)
7,201 - 15,000	48	6	(4)
15,001 - 24,000	84	9	(6)
24,001 - 42,000	126	13	(9)
more than 42,000	200	19	(13)

* The figure in brackets under the Acceptance Number (c) indicates the Acceptance Number for decomposition.

CHAPTER 1

INTRODUCTION

1. PURPOSE

The purpose of the Fish Products Standards and Methods Manual is to provide inspectors with recognized standards and methods to be used when determining the acceptability of fish and fish products under the authority of the Fish Inspection Regulations.

It must be recognized that the Fish Products Standards and Methods Manual is a guide only and is not intended to supersede the requirements of the Fish Inspection Regulations. Inspectors should always have the legislation in mind, and should use this manual as an aid in the interpretation of the Regulations.

2. AUTHORITIES/REFERENCES

2.1 The Fish Inspection Act (FIA) and the Fish Inspection Regulations (FIR) are the relevant authorities on which this manual is based. While this manual provides more detail than the FIA or the FIR, it does not have any legal authority.

2.2 The manual does not deal with the policies and procedures for fish products inspection and facilities inspection. The Fish Products Inspection Manual - Policies and Procedures and the Facilities Inspection Manual, respectively, address these subjects.

2.3 The standards do not cover package/container integrity defects, chemical and microbiological contamination, the application of additives, weight requirements or labelling requirements. Applicable legislation and administrative guidelines made under the Fish Inspection Regulations, the Food and Drug Regulations, the Consumer Packaging and Labelling Regulations and the Weights and Measures Regulations regulate these aspects of the products.

3. ORGANIZATION OF THE MANUAL

The Fish Products Standards and Methods Manual is divided into chapters of related inspection elements which are sub-divided into individual standards.

Each standard is divided into common headings, except for instances where a different format might be required due to the nature of the standard.

Amend.no.2 15/07/94

Introduction:

Includes the name by which the fish covered by the standard is known, or if more than one type of fish is covered by the standard, by a general name which covers all species for the particular process. It describes the authority under which the standard is elaborated, exclusions and the general requirements for acceptability.

Scope:

The scope provides a clear statement on product and species requirements covered by the standard. It describes general statements on raw material and the processing of the product using good manufacturing practices. Documents for good manufacturing practices are listed.

Nomenclature:

This section contains special nomenclature requirements for the product as appropriate.

Forms of Product Presentation:

This section provides a definition of the product, types, styles or forms of product presentation. Other styles of presentation are permitted under the circumstances specified.

Sampling:

Sampling for the purpose of determining acceptability is an integral part of the standard. Sampling tables are prescribed which specify the minimum level of sampling required.

Description of Defects:

This section describes the essential quality factors and tolerances used as criteria for determining acceptance or rejection of a sample unit for taint, decomposition, unwholesomeness or other requirements. The provision of "tolerances" is intended to allow Inspectors some flexibility when applying the regulatory requirements.

Exceptions to the tolerances can occur for justifiable reasons. Inspectors can be more rigid when defects are due to careless or intentional behaviour, or when the problems are detrimental to health as opposed to aesthetics.

Examination Methods:

The examination method is an important part of the standard, laying out for the inspector the steps to be used in examining the sample unit to determine compliance.

Classification of "Defective" Units:

Defines the criteria for determining a "defective" sample unit.

Lot Acceptance:

This section outlines the factors to be used in determining the acceptability of the lot based on lot acceptance procedures.

CHAPTER 2, STANDARD 1

CANNED TUNA STANDARD

1. INTRODUCTION

This standard for canned tuna derives its authority from the Fish Inspection Regulations. It defines minimum acceptability of canned tuna for taint, decomposition, unwholesomeness and other requirements other than weight, as defined in the Fish Inspection Regulations, and describes methods for determining that acceptability.

2. SCOPE

This standard applies to canned and/or heat processed tuna in hermetically sealed containers, prepared from sound, wholesome fish flesh of a quality fit for human consumption, using current good manufacturing practices and prepared from any of the following species:

1. Euthynnus alletteratus (little tunny)
2. Euthynnus lineatus (little tunny or black skipjack)
3. Euthynnus yaito or Euthynnus affinis (kawakawa or little tuna)
4. Katsuwonus pelamis (skipjack)
5. Neothunnus macropterus or Thunnus albacares (yellow-fin tuna)
6. Thunnus tonggol or Neothunnus rarus (longtailed tuna or northern bluefin tuna)
7. Para thunnus mebachi or Thunnus obesus (big-eyed tuna)
8. Thunnus atlanticus (black-fin tuna)
9. Thunnus qermo or Thunnus alalunqa (albacore)
10. Thunnus maccoyii (southern bluefin tuna)
11. Thunnus orientalis (oriental tuna)
12. Thunnus thynnus (bluefin tuna)

The species of fish Sarda chiliensis, Sarda lineolata or Sarda sarda after it has been canned, shall be designated as "Bonito" or "Bonito Tuna".

The following documents are to be used in conjunction with the standard to determine good manufacturing practices:

1) the Recommended International Code of Hygienic Practice for Low Acid and Acidified Low Acid Canned Food, CAC/RCP 23-1979.

2) Metal Can Defects Identification and Classification Manual, Canadian Food Inspection Agency.

3) Recommended International Code of Practice for Canned Fish, CAC/RCP 10-1976.

3. FORMS OF PRODUCT PRESENTATION

3.1 Styles of Pack

a) Solid
Fish cut into transverse segments to which no free fragments are added. In containers of 450 g (one pound) or less of net contents, such segments are cut into lengths suitable for packing into one layer. In containers of more than 450 g net contents, such segments may be cut into lengths suitable for packing in one or more layers of equal thickness and no layer shall have a thickness less than 2.5 cm. Segments are placed in the can with the planes of their transverse cut ends parallel to the ends of the can. A piece of segment may be added if necessary to fill a container.

b) Chunk or chunks
A mixture of pieces of fish most of which have dimensions of not less than 1.2 cm in each direction and in which the original muscle structure is retained.

c) Flake, flaked or flakes
A mixture of particles of fish in which the muscle structure of the flesh is retained.

d) Grated or shredded
A mixture of particles of fish that have been reduced to a uniform size, and in which particles are discrete and do not comprise a paste.

3.2 Fish Flesh Colour

The labels on all cans of tuna shall indicate the colour of the fish flesh in accordance with the following colour classifications:

a) "White Meat Tuna" or "White Tuna"
Canned tuna of the species Thunnus alalunga or Thunnus germo (albacore) that has a diffuse luminous reflectance of not less than 33.7% of that of magnesium oxide when that reflectance is measured by a prescribed method. This is approximately equivalent to 6.3 Munsell units.

b) "Light Meat Tuna" or "Light Tuna"
Canned tuna that has a diffuse luminous reflectance of not less than 22.6% of that of magnesium oxide when that reflectance is measured by a prescribed method. This is approximately equivalent to 5.3

Munsell units.

c) "Dark Meat Tuna" or "Dark Tuna"
Canned tuna that does not meet the colour requirements of "Light Meat Tuna".

3.3 Packing Media

a) Olive oils
In conformity with the Recommended International Standard for Olive Oil, Virgin and Refined, and for Refined Olive-Residue Oil (Ref. CAC/RS 33-1970).

b) Other vegetable oils
Clear, refined, deodorized, edible vegetable oil in conformity with the relevant recommended international standards adopted by the Codex Alimentarius Commission.

c) Potable water
In conformity with the latest WHO International Standards for Drinking Water.

d) Spring water or mineral water
Potable water from an underground source but not obtained from a public community water supply and which meets the requirements of Section B12.001 of the Food and Drug Regulations.

e) Vegetable broth
The liquid arising from the cooking of vegetables in water and which may be prepared from one or more types of vegetables.

f) Vegetable broth / Vegetable oil
Any combination of vegetable broth and vegetable oil meeting the above specifications.

3.4 Other Presentations

Any other presentation may be permitted provided that it:

a) is sufficiently distinctive from the forms of presentations set out in 3.1 and 3.3; and

b) meets all other requirements of the Fish Inspection Regulations; and

c) is adequately described on the label.

4. SAMPLING

The sampling and tolerance plans at the front of this manual shall be used to determine the acceptability of the lot. The sampling plans dictate the minimum sample size to be taken. If necessary, in the opinion of the inspector, more than the minimum sample size specified may be taken.

4.1 Sampling of lots for examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods(AQL 6.5) (CAC/RM42-1969) except that acceptance numbers for decomposition shall be reduced in accordance with the sampling plans.

4.2 Size of Sample Unit

The sample unit shall consist of a can or pouch of tuna and the contents thereof.

5. DESCRIPTION OF DEFECTS

5.1 Taint

A unit will be considered tainted when any of the following conditions exist:

a) Rancid
Odour characterized by the distinct or readily detectable persistent odour of oxidized oil, (this may be characterized by a pungent sensation in the nasal passage); or

Flavour characterized by distinct flavours present individually or in combination as follows:

bitter, sour, metallic flavours detected at the sides and back of the tongue leaving a lingering aftertaste.

b) Abnormal
Distinct and persistent odours and/or flavours that are burnt or acrid, (e.g. as associated with excess scorch).

c) Contaminated
Odours and/or flavours resulting from contamination by solvents, soaps, fuel, oil, grease, etc. that are organoleptically detectable.

5.2 Decomposition

A unit will be considered decomposed when any of the following conditions exist:

a) Persistent, distinct and uncharacteristic odour characterized by:

1) fruity (aldehyde odours similar to pineapple or other fruits);

2) vegetable odours - (e.g. turnip and cabbage-like but not associated with packing medium);

3) sour, yeasty fermented odours;

4) ammonia odours, hydrogen sulphide odours; or

5) other pungent odours such as putrid or faecal.

b) Persistent distinct and uncharacteristic flavours characterized by:

1) sweet fruity flavours (e.g. pineapple-like); or

2) vegetable flavours (e.g. turnip and cabbage-like but not associated with packing medium); or

3) putrid or sour or faecal flavours.

c) Texture

Breakdown of muscle structure characterized by muscle fibers no longer being detectable resulting in the presence of small particles and/or granular, gritty or pasty texture exceeding 20% of the drained content.

d) Appearance

1) Discoloration characterized by persistent flushed pink, orange or green colours in the flesh exceeding 5% of drained contents.

2) True Honeycombing exceeding 5% of drained contents.

5.3 Unwholesome

a) Critical Foreign Material
A lot will be considered defective when any of the following conditions exist:

the presence of any material which has not been derived from tuna (and packing media) and which poses a threat to human health (such as glass, etc.); or

distinct and persistent odour or flavour of any material which has not been derived from tuna (and packing media) and which

poses a threat to human health (such as solvents, fuel oil, etc.).

b) Foreign Material

A unit will be considered defective when the following condition is found:

the presence of any material which has not been derived from tuna (and packing media) but does not pose a threat to human health (such as insect pieces, sand, etc.).

c) Other Defects

A unit will be considered defective when any of the following conditions exist:

a) **Struvite Crystals** (magnesium ammonium phosphate crystals)
Any struvite crystal greater than 5 mm in length.

b) **Sulphide Blackening**
Staining of the meat exceeding 5% of the drained contents.

5.4 Labelling

A unit will be considered defective when any of the following conditions exist:

a) Style of Pack

1) Solid - Greater than 18% chunk and/or flaked.
Chunk - Greater than 50% flaked.
Flaked - Greater than 20% grated or shredded.

2) Shredded, grated or paste in solid or chunk pack.

b) Fish Flesh Colour

1) White Meat Tuna or White Tuna of the species Thunnus alalunga of Thunnus germo (albacore) that has a diffuse luminous reflectance less than 33.7% of that of magnesium oxide. This is approximately equivalent to 6.3 Munsell units.

2) Light Meat Tuna or Light Tuna that has a diffuse luminous reflectance less than 22.6% of that of magnesium oxide. This is approximately equivalent to 5.3 Munsell units.

NOTE: Dark Meat Tuna or Dark Tuna is canned tuna that does not meet the colour requirements of Light Meat Tuna.

6. EXAMINATION METHODS

6.1 Procedure for Determining Compliance for Style of Pack Declaration

6.1.1 Scope and Application

This procedure is applicable to the determination of the percentage of different styles of pack in canned tuna.

6.1.2 Apparatus

- Can opener
- One-half inch (1.2 cm) mesh screen equipped with a collecting pan
- Suitable balance for weighing the samples to the nearest 0.1 g
- Spatula

6.1.3 Procedure

1) Open the can, drain the contents, weigh the tuna and record the weight.

2) Pour the drained can contents onto a tared 1.2 cm mesh screen equipped with a collecting pan.

3) Separate the tuna with a spatula being careful not to break the configuration of the pieces. Ensure that the smaller pieces of tuna are moved to the top of a mesh opening to allow them to fall through or be retained on the screen.

4) Segregate the material on the pan according to flaked, grated (shredded) and paste and weigh individually in order to establish the weight of each component.

5) Weigh the screen with the fish retained and record the weight. This weight will be used, by difference, to establish the weight of solid plus chunk tuna.

6) In the case of a "solid" declaration, remove any small pieces (chunks) from the screen and reweigh. This weight can be used to establish the weight of solid tuna by difference.

6.1.4 Calculations

1) Express the weight of flaked, grated (shredded) and paste as a percentage of the total drained weight of tuna.

$$\% \text{ Flakes} = \frac{\text{Weight of Flakes}}{\text{Total Weight of Drained Tuna}} \times 100$$

2) Calculate the weight of solid and chunk tuna retained on the screen by difference and express as a % of the total drained weight of tuna.

$$\% \text{ Solid \& Chunk Tuna} = \frac{\text{Weight of Solid \& Chunk Tuna}}{\text{Total Weight of Drained Tuna}} \times 100$$

3) Calculate the weight of solid tuna retained on the screen by difference and express as a % of the total drained weight of tuna.

$$\% \text{ Solid Tuna} = \frac{\text{Weight of Solid Tuna}}{\text{Total Weight of Drained Tuna}} \times 100$$

6.1.5 Determination of compliance

Refer to section 5.4 to determine the defect classification of the sample unit.

6.2 Procedure for Determining Percentage of Honeycombing in Canned Tuna

6.2.1 Scope

This method shall be used to assess the extent of honeycombing in canned tuna.

The canned tuna standard stipulates that a sample unit shall be considered defective because of decomposition if the weight of honeycombed flesh exceeds 5% of the drained weight of the contents of the can.

6.2.2 Laboratory Apparatus

- Can opener
- Electronic Scale
- Beakers or Draining Trays
- Vacuum Gauge
- Clock or other suitable timing device
- Warming Cabinet
- Tared Collecting Dishes
- Tweezers or Forceps
- Spatula
- Appropriate forms

6.2.3 Procedure

1) Determine the drained weight of each sample unit, using the approved method.

2) After draining, transfer the contents of the can to an inspection

tray or, if style of pack is to be determined, a 1.2 cm mesh screen equipped with a collecting pan.

3) Separate the tuna with a spatula being careful not to break the configuration of the pieces. If the contents are to be evaluated for style of pack, that procedure must be performed first, using the method outlined in section 6.1 of this standard.

4) Using tweezers or forceps remove all pieces of honeycombed fish flesh and place these in a tared collecting dish.

"Any piece of tuna flesh showing evidence of pitting, whether on the surface of the cut or between the layers of fish flesh, shall be considered to be affected by honeycombing."

5) Weigh the collecting dish with the honeycombed flesh and record the total weight. Subtract the weight of the collecting dish from the total weight of the dish and honeycombed flesh to obtain the weight of honeycombed flesh.

6.2.4 Calculations

Express the weight of the honeycombed flesh as a percentage of the drained weight of the can contents.

$$\% \text{ of True Honeycombing} = \frac{\text{Weight of the Honeycombed Fish Flesh}}{\text{Drained Weight}} \times 100$$

6.2.5 Determination of Compliance

1) If the result exceeds 5% of the drained weight of the can contents, the sample unit is considered defective.

2) Repeat the above procedure and determine the status of the remaining sample units in the sample. A sample shall consist of at least the minimum number of sample units outlined in the sampling plans.

3) Determine the status of the lot by comparing the total number of defective sample units with the acceptance number for decomposition.

7. CLASSIFICATION OF "DEFECTIVES"

A sample unit which contains defects as described in section 5 is classified as a "defective".

8. LOT ACCEPTANCE

A lot will be considered unacceptable if it fails to meet the following final product requirements:

1) any single instance of critical foreign matter occurs; or

2) the total number of sample units found defective for taint, decomposition or unwholesomeness, individually or in combination, exceeds the acceptance number for the sample size designated in the sampling plans; or

3) the total number of sample units found defective for decomposition exceeds the acceptance number shown in parentheses for the sample size designated in the sampling plans; or

4) the total number of sample units found defective for standards of identity (colour, style of presentation) exceeds the acceptance number for the sample size designated in the sampling plans.

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CHAPTER 2, STANDARD 2

CANNED SARDINE STANDARD

1. INTRODUCTION

This standard for canned sardines derives its authority from the Fish Inspection Regulations. It defines minimum acceptability of canned sardines for taint, decomposition, unwholesomeness and other requirements, other than weight, as defined in the Fish Inspection Act and Regulations and describes methods for determining that acceptability.

2. SCOPE

This standard applies to canned sardines in hermetically sealed containers that are prepared from any of the following species:

Sardina pilchardus (Walbaum)
Sardinops melanosticta, neopilchardus, ocellata, sagax, or caerulea
Sardinella aurita, anchovia, brasiliensis, or maderensis
Clupea harengus
Clupea antipodum, bassensis, or fuegensis
Sprattus sprattus (Clupea sprattus)
Hyperlophus vittatus
Nematolosa vlaminghi
Etrumeus microps
Ethmidium maculatus
Engraulis anchoita
Engraulis ringens

Canned sardines shall be prepared from sound, wholesome raw material processed using good manufacturing practices.

Documents used to determine good manufacturing practice and compliance include:

1) International Code of Practice for Low Acid Canned Food CAC/RCP 23-1979.

2) Metal Can Defects Identification and Classification Manual, Canadian Food Inspection Agency.

3) Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL 6.5) CAC/RM 42-1969.

3. NOMENCLATURE

The name of the product shall be:

"Sardines"; or

"X sardines" where the "X" is the name of a country, a geographic area, the species, or the common name of the species in accordance with the applicable sections of the Recommended International Standard for Canned Sardines (CAC/RS 94-1978) and the Fish Inspection Regulations.

4. FORMS OF PRODUCT PRESENTATION

Canned sardines shall be prepared from fresh, frozen, cooked or smoked sardines and neatly arranged with at least 3 fish per can.

4.1 Packing Media

The product shall be presented in one of the following packing media with or without permitted optional ingredients:

a) Own juice
Fish packaged without added liquid.

b) Potable water
In conformity with the requirements of the Fish Inspection Regulations for water used in registered establishments.

c) Spring water or mineral water
Potable water from an underground source but not obtained from a public community water supply and which meets the requirements of Section B12.001 of the Food and Drug Regulations.

d) Vegetable broth
The liquid arising from the cooking of sound wholesome vegetables in water and which may be prepared from one or more types of vegetables. Vegetable broth may also be prepared from hydrolysed vegetable protein, but a broth so prepared requires that it's components be declared in a list of ingredients.

e) Olive oils
In conformity with:
the relevant sections of Division 9 of the Canadian Food and Drug Regulations; or

the Recommended International Standard for Olive Oil, Virgin and Refined, and for Refined Olive-Residue Oil (Ref. CAC/RS 33-1970).

f) Other vegetable oils
Clear, refined, deodorized, edible vegetable oil in conformity with:

the relevant sections of Division 9 of the Canadian Food and Drug Regulations; or

the relevant recommended International standards adopted by the Codex Alimentarius Commission.

g) Sauces
A thickened liquid made from acceptable food ingredients giving a characterizing flavour and odour to the product.

h) Marinades
A thin liquid made from acceptable food ingredients, usually containing a sweetener, an acid solution or an alcoholic solution, with or without spices, herbs, seasonings, vegetables and other condiments.

4.2 Optional Ingredients

a) Salt.

b) Natural starches.

c) Other optional ingredients provided that all ingredients are suitable for human consumption, are free from abnormal taste, flavour or odour and are permitted in Division 21 of the Food and Drug Regulations. Examples of such ingredients are spices, herbs, vegetable seasonings, vinegar and wine and vegetables and fruits for decorative and flavouring purposes only.

4.3 Other Presentations

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

a) is sufficiently distinctive from the forms of presentation set out above; and

b) meets all other Canadian Regulatory requirements; and

c) is adequately described on the label in accordance with all regulatory labelling requirements.

5. SAMPLING

The sampling and tolerance plans at the front of this manual shall be used to determine the acceptability of the lot. The sampling plans dictate the minimum sample size to be taken. If necessary, in the opinion of the inspector, more than the minimum sample size specified may be taken.

5.1 Sampling of lots for the sensory examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plan for Prepackaged Foods (AQL 6.5) (CAC/RM 42-1969) except that a lower acceptance number for decomposition shall be used as indicated in the sampling tables.

The tables specify the minimum number of sample units to be used for the following types of inspections:

a) Level I - Sensory examinations of all products subject to inspection other than lots which are subject to reinspection.

b) Level II - Sensory examinations of all products which are under reinspection.

5.2 Size of Sample Unit

The sample unit shall consist of a can of sardines and the entire contents thereof.

6. DESCRIPTION OF DEFECTS

6.1 Taint

A unit will be considered tainted when any of the following conditions are found:

a) Rancid
The contents in the container show the following defects:

1) Odour characterized by the distinct or persistent odour of oxidized oil; or

2) Flavour characterized by that of oxidized oil which leaves a distinct bitter aftertaste.

b) Abnormal
Distinct and persistent uncharacteristic odours or flavours such as burnt or acrid, metallic, or associated with feed, and not defined

as rancid or decomposed; or

Flavour or odour resulting from the improper addition or mixing of ingredients.

6.2 Decomposition

A unit will be considered decomposed when any of the following conditions are found:

a) Odour or flavour
Persistent, distinct and uncharacteristic odour or flavour including but not limited to the following:

fruity, vegetable, musty, yeasty, sour, faecal, ammonia, hydrogen sulphide, bilge-like, putrid.

b) Discolouration
Discolouration uncharacteristic of the species and type of pack, such as flushed pink (with a somewhat raw appearance), dark brown, yellowish to orange colours or definite red along the backbone.

c) Texture
Breakdown of muscle structure characterized by:

1) muscle structure which is very tough, dry, mealy or chalky; or

2) muscle structure which is very soft, mushy or pasty.

6.3 Unwholesome

a) Critical Foreign Material
A lot will be considered defective when any of the following conditions are found:

the presence of any material which has not been derived from fish (and packing media) and which poses a threat to human health (such as glass, etc.); or

distinct and persistent odour or flavour of any material which has not been derived from fish (and packing media) and which poses a threat to human health (such as solvents, fuel oil, etc.).

b) Foreign Material
A unit will be considered defective when the following condition is found:

the presence of any material which has not been derived from fish (and packing media) but does not pose a threat to human health (such as insect pieces, sand, etc.).

c) Other Defects
A unit will be considered defective when any of the following conditions are found:

1) **Struvite Crystals** (magnesium ammonium phosphate crystals)
Any struvite crystal greater than 5 mm in length.

2) **Sulphide Blackening** (smut)
Staining affecting greater than 5% of the fish in the sample unit.

3) **Undesirable Parts**
Any combination of sardines from which the heads and gills have not been removed which exceeds 5% of the number of fish in the sample unit.

7. EXAMINATION METHODS

7.1 Complete external can examination. Open can and complete net weight determination according to the defined procedures.

7.2 Remove fish from can to examination tray, if this has not already been done. Examine can interior for presence of foreign material, smut, struvite, and corrosion or other can interior defects.

7.3 Examine liquid and surface of fish for presence of struvite crystals, smut, foreign material.

7.4 Gently split fish along backbone. Examine backbone for hardness - it should be easily crushed between thumb and forefinger. Observe colour of flesh, especially the presence or absence of "definite" red along the backbone. Examine texture. Examine fish for the presence of large amounts of feed.

7.5 Assess odour. Assess flavour, and texture upon chewing, as required.

7.6 Record any defect for that unit on the appropriate worksheet.

8. CLASSIFICATION OF "DEFECTIVES"

A sample unit which contains defects as described in section 6 is classified as "defective".

9. LOT ACCEPTANCE

A lot will be considered unacceptable when:

a) any single instance of critical foreign matter occurs; or

b) the total number of sample units found defective for taint, decomposition or unwholesomeness, individually or in combination, exceeds the acceptance number for the sample size designated in the sampling plans; or

c) the total number of sample units found defective for decomposition exceeds the acceptance number shown in parentheses for the sample size designated in the sampling plans.

CHAPTER 2, STANDARD 3

CANNED SHRIMP OR PRAWN STANDARD

1. INTRODUCTION

This standard for canned shrimp* derives its authority from the Fish Inspection Regulations. It defines minimum acceptability of canned shrimp for taint, decomposition, unwholesomeness and other requirements, other than weight, as defined in the Fish Inspection Act and Regulations and describes methods for determining that acceptability.

* NOTE: Throughout this document, the term "shrimp" will be used to denote both shrimps and prawns.

2. SCOPE

This standard applies to canned shrimp in hermetically sealed containers and prepared from species of any of the following families:

PENAEIDAE, PANDALIDAE, CRANGONIDAE, PALAEMONIDAE.

Canned shrimp shall be prepared from sound, wholesome raw material, processed using good manufacturing practices.

Documents used to determine good manufacturing practice and compliance include:

1) International Code of Practice for Low Acid Canned Food CAC/RCP 23-1979.

2) Metal Can Defects Identification and Classification Manual, Canadian Food Inspection Agency.

3) Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL 6.5) CAC/RM 42-1969.

4) Code of Practice - General Principles of Food Hygiene for Use by the Food Industry in Canada, Health Canada.

5) Recommended International Code of Practice for Shrimps or Prawns, CAC/RCP 17-1978.

3. NOMENCLATURE

a) The name of the product shall be "Shrimp", "Shrimps" or "Prawns".

b) If desired, "X Shrimp", "X Shrimps" or "X Prawns" may be used where the "X" is the name of a country or a geographic area from which the shrimps originate.

c) Size designations are not required on the label, but if used, must be in accordance with the table in section 4.2. A count range may be specified on the label; no tolerances are applicable to count ranges when these are used in the place of size designations.

d) Any descriptive terms used, including those denoting style of presentation, must accurately reflect the contents of the can.

4. FORMS OF PRODUCT PRESENTATION

Canned shrimp shall be prepared from fresh, frozen or cooked whole and/or broken shrimp, and are usually packed in water. Salt, lemon juice, citric acid, seasonings, sugars and other ingredients, such as permitted additives, may be present.

4.1 Style of Presentation

Canned shrimp may be presented in the following ways:

a) Peeled (Conventional)
Shrimp which have been peeled and subsequently canned without the intentional removal of the dorsal tract.

b) Peeled and Deveined (Cleaned)
Shrimp which have been peeled and in addition have had the back cut open and the dorsal tract removed at least up to the last segment of the tail.

c) Cocktail (Picnic)
Any mixture of shrimp sizes which does not contain more than 15% of the drained weight of the contents (m/m) broken shrimp.

d) Salad
Any size or mixture of sizes, which does not contain more than 50% m/m broken shrimp in a can.

e) Broken
Pieces of shrimp consisting of less than four segments. Also, this may denote product containing more than the permitted percentage of broken shrimp.

4.2 Size Designation

Canned shrimp may be presented in the following size designations:

Size Designations	Maximum Count per 100 g Declared Weight
Extra large or jumbo	16.6
Large	24.9
Medium	45.7
Small	74.8
Tiny or Minuscule	no limit

4.3 Other Presentation

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

a) is sufficiently distinctive from the forms of presentation set out above; and

b) meets all other Canadian regulatory requirements; and

c) is adequately described on the label in accordance with all regulatory labelling requirements.

5. SAMPLING

The sampling and tolerance plans at the front of this manual shall be used to determine the acceptability of the lot. The sampling plans dictate the minimum sample size to be taken. If necessary, in the opinion of the inspector, more than the minimum sample size specified may be taken.

5.1 Sampling of lots for the sensory examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plan for Prepackaged Foods (AQL 6.5) (CAC/RM 42-1969) except that a lower acceptance number for decomposition shall be used as indicated in the sampling tables.

The tables specify the minimum number of sample units to be used for the following types of inspections:

a) Level I - Sensory examinations of all products subject to inspection other than lots which are subject to reinspection.

b) Level II - Sensory examinations of all products which are under reinspection.

5.2 Size of Sample Unit

The sample unit shall consist of a can of shrimp and the entire contents thereof.

6. DESCRIPTION OF DEFECTS

6.1 Taint

A unit will be considered tainted when any of the following conditions are found:

a) Rancid
Odour characterized by the distinct or persistent odour of oxidized oil; or

Flavour characterized by that of oxidized oil which leaves a distinct bitter aftertaste.

b) Abnormal
Distinct and persistent uncharacteristic odours or flavours such as burnt or acrid, metallic, or associated with feed, and not defined as rancid or decomposed; or

Flavour or odour resulting from the improper addition or mixing of ingredients.

6.2 Decomposition

A unit will be considered decomposed when any of the following conditions are found:

a) Odour or flavour
Persistent, distinct and uncharacteristic odour or flavour including but not limited to the following:

fruity, vegetable, musty, yeasty, sour, faecal, ammonia, hydrogen sulphide, putrid.

b) Discolouration
More than 10% m/m shrimp with faded pigment, liver stain, or black discolouration not caused by the metal container.

c) Texture
Breakdown of muscle structure characterized by:

1) muscle structure which feels dry as though no packing medium had been used; or

2) muscle structure which is very soft, mushy or pasty; or

3) muscle structure which is rubbery or tough, to the feel, or when chewing.

6.3 Unwholesome

a) Critical Foreign Material
A lot will be considered defective when any of the following conditions are found:

the presence of any material which has not been derived from shrimp (and packing media) and which poses a threat to human health (such as glass, etc.); or

distinct and persistent odour or flavour of any material which has not been derived from shrimp (and packing media) and which poses a threat to human health (such as solvents, fuel oil, etc.).

b) Foreign Material
A unit will be considered defective when the following condition is found:

the presence of any material which has not been derived from shrimp (and packing media) but does not pose a threat to human health (such as insect pieces, sand, etc.).

c) Other Defects
A unit will be considered defective when any of the following conditions are found:

1) **Struvite Crystals** (magnesium ammonium phosphate crystals)
Any struvite crystal greater than 5 mm in length.

2) **Sulphide Blackening** (smut)
Sulphide blackening affecting greater than 5% of the drained contents.

3) **Undesirable Parts**
Any combination of loose or attached shell, head pieces or antennae in excess of 2% of the drained weight.

6.4 Failure to Meet a Standard of Identity

a) Broken Shrimp
A unit will be considered defective for broken shrimp if it fails the following criteria when examined by the method outlined in section 7.

Size Designation	Maximum Number of Broken Shrimp Permitted (% m/m)
Extra Large, Jumbo	5
Large	5
Medium	5
Small	10
Tiny	15
No size designation	10
Style Designation	
Picnic or Cocktail	15
Salad	50
Broken	no maximum

b) Deveining (Cleaning)
In the case of deveined shrimp, a unit will be considered defective for deveining if it is found to contain more than 5% m/m of improperly cleaned or deveined shrimp, when examined using the method outlined in section 7.

c) Size Designation
When a size designation is declared, a unit will be considered defective for size designation if it exceeds the maximum count per 100 g declared weight specified in section 4.2, when examined by the method outlined in section 7.

d) Count Range
When a count range is declared, a unit will be considered defective for count range if the count is greater than or less than the range specified on the label, when examined by the method outlined in section 7.

7. EXAMINATION METHODS

7.1 Complete external can examination.

7.2 Open can and complete drained weight determination, according to defined procedures. A drained weight determination should only be conducted on samples which have equilibrated at room temperature for several hours. This will ensure that any gelled brine has liquified.

7.3 Remove product from can. Examine can interior for presence of foreign material, sulphide blackening, struvite, and corrosion or other can interior defects.

7.4 Examine liquid and surface of shrimp for presence of struvite crystals,

sulphide blackening, foreign material, or undesirable parts. Assess colour.

7.5 Examine each unit for style of presentation as required:

When a size designation is declared, count the number of whole shrimp present. Calculate the whole shrimp present per 100 g using the following formula:

$$\frac{\text{number of whole shrimp in unit}}{\text{actual drained weight of unit}} \times 100 = \text{\# shrimp/100 g}$$

During this procedure, separate broken pieces and determine the percentage of broken shrimp present. The percentage of broken shrimp may be calculated using the following formula:

$$\frac{\text{weight of broken shrimp}}{\text{actual drained weight of unit}} \times 100 = \text{\% broken shrimp}$$

Where shrimp is further described on the label (eg. "deveined"), product is examined for compliance. All percentages are calculated based on the actual drained weight of the unit.

7.6 Assess odour. Assess flavour and texture as required.

7.7 Record any defect for that unit on the appropriate worksheet.

8. CLASSIFICATION OF "DEFECTIVES"

A sample unit which contains defects as described in section 6 is classified as a "defective".

9. LOT ACCEPTANCE

A lot will be considered unacceptable when:

a) any single instance of critical foreign matter occurs; or

b) the total number of sample units found defective for taint, decomposition or unwholesomeness, individually or in combination, exceeds the acceptance number for the sample size designated in the sampling plans; or

c) the total number of sample units found defective for decomposition exceeds the acceptance number shown in parentheses for the sample size designated in the sampling plans; or

d) the total number of sample units found defective for standards of identity (style of presentation) and size designation or count range (if a size designation or count range is declared), exceeds the acceptance number for the sample size designated in the sampling plans.

CHAPTER 2, STANDARD 4

CANNED CRAB STANDARD

1. INTRODUCTION

This standard for canned crab derives its authority from the Fish Inspection Regulations. It defines minimum acceptability of canned crab for taint, decomposition, unwholesomeness and other requirements, other than weight, as defined in the Fish Inspection Act and Regulations and describes methods for determining that acceptability.

2. SCOPE

This standard applies to canned and/or heat processed crab in hermetically sealed containers and prepared from species of the sub-order Brachyura of the order Decapoda and all species of the family Lithodidae.

This standard does not apply to specialty products where the crab meat constitutes only a part of the edible contents.

Crab must be alive before processing and be prepared from sound, wholesome raw material processed using current good manufacturing practices.

Documents used to determine good manufacturing practice and compliance include:

1) International Code of Practice for Low Acid Canned Food CAC/RCP 23-1979.

2) Metal Can Defects Identification and Classification Manual, Canadian Food Inspection Agency.

3) Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL 6.5) CAC/RM 42-1969.

4) Code of Practice - General Principles of Food Hygiene for Use by the Food Industry in Canada, Health Canada.

3. NOMENCLATURE

a) The name of the product shall be "Crab Meat" and may be preceded or followed by the common or usual name applied to the species and meeting Canadian Regulations.

b) Where a can of crab meat is labelled according to the percentage of leg meat in twin or single face packs, the composition of the leg meat shall be expressed as a percentage of the drained weight.

c) Any presentation other than twin-face leg pack or single-face leg pack must have the style of pack accurately described on the label (eg. Chunk Crab Meat, Salad Crab Meat).

d) Any additional descriptive terms used must accurately reflect the contents of the can.

4. FORMS OF PRODUCT PRESENTATION

4.1 Canned crab meat may be presented as:

a) Twin Face Leg Pack
In which the top and bottom of the contents consist of well-filled and neatly arranged leg meat and the inner portion consists of salad or flaked crab meat.

b) Single Face Leg Pack
In which one end of the contents consists of well-filled and neatly arranged leg meat and the remaining portion of salad or flaked crabmeat.

c) Chunk Pack
In which at least 50% of the contents consists of solid pieces or chunks of crab meat, the remainder being flakes, and is accurately described on the label.

d) Salad Pack
In which the contents consists of flakes, shoulder meat and claw or broken leg meat portions, and is accurately described on the label.

4.2 Other presentations

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

a) is sufficiently distinctive from the forms of presentation set out above; and

b) meets all other Canadian regulatory requirements; and

c) is adequately described on the label and in accordance with all regulatory labelling requirements.

5. SAMPLING

The sampling and tolerance plans at the front of this manual shall be used to determine the acceptability of the lot. The sampling plans dictate the minimum sample size to be taken. If necessary, in the opinion of the inspector, more than the minimum sample size specified may be taken.

5.1 Sampling of lots for the sensory examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plan for Prepackaged Foods (AQL 6.5) (CAC/RM 42-1969) except that a lower acceptance number for decomposition shall be used as indicated in the sampling tables.

The tables specify the minimum number of sample units to be used for the following types of inspections:

a) Level I - Sensory examinations of all products subject to inspection other than lots which are subject to reinspection.

b) Level II - Sensory examinations of all products which are under reinspection.

5.2 Size of Sample Unit

The sample unit shall consist of a can of crab and the entire contents thereof.

6. DESCRIPTION OF DEFECTS

6.1 Taint

A unit will be considered tainted when any of the following conditions are found:

a) Rancid
Odour characterized by the distinct or persistent odour of oxidized oil; or

Flavour characterized by that of oxidized oil which leaves a distinct bitter aftertaste.

b) Abnormal
Distinct and persistent uncharacteristic odours or flavours such as iodine, burnt, acrid or metallic, and not defined as rancid or decomposed; or

Flavour or odour resulting from the improper addition or mixing of ingredients (eg. salt or citric acid).

6.2 Decomposition

A unit will be considered decomposed when any of the following conditions are found:

a) Odour or flavour
Persistent, distinct and uncharacteristic odour or flavour including but not limited to the following:

sickly-sweet, fruity, vegetable, musty, sour, faecal, ammonia, hydrogen sulphide, putrid.

b) Discolouration
Distinct discolouration characterized by a blue, black, orange or yellow colour to the meat.

c) Texture
Breakdown of muscle structure characterized by:

1) muscle structure which is very soft or mushy; and/or
2) muscle fibres, particularly in the legs, which are short and very shredded; and/or
3) muscle structure which is very tough or dry.

6.3 Unwholesome

a) Critical Foreign Material

A lot will be considered defective when any of the following conditions are found:

the presence of any material which has not been derived from crab (and packing media) and which poses a threat to human health (such as glass, etc.); or

distinct and persistent odour or flavour of any material which has not been derived from crab (and packing media) and which poses a threat to human health (such as solvents, fuel oil, etc.).

b) Foreign Material

A unit will be considered defective when the following condition is found:

the presence of any material which has not been derived from

crab (and packing media) but does not pose a threat to human health (such as insect pieces, sand, etc.).

c) Other Defects

A unit will be considered defective when any of the following conditions are found:

1) **Struvite Crystals** (magnesium ammonium phosphate crystals)
Any struvite crystal greater than 5 mm in length.

2) **Sulphide Blackening** (smut)
Staining of the meat in excess of 5% of the drained contents.

3) **Undesirable Parts**
Shell, gills, viscera or cartilage in excess of 2% of the drained contents.

6.4 Style of Presentation

A unit will be considered defective for style of presentation if any of the following conditions occur:

a) it fails to meet the declared percentage of leg meat when examined according to the method outlined in section 7; or

b) in the case of chunk pack, greater than 50% of the contents is flaked, when examined by the method outlined in section 7.

7. EXAMINATION METHODS

7.1 Complete external can examination.

7.2 Open can and complete drained weight determination, according to defined procedures. A drained weight determination should only be conducted on samples which have equilibrated at room temperature for several hours. This will ensure that any gelled brine has liquified. Where parchment paper has been wrapped around the product, care should be taken to ensure product is free to drain properly.

7.3 Carefully remove product, and parchment paper where necessary, from can. Examine can interior for presence of foreign material, sulphide blackening, struvite, and corrosion or other can interior defects.

7.4 Examine liquid and surface of crab for presence of struvite crystals, sulphide blackening, foreign material or undesirable parts.

7.5 Examine each unit for style of presentation as required:

Where percentage of leg meat is declared, collect leg meat separately and determine compliance using the following formula:

$$\frac{\text{Weight of leg meat in unit}}{\text{Declared drained weight of unit}} \times 100 = \% \text{ leg meat}$$

For packs labelled as "chunk", collect chunks (pieces not less than 10 mm in each direction) separately and determine compliance as follows:

$$\frac{\text{Weight of chunks in unit}}{\text{Declared drained weight of unit}} \times 100 = \% \text{ chunk}$$

7.6 Assess odour. Assess flavour and texture as required.

7.7 Record any defect for that unit on the appropriate worksheet.

8. CLASSIFICATION OF "DEFECTIVES"

A sample unit which contains defects as described in section 6 is classified as a "defective".

9. LOT ACCEPTANCE

A lot will be considered unacceptable when:

a) any single instance of critical foreign material occurs; or

b) the total number of sample units found defective for taint, decomposition or unwholesomeness, individually or in combination, exceeds the acceptance number for the sample size designated in the sampling plans; or

c) the total number of sample units found defective for decomposition exceeds the acceptance number shown in parentheses for the sample size designated in the sampling plans; or

d) the total number of sample units found defective for standards of identity (style of presentation), exceeds the acceptance number for the sample size designated in the sampling plans.

CHAPTER 2, STANDARD 5

CANNED CLAM STANDARD

1. INTRODUCTION

This standard for canned clams derives its authority from the Fish Inspection Regulations. It defines minimum acceptability of canned clams for taint, decomposition, unwholesomeness and other requirements, other than weight, as defined in the Fish Inspection Act and Regulations and describes methods for determining that acceptability.

2. SCOPE

This standard applies to canned and/or heat processed clams, clam meats, minced clam meats or chopped clam meats in hermetically sealed containers, prepared from any of the following species:

Mya arenaria
Spisula solidissima
Ensis directus
Mercenaria mercenaria or Venus mercenaria
Arctica islandica
Saxidomus giganteus

Other species commonly associated with the clam family.

Canned clams, clam meats, minced clam meats or chopped clam meats should be prepared from sound, wholesome raw material processed using current good manufacturing practices.

Documents used to determine good manufacturing practice and compliance include:

1) International Code of Practice for Low Acid Canned Food CAC/RCP 23-1979.

2) Metal Can Defects Identification and Classification Manual, Canadian Food Inspection Agency.

3) Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL 6.5) CAC/RM 42-1969.

4) Code of Practice - General Principles of Food Hygiene for Use by the Food Industry in Canada, Health Canada.

3. NOMENCLATURE

a) The name of the product shall be "Clams" or "Clam Meats".

b) The following forms of presentation must be accurately described on the label: minced or chopped, as appropriate.

c) Any additional descriptive terms used must accurately reflect the contents of the can.

4. FORMS OF PRODUCT PRESENTATION

The product may be prepared from clams, steamed or not, smoked or unsmoked, whole (unshelled) clams or shucked meats, which have been culled, washed, trimmed if necessary and packed in a container with brine, own juice and/or other suitable food grade packing media.

4.1 Other presentations

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

a) is sufficiently distinctive from the forms of presentation set out above; and

b) meets all other Canadian regulatory requirements; and

c) is adequately described on the label and in accordance with all regulatory labelling requirements.

5. SAMPLING

The sampling and tolerance plans at the beginning of this manual shall be used to determine the acceptability of the lot. The sampling plans dictate the minimum sample size to be taken. If necessary, in the opinion of the inspector, more than the minimum sample size specified may be taken.

5.1 Sampling of lots for the sensory examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plan for Prepackaged Foods (AQL 6.5) (CAC/RM42-1969) except that a lower acceptance number for decomposition shall be used as indicated in the sampling tables.

The sampling tables specify the minimum number of sample units to be used for the following types of inspections:

a) Level I - Sensory examinations of all products subject to inspection other than lots which are subject to reinspection.

b) Level II - Sensory examination of all products which are under reinspection.

5.2 Size of Sample Unit

The sample unit shall consist of a can of clams and the entire contents thereof.

6. DESCRIPTION OF DEFECTS

6.1 Taint

A unit will be considered tainted when any of the following conditions are found:

a) Rancid
Odour characterized by the distinct or persistent odour of oxidized oil; or

Flavour characterized by that of oxidized oil which leaves a distinct bitter aftertaste.

b) Abnormal
Distinct and persistent odour or flavour uncharacteristic of the species or method of preparation, such as ash-like or charcoal-like, feedy, burnt or acrid, metallic, and not defined as rancid or decomposed; or

Flavour or odour resulting from the improper addition or mixing of ingredients.

6.2 Decomposition

A unit will be considered decomposed when any of the following conditions are found:

a) Odour or flavour
Persistent, distinct and uncharacteristic odour or flavour including but not limited to the following:

sour, musty, vegetable, fruity, ammonia, yeasty, hydrogen sulphide, faecal, putrid.

b) Texture
Breakdown of tissue characterized by structure which is very soft or mushy.

c) Discolouration
Distinct discolouration of the clam meats, characterized by green, gray or black colours. (Note: Excluded from this defect is a normal greenish tinge to the belly wall, due to the presence of algae in the stomach).

6.3 Unwholesome

a) Critical Foreign Material

A lot will be considered defective when any of the following conditions are found:

the presence of any material which has not been derived from clams (and packing media) and which poses a threat to human health (such as glass, etc.); or

distinct and persistent odour or flavour of any material which has not been derived from clams (and packing media) and which poses a threat to human health (such as solvents, fuel oil, etc.).

b) Foreign Material

A unit will be considered defective when the following condition is found:

the presence of any material which has not been derived from clams (and packing media) but does not pose a threat to human health (such as insect pieces, sand, etc.).

c) Other Defects

A unit will be considered defective when any of the following conditions are found:

1) **Struvite Crystals** (magnesium ammonium phosphate crystals)
Any struvite crystal greater than 5 mm in length.

2) **Sulphide Blackening** (smut)
Staining of the meat in excess of 5% of the drained contents.

3) **Discolouration of Packing Medium**
The packing medium is blue or black.

7. EXAMINATION METHODS

7.1 Complete external can examination.

7.2 Open can and complete drained weight determination, according to defined procedures.

7.3 Carefully remove product from can. Examine can interior for presence of foreign material, sulphide blackening, struvite crystals, and corrosion or other can interior defects.

7.4 Examine liquid and clams for presence of struvite crystals, sulphide blackening or foreign material. Assess colour of clams and liquid.

7.5 Assess odour. Assess flavour and texture as required.

7.6 Record any defect for that unit on the appropriate worksheet.

8. CLASSIFICATION OF "DEFECTIVES"

A sample unit which contains defects as described in section 6 is classified as a "defective".

9. LOT ACCEPTANCE

A lot will be considered unacceptable when:

a) any single instance of critical foreign material occurs; or

b) the total number of sample units found defective for taint, decomposition or unwholesomeness, individually or in combination, exceeds the acceptance number for the sample size designated in the sampling plans; or

c) the total number of sample units found defective for decomposition exceeds the acceptance number shown in parentheses for the sample size designated in the sampling plans.

CHAPTER 2, STANDARD 6

GENERAL CANNED SHELLFISH STANDARD

1. INTRODUCTION

This standard for canned shellfish derives its authority from the Fish Inspection Regulations. It defines minimum acceptability of canned shellfish for taint, decomposition, unwholesomeness and other requirements, other than weight, as defined in the Fish Inspection Act and Regulations and describes methods for determining that acceptability.

2. SCOPE

This standard applies to canned shellfish in hermetically sealed containers. It is intended to be used for the inspection of canned shellfish products for which specific Canadian product standards have not been elaborated.

Canned shellfish shall be prepared from sound, wholesome raw material processed using good manufacturing practices.

Documents used to determine good manufacturing practice and compliance include:

1) International Code of Practice for Low Acid Canned Food CAC/RCP 23-1979.

2) Metal Can Defects Identification and Classification Manual, Canadian Food Inspection Agency.

3) Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL 6.5) CAC/RM 42-1969.

4) Code of Practice - General Principles of Food Hygiene for Use by the Food Industry in Canada, Health Canada.

3. NOMENCLATURE

The name of the product shall be that recognized in common usage in Canada, and in accordance with the Fish Inspection Regulations and any requirements of the applicable Codex Alimentarius Recommended International Standard.

Descriptive terms should be used where necessary to accurately describe

the contents of the can.

4. FORMS OF PRODUCT PRESENTATION

This product may be prepared from shellfish, cooked or not, smoked or unsmoked, whole (unshelled or with the half-shell removed) or shucked meats, which have been culled, washed, trimmed if necessary and packed in a container with brine, own juice and/or other suitable food grade packing media.

4.1 Other Presentations

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

a) is sufficiently distinctive from the forms of presentation set out above;

b) meets all other Canadian Regulatory requirements; and

c) is adequately described on the label and in accordance with all regulatory labelling requirements.

5. SAMPLING

The sampling and tolerance plans in the front of this manual shall be used to determine the acceptability of the lot. The sampling plans dictate the minimum sample size to be taken. If necessary, in the opinion of the inspector, more than the minimum sample size specified may be taken.

5.1 Sampling of lots for the sensory examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plan for Prepackaged Foods (AQL 6.5) (CAC/RM42-1969) except that a lower acceptance number for decomposition shall be used as indicated in the sampling tables.

The sampling tables specify the minimum number of sample units to be used for the following types of inspections:

a) Level I - Sensory examination of all products subject to inspection other than lots which are subject to reinspection.

b) Level II - Sensory examination of all products which are under reinspection.

5.2 Size of Sample Unit

The sample unit shall consist of a can of shellfish and the entire contents thereof.

6. DESCRIPTION OF DEFECTS

6.1 Taint

A unit will be considered tainted when any of the following conditions are found:

a) Rancid
The contents in the container show the following defects:

Odour characterized by the distinct or persistent odour of oxidized oil; or

Flavour characterized by that of oxidized oil which leaves a distinct bitter aftertaste.

b) Abnormal
Distinct and persistent uncharacteristic odours or flavours such as iodine, burnt or acrid, ash-like, metallic, or associated with feed and not defined as rancid or decomposed; or

Flavour or odour resulting from the improper addition and/or mixing of ingredients.

6.2 Decomposition

A unit will be considered decomposed when any of the following conditions are found:

a) Odours and flavours
Persistent, distinct and uncharacteristic odour or flavour including but not limited to the following:

fruity, vegetable, musty, yeasty, sour, faecal, ammonia, hydrogen sulphide, and putrid.

b) Discolouration
Discolouration associated with decomposition which is uncharacteristic of the species and type of pack. Depending on the species, abnormal colours may include blue, black, green, grey, or yellowish to orange colours.

c) Texture
Breakdown of muscle structure due to decomposition as characterized by:

very tough, rubbery, or dry conditions; or

very soft, mushy, or pasty conditions.

6.3 Unwholesome

a) Critical Foreign Material

A lot will be considered defective when any of the following conditions are found:

the presence of any material which has not been derived from shellfish (and packing media) and which poses a threat to human health (such as glass, etc.); or

distinct and persistent odour or flavour of any material which has not been derived from shellfish (and packing media) and which poses a threat to human health (such as solvents, fuel oil, etc.).

b) Foreign Material

A unit will be considered defective when the following condition is found:

the presence of any material which has not been derived from shellfish (and packing media) but does not pose a threat to human health (such as insect pieces, sand, etc.).

c) Other Defects

A unit will be considered defective when any of the following conditions are found:

1) **Struvite Crystals** (magnesium ammonium phosphate crystals)
Any struvite crystal greater than 5 mm in length.

2) **Sulphide Blackening** (smut)
Staining of the meat in excess of 5% of the drained contents.

7. EXAMINATION METHODS

7.1 Complete external can examination. Open can and perform net and/or drained weight determination, according to defined policies and

procedures for these examinations.

7.2 Carefully remove product from can to examination tray. Examine can interior for presence of foreign material, smut, struvite, and corrosion or other can interior defects.

7.3 Inspect liquid and shellfish for presence of foreign material, smut, or struvite.

7.4 Observe colour of flesh and presence of discolouration in shellfish.

7.5 Assess odour. Assess flavour and texture as required.

7.6 Record any defect for that unit on the appropriate worksheet.

8. CLASSIFICATION OF "DEFECTIVES"

A sample unit which contains defects as described in section 6 is classified as a "defective".

9. LOT ACCEPTANCE

A lot will be considered unacceptable when:

a) any single instance of critical foreign material occurs; or

b) the total number of sample units found defective for taint, decomposition or unwholesomeness, individually or in combination, exceeds the acceptance number for the sample size designated in the sampling plans; or

c) the total number of sample units found defective for decomposition exceeds the acceptance number shown in parentheses for the sample size designated in the sampling plans.

CHAPTER 2, STANDARD 7

GENERAL CANNED FINFISH STANDARD

1. INTRODUCTION

This general standard for canned finfish derives its authority from the Fish Inspection Regulations. It defines minimum acceptability for taint, decomposition, unwholesomeness and other requirements, other than weight, as defined in the Fish Inspection Act and Regulations and describes methods for determining that acceptability.

2. SCOPE

This standard applies to canned finfish in hermetically sealed containers. It is intended to be used for the inspection of canned finfish species for which specific Canadian product standards have not been elaborated.

Canned finfish shall be prepared from sound, wholesome raw material processed using good manufacturing practices.

Documents used to determine good manufacturing practice and compliance include:

1) International Code of Practice for Low Acid Canned Food CAC/RCP 23-1979.

2) Metal Can Defects Identification and Classification Manual, Canadian Food inspedtion Agency.

3) Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL 6.5) CAC/RM 42-1969.

4) Code of Practice - General Principles of Food Hygiene for Use by the Food Industry in Canada, Health Canada.

3. NOMENCLATURE

The name of the product shall be that recognized in common usage in Canada, and in accordance with the Fish Inspection Regulations and any requirements of the applicable Codex Alimentarius Recommended International Standard.

Descriptive terms shall be used where necessary to accurately describe the contents of the can.

4. FORMS OF PRODUCT PRESENTATION

Canned finfish may be prepared from fish which is fresh, frozen, cooked or smoked.

4.1 Packing Media

The product may be presented in one of the following packing media as appropriate to the species and style of pack, with or without permitted optional ingredients:

a) Own juice
Fish packaged without added liquid;

b) Potable water
In conformity with the requirements of the Fish Inspection Regulations for water used in registered establishments;

c) Spring water or mineral water
Potable water from an underground source but not obtained from a public community water supply and which meets the requirements of Section B12.001 of the Food and Drug Regulations;

d) Vegetable broth
The liquid arising from the cooking of sound wholesome vegetables in water and which may be prepared from one or more types of vegetables. Vegetable broth may also be prepared from hydrolysed vegetable protein but a broth so prepared requires its components to be declared in a list of ingredients;

e) Olive oils
In conformity with:

the relevant sections of Division 9 of the Canadian Food and Drug Regulations; or

the Recommended International Standard for Olive Oil, Virgin and Refined, and for Refined Olive-Residue Oil (Ref. CAC/RS 33-1970);

f) Other vegetable oils
Clear, refined, deodorized, edible vegetable oil in conformity with:

the relevant sections of Division 9 of the Canadian Food and Drug Regulations; or

the relevant recommended International standards adopted by the Codex Alimentarius Commission;

g) Sauces
A thickened liquid made from acceptable food ingredients giving a characterizing flavour and odour to the product;

h) Marinades
A thin liquid made from acceptable food ingredients, usually containing a sweetener, an acid solution or an alcoholic solution, with or without spices, herbs, seasonings, vegetables, and other condiments;

i) Fish oils
Clear, refined, edible fish (marine) oil. The species from which the oil is derived should be noted on the product label.

4.2 Optional Ingredients

a) salt;

b) natural starches; and

c) other optional ingredients provided that all ingredients are suitable for human consumption, are free from abnormal taste, flavour, or odour, and are permitted in Division 21 of the Food and Drug Regulations. Examples of such ingredients are spices, herbs, vegetable seasonings, vinegar and wine, and vegetables and fruits for decorative and flavouring purposes only.

4.3 Other Presentations

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

a) is sufficiently distinctive from the forms of presentation set out above;

b) meets all other Canadian Regulatory requirements; and

c) is adequately described on the label and in accordance with all regulatory labelling requirements.

5. SAMPLING

The sampling and tolerance plans at the front of this manual shall be used to determine the acceptability of the lot. The sampling plans dictate the minimum sample size to be taken. If necessary, in the opinion of the inspector, more than the minimum sample size specified may

be taken.

5.1 Sampling of lots for the sensory examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plan for Prepackaged Foods (AQL 6.5) (CAC/RM42-1969) except that a lower acceptance number for decomposition shall be used as indicated in the sampling tables.

The sampling tables specify the minimum number of sample units to be used for the following types of inspections:

a) Level I - Sensory examination of all products subject to inspection other than lots which are subject to reinspection.

b) Level II - Sensory examination of all products which are under reinspection.

5.2 Size of Sample Unit

The sample unit shall consist of a can of fish and the entire contents thereof.

6. DESCRIPTION OF DEFECTS

6.1 Taint

A unit will be considered tainted when any of the following conditions are found:

a) Rancid
The contents in the container show the following defects:

Odour characterized by the distinct or persistent odour of oxidized oil; or

Flavour characterized by that of oxidized oil which leaves a distinct bitter aftertaste.

b) Abnormal
Distinct and persistent uncharacteristic odours or flavours such as burnt or acrid, metallic, or associated with feed and not defined as rancid or decomposed; or

Flavour or odour resulting from the improper addition and/or mixing of ingredients.

6.2 Decomposition

A unit will be considered decomposed when any of the following conditions are found:

a) Odours and flavours
Persistent, distinct and uncharacteristic odour or flavour including but not limited to the following:

fruity, vegetable, stale, musty, yeasty, sour, faecal, ammonia, hydrogen sulphide, bilge-like and putrid.

b) Discolouration
Discolouration associated with decomposition which is uncharacteristic of the species and type of pack, such as flushed pink, dark brown, green or yellowish to orange colours.

c) Texture
Breakdown of muscle structure due to decomposition characterized by:

muscle structure which is very tough, dry, mealy or chalky; or

muscle structure which is very soft, mushy, or pasty.

6.3 Unwholesome

a) Critical Foreign Material

A lot will be considered defective when any of the following conditions are found:

the presence of any material which has not been derived from fish (and packing media) and which poses a threat to human health (such as glass, etc.); or

distinct and persistent odour or flavour of any material which has not been derived from fish (and packing media) and which poses a threat to human health (such as solvents, fuel oil, etc.).

b) Foreign Material

A unit will be considered defective when the following condition is found:

the presence of any material which has not been derived from fish (and packing media) but does not pose a threat to human health (such as insect pieces, sand, etc.).

c) Other Defects

A unit will be considered defective when any of the following conditions are found:

1) **Struvite Crystals** (magnesium ammonium phosphate crystals)
Any struvite crystal greater than 5 mm in length.

2) **Sulphide Blackening** (smut)
Staining affecting greater than 5% of the drained contents.

3) **Undesirable Parts**
Any combination of head parts, heads, tails, scales and viscera exceeding 2% of the drained weight.

7. EXAMINATION METHODS

7.1 Complete external can examination. Open can and complete net weight determination, according to defined policies and procedures for these examinations.

7.2 Examine appearance of product in can. Carefully remove fish from can to examination tray. Inspect can contents for presence of foreign material or other undesirable parts, carefully separating fish as necessary.

7.3 Examine can interior for presence of foreign material, smut, struvite, and corrosion or other can interior defects.

7.4 Observe colour of flesh as an indicator of decomposition.

7.5 Assess odour, flavour and texture as required.

7.6 Record any defect for that unit on the appropriate worksheet.

8. CLASSIFICATION OF "DEFECTIVES"

A sample unit which contains defects as described in section 6 is classified as a "defective".

9. LOT ACCEPTANCE

A lot will be considered unacceptable when:

a) any single instance of critical foreign material occurs; or

b) the total number of sample units found defective for taint, decomposition or unwholesomeness, individually or in combination, exceeds the acceptance number for the sample size designated in the sampling plans; or

c) the total number of sample units found defective for decomposition exceeds the acceptance number shown in parentheses for the sample size designated in the sampling plans.

CHAPTER 2, STANDARD 8

CANNED SALMON STANDARD

1. INTRODUCTION

This standard for canned salmon derives its authority from the Fish Inspection Regulations and the Food and Drug Regulations. It defines minimum acceptability for taint, decomposition, unwholesomeness and other requirements, other than weight, as defined in the Fish Inspection Act and Regulations and describes methods for determining that acceptability.

2. SCOPE

This standard applies to canned salmon in hermetically sealed containers. It is intended to be used for the inspection of canned salmon prepared from any of the following species:

1. Oncorhynchus nerka (sockeye salmon, red sockeye salmon, red salmon)
2. Oncorhynchus tschawytscha (spring salmon, king salmon, chinook salmon)
3. Oncorhynchus kisutch (coho salmon, medium red coho salmon)
4. Oncorhynchus gorbuscha (pink salmon)
5. Oncorhynchus keta (chum salmon, keta salmon)
6. Oncorhynchus mykiss (steelhead salmon, deep sea trout)
7. Salmo salar (salmon, Atlantic salmon)

Canned salmon shall be prepared from sound, wholesome raw material processed using good manufacturing practices.

Documents used to determine good manufacturing practice and compliance include:

1) Recommended International Code of Hygienic Practice for Low Acid and Acidified Low Acid Canned Food, CAC/RCP 23-1979.

2) Metal Can Defects Identification and Classification Manual, Canadian Food Inspection Agency.

3) Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL 6.5) CAC/RM 42-1969.

4) Code of Practice - General Principles of Food Hygiene for use by the Food Industry in Canada, Health Canada.

5) Recommended International Code of Practice for Canned Fish, CAC/RCP

10-1976.

6) Codex Alimentarius Draft Revised Standard For Canned Salmon, Codex Standard 3-1981.

3. NOMENCLATURE

The name of the product shall be that recognized in common usage in Canada, and in accordance with the Fish Inspection Regulations and any requirements of the applicable Codex Alimentarius Recommended International Standard.

Descriptive terms shall be used where necessary to accurately describe the contents of the can.

4. FORMS OF PRODUCT PRESENTATION

Canned salmon may be prepared from fish which is fresh, frozen, cooked or smoked.

4.1 Styles of Pack

a) Regular-pack
Consists of sections of flesh that are cut transversely from the fish and are equal in length to the height of the can and packed so that the cut surfaces are parallel with the ends of the can.

b) Chunk
A mixture of pieces of fish most of which have dimensions of not less than 1.2 cm in each direction and in which the original muscle structure is retained.

c) Flake, flaked or flakes
A mixture of particles of fish in which the muscle structure of the flesh is retained.

d) Minced, grated or shredded
A mixture of particles of fish that have been reduced to a uniform size and in which particles are discrete and do not comprise a paste.

4.2 Spring Salmon (*Oncorhynchus tschawytscha*) Colour Designations

In addition to the appropriate common name, canned salmon of the species *Oncorhynchus tschawytscha* may be designated as "red", "pink" or "white" to indicate the colour of the flesh in accordance with standards approved by the Minister.

4.3 Packing Media

The product may be presented in one of the following packing media as appropriate to the species and style of pack, with or without permitted optional ingredients:

a) Own juice
Fish packaged without added liquid.

b) Potable water
In conformity with the requirements of the Fish Inspection Regulations for water used in registered establishments.

c) Spring water or mineral water
Potable water from an underground source but not obtained from a public community water supply and which meets the requirements of Section B.12.001 of the Food and Drug Regulations.

d) Vegetable broth
The liquid arising from the cooking of sound wholesome vegetables in water and which may be prepared from one or more types of vegetables.

e) Olive oils
In conformity with:

the relevant sections of Division 9 of the Canadian Food and Drug Regulations; or

the Recommended International Standard for Olive Oil, Virgin and Refined, and for Refined Olive-Residue Oil (Ref. CAC/RS 33-1970).

f) Other vegetable oils
Clear, refined, deodorized, edible vegetable oil in conformity with:

the relevant sections of Division 9 of the Canadian Food and Drug Regulations; or

the relevant recommended International standards adopted by the Codex Alimentarius Commission.

g) Sauces
A thickened liquid made from acceptable food grade ingredients giving a characterizing flavour and odour to the product.

h) Marinades
A thin liquid made from acceptable food grade ingredients, usually

containing a sweetener, an acid solution or an alcoholic solution, with or without spices, herbs, seasonings, vegetables and other condiments.

i) Fish oils
Clear, refined, edible fish (marine) oil. The species from which the oil is derived should be noted on the product label.

4.4 Optional Ingredients

a) Salt.

b) Other optional ingredients provided that all ingredients are food grade and meet the requirements of the Food and Drug Regulations.

4.5 Other Presentations

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

a) is sufficiently distinctive from the forms of presentation set out above; and

b) meets all other Canadian regulatory requirements; and

c) is adequately described on the label and in accordance with all regulatory labelling requirements.

5. SAMPLING

The sampling and tolerance plans at the front of this manual shall be used to determine the acceptability of the lot. The sampling plans dictate the minimum sample size to be taken.

5.1 Sampling of lots for the sensory examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plan for Prepackaged Foods (AQL 6.5) (CAC/RM42-1969) except that a lower acceptance number for decomposition shall be used as indicated in the sampling tables.

The sampling tables specify the minimum number of sample units to be used for the following types of inspections:

a) Level I - Sensory examinations of all products subject to inspection other than lots which are subject to reinspection.

b) Level II - Sensory examination of all products which are under reinspection.

5.2 Size of Sample Unit

The sample unit shall consist of a can or pouch of fish and the entire contents thereof.

6. DESCRIPTION OF DEFECTS

6.1. Taint

A unit will be considered tainted when any of the following conditions are found:

a) Rancid
Odour characterized by the distinct and persistent and objectionable odour of oxidized oil; or

Flavour characterized by that of oxidized oil which leaves a distinct bitter and objectionable aftertaste.

Discolouration indicative of rancidity.

b) Abnormal
Distinct and persistent and objectionable uncharacteristic odours or flavours such as metallic and not defined as rancid or decomposed; or

Flavour or odour resulting from the improper addition and/or mixing of ingredients.

c) Excessive levels of sexual maturity.
Distinct and persistent and objectionable odours or flavours indicative of advanced sexual maturity (late-run fish).

6.2 Decomposition

A unit will be considered decomposed when any of the following conditions are found:

a) Odours and flavours
Persistent, distinct, uncharacteristic and objectionable odour or flavour such as:

fruity, vegetable, stale, musty, yeasty, sour, faecal, ammonia, hydrogen sulphide, bilge-like, putrid.

b) Discolouration
Discolouration indicative of decomposition.

c) Texture
Breakdown of muscle structure due to decomposition characterized by:

1) excessively mushy flesh uncharacteristic of the species in the presentation; or

2) excessively tough flesh uncharacteristic of the species in the presentation.

6.3 Unwholesome

a) Critical Foreign Material

A lot will be considered defective when the following conditions are found:

the presence of any material which has not been derived from fish (or packing media) and which poses a threat to human health (such as glass, etc.); or

distinct and persistent odour or flavour of any material which has not been derived from fish (or packing media) and which poses a threat to human health (such as solvents, fuel oil, etc.).

b) Foreign Material

A unit will be considered defective when the following condition is found:

the presence of any material which has not been derived from fish (or packing media) but does not pose a threat to human health (such as insect pieces, sand, etc.).

c) Other Defects

A unit will be considered defective when any of the following conditions are found:

1) **Struvite Crystals** (magnesium ammonium phosphate crystals)
Any struvite crystal greater than 5 mm in length.

2) **Sulphide Blackening** (smut)
Staining affecting greater than 5% of the net contents.

3) **Undesirable Parts**
Any combination of head parts, heads, tails and viscera exceeding 2% of the net weight of the intended pack.

7. EXAMINATION METHODS

7.1 Complete external can examination. Open container and complete net weight determination, according to the defined policies and procedures for these examinations.

7.2 Examine appearance of product in container. Carefully remove fish from container to examination tray. Compare product form with standard product form. Inspect container contents for presence of foreign material or other undesirable parts, carefully separating fish as necessary.

7.3 Examine container interior for presence of foreign material, smut, struvite, and corrosion or other can interior defects.

7.4 Evaluate the colour to determine if there is discoloration indicative of rancidity and decomposition. Assess the odour, flavour and texture as required.

7.5 Record any defect for that unit on the appropriate worksheet.

8.0 CLASSIFICATION OF "DEFECTIVES"

A sample unit which contains defects as described in section 6 is classified as a "defective".

9.0 LOT ACCEPTANCE

A lot will be considered unacceptable when:

a) any single instance of critical foreign matter occurs; or

b) the total number of sample units found defective for taint, decomposition or unwholesomeness, individually or in combination, exceeds the acceptance number for the sample size designated in the sampling plans; or

c) the total number of sample units found defective for decomposition exceeds the acceptance number shown in parentheses for the sample size designated in the sampling plans.

CHAPTER 3, STANDARD 1

FRESH & FROZEN GROUNDFISH BLOCK AND FILLET STANDARD

1. INTRODUCTION

This standard for fresh and frozen groundfish fillets and blocks including minced fish derives its authority from the Fish Inspection Act and Regulations. It defines minimum acceptability for taint, decomposition, and unwholesomeness and other requirements, other than weight, as defined in the Fish Inspection Act and Regulations and describes methods for determining that acceptability.

2. SCOPE

This standard applies to fresh, frozen or defrosted fillets or fillet blocks or minced blocks of groundfish, prepared from any one of the following families or orders of groundfish:

a) The family Gadidae - including cod, haddock, pollock, hake and cusk;
b) The family Anarchichadidae - wolffish or catfish;
c) The family Scorpaenidae - including ocean perch (redfish) and black belly rosefish;
d) The family Hexagrammidae - ling cod;
e) The order Pleuronectiformes - including flounder, sole, greysole, turbot and other related flatfish species;
f) The family Lophiidae - monkfish.

Fresh, frozen or defrosted groundfish fillets or fillet blocks or minced blocks should be prepared from sound, wholesome raw material and processed using good manufacturing practices.

Documents which are used for interpreting good manufacturing practices include:

1) Recommended International Code of Practice - General Principles of Food Hygiene, CAC/RCP 1-1969 REV. 1.

2) Codex Alimentarius Sampling Plans for Prepackaged Foods, (AQL 6.5) CAC/RM 42-1969.

3) Recommended International Code of Practice for Fresh Fish, CAC/RCP 9-1976.

4) Recommended International Code of Practice for Frozen Fish, CAC/RCP 16-1978.

3. NOMENCLATURE

The name of the product shall be that required in common usage in Canada and in accordance with the Fish Inspection Regulations and any requirements of the applicable Codex Alimentarius Recommended International Standard.

4. FORMS OF PRODUCT PRESENTATION

4.1 Groundfish may be presented as fillets or blocks.

4.2 Groundfish may also be presented as minced fish blocks.

4.3 Any other presentation may be permitted provided that it:

a) is sufficiently distinctive from the forms of presentations set out in 4.1 and 4.2; and
b) meets the requirements of the Fish Inspection Regulations; and
c) is adequately described on the label and in accordance with all regulatory labelling requirements.

5. SAMPLING

The sampling and tolerance plans at the front of this manual shall be used to determine the acceptability of the lot. The sampling plans dictate the minimum sample size to be taken. If necessary, in the opinion of the inspector, more than the minimum sample size specified may be taken.

5.1 Sampling of lots for the sensory examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plan for Prepackaged Foods (AQL 6.5) (CAC/RM 42-1969) except that a lower acceptance number for decomposition shall be used as indicated in the sampling tables.

The tables specify the minimum number of sample units to be used for the following types of inspections:

a) Level I - Sensory examinations of all products subject to inspection other than lots which are subject to reinspection.

b) Level II - Sensory examinations of all products which are under reinspection.

5.2 Size of Sample Unit

The sample unit shall consist of a container of fish and the entire contents thereof.

6. DESCRIPTION OF DEFECTS

6.1 Decomposition

A sample unit will be classified decomposed when more than 10% of the declared weight is affected by:

a) Odours
Persistent and distinct odours in a fillet, part of a fillet or in minced fish characterized by: fruity, vegetable, musty, saltfish-like, sour, sour milk-like, faecal, ammonia, hydrogen sulphide, bilge, putrid; or

b) Colour
Distinct green colour in a fillet or part fillet of flatfish species.

6.2 Taint

A sample unit will be classified tainted when more than 10% of the declared weight is found to be:

a) Rancid
Odour in a fillet or part of a fillet or minced fish which is characterized by the persistent and distinct odour of oxidized oil (this may be characterized by a pungent sensation in the nasal passage); or

b) Abnormal
Distinct and persistent odour in a fillet or part of a fillet or minced fish which is organic sulphide-like, such as dimethyl sulfide (blackberry), or iodine-like, as associated with feed.

6.3 A sample unit shall be classified as defective when more than 10% of the declared weight of the sample unit is affected by any combination of tainted or decomposed conditions.

6.4 Unwholesome

a) Critical Foreign Matter
A lot will be considered defective when any of the following conditions are found:

1) the presence of any material which has not been derived from fish and which poses a threat to human health (such as glass, etc.); or

2) distinct and persistent odour of any material which has not been derived from fish and which poses a threat to human health (such as solvents, fuel oil, etc.).

b) Foreign Matter

A unit will be considered defective when the following condition is found:

the presence of any material which has not been derived from fish but does not pose a threat to human health (such as insect pieces, sand, etc.).

c) Other Defects

A unit will be considered defective when any of the following conditions are found:

1) **Dehydration** (freezer burn)

Fillet Packs or Blocks - More than 10% of the surface area of a sample unit is affected.

Fillets (IQF or Layer Pack) - More than 10% of the declared weight of the fillets in the sample unit is affected with dehydration conditions affecting more than 10% of the fillet surface area.

2) **Nematodes or Copepods**

Only nematodes or copepod parasites having a capsular diameter of greater than 3 mm or, if not encapsulated, a length of greater than 10 mm will be considered in determining whether the lot is acceptable with respect to parasites. For packs of 1 kg and greater, the presence of 2 or more parasites per kg of sample unit will result in rejection of the sample. For packs of less than 1 kg an average of 1 parasite per kg of total sample will result in rejection of the sample. For example, a sample consisting of 13 units of 500g each would be rejected if 7 or more parasites were found.

The following parasite occurrences will result in the sample unit being classified as defective:

Pack Size	Reject Parasite Level
1 kg	Use average as described above
5 lb	3
10 lb	5
15 lb	7
16.5 lb	8
18.5 lb	9
20 lb	10
50 lb	23

3) **Gelatinous Conditions**
More than 10% of the sample unit by declared weight is affected by excessive jellied conditions of the flesh.

4) **Bones** (Boneless Packs Only)
One bone ≥ 1 mm in diameter or ≥ 10 mm in length per kg fish.

7. EXAMINATION METHODS

7.1 Scope

The methodology described in this section outlines a procedure for the examination of groundfish fillet and block products. The examination shall be made of end-of-line final products in the fresh, frozen and defrosted state for tainted, decomposed or unwholesome conditions.

7.2 Equipment Required

- candling table
- calculator
- measuring tape or ruler
- examination tray, measuring approximately 30 x 50 cm
- knife

7.3 Examination for Frozen State Defects

The frozen package of fillet or block is examined for presence of freezer burn, i.e. dehydration which can only be removed with a knife or other sharp instrument.

7.3.1 The area affected by dehydration is measured and the total surface of the fillets or blocks is determined. Inspectors shall then determine the percent of area affected by the following calculation:

$$\% \text{ of dehydration} = \frac{\text{Area Affected}}{\text{Total Surface Area}} \times 100$$

7.4 Examination of Fresh or Defrosted Fillet or Block Packs Excluding Minced Fish

The fresh or defrosted sample unit is examined in its entirety. Each fillet is examined individually. Care should be exercised in separating the fillets to prevent tearing or mutilation.

7.4.1 Candling Procedures

Each fillet is individually examined on the illuminated candling table for presence of parasites, i.e. nematodes or copepods. Each parasite whether whole or in part or encapsulated is considered a parasite incidence. The examination is to be non-destructive in nature, that is, no slicing is permitted nor is the skin to be removed from skin-on fillets. The parasites are removed and the total number of incidents counted to determine the sample unit or entire sample compliance as per requirements in section 6.4 c) 2).

7.4.2 Determining the Cause for Rejection of a Fillet

Fillets within the sample units shall be classified according to whether they are acceptable or not acceptable. If not acceptable, the inspector will classify the fillet as decomposed, tainted or unwholesome. Should a fillet be both tainted and decomposed, for the purpose of the application of this standard and the interpretation of the sampling plan, the fillet is deemed to be decomposed. In the case of tainted or decomposed fillets, the inspector shall weigh the affected fillets, as necessary, to determine the percent of the sample unit which is affected by each category. The calculation is performed as follows:

$$\% \text{ Decomposed fillets} = \frac{\text{Weight of fillets affected}}{\text{Declared weight of pack}} \times 100$$

$$\% \text{ Tainted fillets} = \frac{\text{Weight of fillets affected}}{\text{Declared weight of pack}} \times 100$$

A similar calculation is made when jellied flesh (unwholesome) is encountered.

7.5 Examination of Minced Fish

Similar to the examination of fillet packs the entire sample unit of minced fish is examined. The following procedure should be used in the assessment of this product.

7.5.1 A sub-sample of 1 kg is extracted from the container and evenly spread on

an examination tray to a depth of 1 cm. An assessment is then made under normal overhead lighting conditions for the presence of whole parasites which may be visible on the surface of the minced fish. The parasites are removed and the number of incidents counted and recorded. Following this, the minced fish is examined for tainted or decomposed conditions or other evidence of unwholesome conditions other than parasites.

The process of spreading a 1 kg sub-sample on the tray is repeated and examination made as described above until the entire sample unit is inspected. The decision on classifying minced fish is the same as outlined in section 7.4.2.

8. CLASSIFICATION OF "DEFECTIVES"

A sample unit of fillets or blocks including minced fish is classified defective when one or more of the following conditions are encountered:

a) **Decomposed,** when more than 10% of the declared weight of the fish is found to be decomposed as described in section 6, the sample unit is considered decomposed and the lower acceptance number in parentheses is used to determine lot acceptance; or

b) **Tainted,** when more than 10% of the declared weight of the fish is found to be tainted as described in section 6, the sample unit is considered tainted and the regular acceptance number is used to determine lot acceptance; or

c) **Tainted/Decomposed,** when assessed individually the amounts of tainted or decomposed fish are each less than 10%, but when combined, the amount of tainted and decomposed fish exceeds more than 10% of the declared weight, the sample unit is rejected as tainted/decomposed and the regular acceptance number is used to determine lot acceptance.

d) **Unwholesome,** when:
   1) the number of incidents of parasites exceed the tolerance as described in section 6.4 c) 2); or
   2) the sample unit is affected by foreign matter; or
   3) the sample unit is affected by dehydration on more than 10% of the total surface area; or
   4) the presence of excessive jellied flesh exceeds 10% of the declared weight of the pack; or
   5) the incidence of bones exceeds the tolerance prescribed in section 6.4 c) 4) in packs designated as boneless.

9. LOT ACCEPTANCE

A lot will fail the requirements of this standard when:

a) any single instance of critical foreign matter is encountered; or

b) the total number of sample units found defective for tainted, decomposed or unwholesome conditions, individually or in combination, exceeds the acceptance number for the sample size described in the sampling plans; or

c) the total number of sample units found defective for decomposition exceeds the acceptance number shown in parentheses for the sample size described in the sampling plans.

CHAPTER 3, STANDARD 2

FRESH & FROZEN SHRIMP OR PRAWN STANDARD

1. INTRODUCTION

This standard for fresh and frozen shrimp* derives its authority from the Fish Inspection Regulations. It defines minimum acceptability of fresh and frozen shrimp for taint, decomposition, unwholesomeness and other requirements, other than weight, as defined in the Fish Inspection Act and Regulations and describes methods for determining that acceptability.

*NOTE: Throughout this document, the term "shrimp" will be used to denote both shrimps and prawns.

2. SCOPE

This standard applies to fresh, frozen and previously frozen shrimp prepared from species of any of the following families:

PENAEIDAE, PANDALIDAE, CRANGONIDAE, PALAEMONIDAE.

Fresh and frozen shrimp shall be prepared from sound, wholesome raw material processed using good manufacturing practices.

Documents used to determine good manufacturing practice and compliance include:

1) Recommended International Code of Practice - General Principles of Food Hygiene, CAC/RCP 1-1969.

2) Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL 6.5) CAC/RM 42-1969.

3) Recommended International Code of Practice for Fresh Fish, CAC/RCP 9-1976.

4) Recommended International Code of Practice for Frozen Fish, CAC/RCP 16-1978.

5) Recommended International Code of Practice for Quick Frozen Shrimps or Prawns, CAC/RS 92-1976.

6) Code of Practice - General Principles of Food Hygiene for Use by the Food Industry in Canada, Health Protection Branch, Health and Welfare Canada, 1983.

7) Good Manufacturing Practices (GMP) - Shrimp Processing, Inspection Services, Department of Fisheries and Oceans, 1989.

3. NOMENCLATURE

a) The name of the product shall be "Shrimp", "Shrimps" or "Prawns".

b) If desired, "X Shrimp", "X Shrimps" or "X Prawns" may be used where the "X" is the name of a country or a geographic area from which the shrimps originate, or where "X" is the common name of the species in accordance with the applicable sections of the Codex Alimentarius Recommended International Code of Practice for Quick-Frozen Shrimps.

c) Any descriptive terms used, including those denoting style of presentation and size designation, must accurately reflect the contents of the unit. Note: If a size designation is declared, it must be expressed in terms of a count range. Terms such as "medium", "jumbo", etc. are unacceptable unless accompanied by a count range.

4. FORMS OF PRODUCT PRESENTATION

Fresh and frozen shrimp may contain salt, lemon juice, citric acid, seasonings, sugars and other ingredients, such as permitted additives.

4.1 Style of Presentation

Shrimp may be presented in the following ways:

a) Whole
Shrimp which have the head, shell and tail fan on.

b) Headless
Shrimp on which the head has been completely removed, but with shell and tail fan on.

c) Peeled, tail fan on
Shrimp on which the head and shell have been removed down to the last segment, but with the shell on the last segment and the tail fan present.

d) Peeled, tail fan removed
Shrimp with the head, shell and tail fan removed.

e) Peeled and Deveined (Peeled and Cleaned)
In addition to having the head and shell removed, the vein has been removed.

f) Butterfly Style (Fantail)
In addition to having the head, shell and vein removed, the peeled segments of the shrimp have been split longitudinally through the dorsal axis into two sections which remain attached on the ventral side.

g) Broken (Pieces)
Pieces of shrimp containing less than 5 segments, for counts less than 150/kg (70/lb); or

pieces of shrimp containing less than 4 segments, for counts greater than 150/kg (70/lb).

4.2 Other Presentations

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

a) is sufficiently distinctive from the forms of presentation set out above; and

b) meets all other Canadian regulatory requirements; and

c) is adequately described on the label in accordance with all regulatory labelling requirements.

5. SAMPLING

The sampling and tolerance plans at the front of this manual shall be used to determine the acceptability of the lot. The sampling plans dictate the minimum sample size to be taken. If necessary, in the opinion of the inspector, more than the minimum sample size specified may be taken.

5.1 Sampling of lots for the sensory examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plan for Prepackaged Foods (AQL 6.5) (CAC/RM 42-1969) except that a lower acceptance number for decomposition shall be used as indicated in the sampling tables.

The tables specify the minimum number of sample units to be used for the following types of inspections:

a) Level I - Sensory examinations of all products subject to inspection other than lots which are subject to reinspection.

b) Level II - Sensory examinations of all products which are under reinspection.

5.2 Size of Sample Unit

The sample unit shall consist of a package of shrimp and the contents thereof. For package sizes of 2.27 kg (5 lb.) or greater, it is permissible to examine a sub-unit consisting of at least 1 kg of product, if, in the Inspector's opinion, a representative sub-unit can be obtained.

6. DESCRIPTION OF DEFECTS

6.1 Taint

A unit will be considered tainted when more than 10% of the number of shrimps in the unit are affected by any of the following conditions:

a) Rancid
Odour characterized by the distinct or persistent odour of oxidized oil; or

Flavour characterized by that of oxidized oil which leaves a distinct bitter aftertaste.

b) Abnormal
Distinct and persistent uncharacteristic odours or flavours such as burnt or acrid, metallic, or associated with feed, and not defined as rancid or decomposed.

6.2 Decomposition

A unit will be considered decomposed when more than 10% of the number of shrimps in the unit are affected by any of the following conditions:

a) Odour or flavour
Persistent, distinct and uncharacteristic odour or flavour including but not limited to the following:

ammonia, musty, yeasty, vegetable, sour, faecal, hydrogen sulphide, putrid.

b) Discolouration
Shrimp with distinct yellow, green or black, singly or in combination, discolouration of the flesh; or

Shrimp with faded pigment or liver stain in association with odour or flavour of decomposition.

c) Texture
Textural breakdown characterized by muscle structure which is mushy.

6.3 Unwholesome

a) Critical Foreign Material
A lot will be considered defective when any of the following conditions are found:

the presence of any material which has not been derived from shrimp and which poses a threat to human health (such as glass, etc.); or

distinct and persistent odour or flavour of any material which has not been derived from shrimp and which poses a threat to human health (such as solvents, fuel oil, etc.).

b) Foreign Material
A unit will be considered defective when the following condition is found:

the presence of readily detectable (without magnification) material which has not been derived from shrimp but does not pose a threat to human health (such as insect pieces, sand, etc.).

c) Other Defects
A unit will be considered defective when any of the following conditions are found:

1) **Blackspot**
In the case of shell-on shrimp, 25% or more of the shrimps in the unit contain distinct areas of black discolouration (melanosis) which cover greater than 10% of the area of the shell.

2) **Dehydration (Freezer burn)**
10% or more of the shrimp in the unit are affected by dehydration or freezer burn.

6.4 Failure to Meet a Standard of Identity

a) Broken Shrimp
A unit will be considered defective for broken shrimp if it contains greater than 5% m/m of broken shrimp when examined by the method outlined in section 7.

b) Deveining (Cleaning)
In the case of deveined shrimp, a unit will be considered defective for deveining if it is found to contain more than 5% by count of improperly cleaned or deveined shrimp, when examined using the method outlined in section 7.

c) Size Designation
When a count range is declared, a unit will be considered defective for size designation if the count is greater than the range specified on the label, when examined by the method outlined in section 7.

7. EXAMINATION METHODS

7.1 Complete net weight determination, according to defined procedures (deglaze as required). If shrimp are breaded, examine for coating defects as defined in the standard for breaded products; remove breading as required according to defined procedures.

NOTE: For all product examinations conducted using sub-units, base all calculations on the actual weight or number of shrimps in the sub-unit, as appropriate.

7.2 Examine each unit for compliance to standards of identity as required.

When a size designation (count per lb or kg) is declared, count the number of whole shrimp present. Calculate the whole shrimp per lb or kg using the following formula:

$$\frac{\text{number of whole shrimp in unit}}{\text{actual thawed wt. of unit (lb or kg)}} = \text{\# shrimp/lb or kg.}$$

During this procedure, separate broken pieces and determine the percentage of broken shrimp present. The percentage of broken shrimp may be calculated using the following formula:

$$\frac{\text{weight of broken shrimp}}{\text{actual thawed weight of unit}} \times 100 = \text{\% broken shrimp}$$

Where shrimp is further described on the label, the product is examined for compliance. For example, compliance with the requirements for deveining is determined as follows:

$$\frac{\text{number of improperly deveined shrimp}}{\text{number of shrimp in unit}} \times 100 = \text{\% improperly deveined}$$

7.3 Examine shrimp for presence of dehydration by counting the number of shrimps in the unit containing any dehydration which can only be removed with a knife or other sharp instrument. Determine the percentage affected using the following formula:

$$\frac{\text{number of shrimp affected}}{\text{number of shrimp in unit}} \times 100 = \text{\% affected by dehydration}$$

7.4 Examine package and thawed shrimp for presence of foreign material. Assess shell-on shrimp for presence of blackspot; calculate the percentage of shrimp affected in the unit.

7.5 Assess colour. Calculate the percentage of shrimp with distinct yellow appearance and black discolouration of the flesh and shrimp affected by faded pigment or liver stain when in association with an odour or flavour of decomposition.

7.6 Assess odour. Assess flavour and texture as required.

Cooking procedures may be used for **reinspection** purposes only when, in the opinion of the inspector, cooking is required to define the flavour in order to render a decision on the acceptance or rejection of the sample unit. The unit is cooked according to the following procedure. For all unit sizes, cook the entire unit. This may be done using a boil-in-bag procedure, or by steaming or microwaving in a closed container, until the protein at the centre of the shrimp has coagulated. (Depending on the method chosen and the equipment available, cooking times may vary. For example, a 500 g thawed sample unit should require a cooking time of 3-4 minutes at a microwave power of 700 watts; the unit should be stirred once during this procedure to ensure even heating).

Let cool slightly, then assess odour, flavour and texture of cooked unit. Calculate percentage of unacceptable shrimps in the unit.

Note: When the amounts of tainted or decomposed shrimps are <u>each</u> less than 10%, but <u>exceed 10% when combined</u>, the unit is rejected, and is subject to the higher acceptance number (AQL 6.5) in the sampling and acceptance plan.

7.7 Record any defect for that unit on the appropriate worksheet.

8. CLASSIFICATION OF "DEFECTIVES"

A sample unit shall be classified as defective when it fails the defects for decomposition, tainted or unwholesome conditions or the criteria for the standards of identity as described in section 6, or when more than 10% of the declared weight of the sample unit is affected by any combination of tainted or decomposed conditions.

9. LOT ACCEPTANCE

A lot will be considered unacceptable when:

a) any single instance of critical foreign matter occurs; or

b) the total number of sample units found defective for taint, decomposition or unwholesomeness, individually or in combination, exceeds the acceptance number for the sample size designated in the sampling plans; or

c) the total number of sample units found defective for decomposition exceeds the acceptance number shown in parentheses for the sample size designated in the sampling plans; or

d) the total number of sample units found defective for standards of identity (style of presentation) and size designation or count range (if a size designation or count range is declared), exceeds the acceptance number for the sample size designated in the sampling plans.

CHAPTER 3, STANDARD 3

GENERAL FRESH & FROZEN FINFISH PRODUCT STANDARD

1. INTRODUCTION

This general standard for packaged fresh and frozen finfish derives its authority from the Fish Inspection Regulations. It defines minimum acceptability of fresh and frozen fish for taint, decomposition, unwholesomeness and other requirements, other than weight, as defined in the Fish Inspection Act and Regulations and describes methods for determining that acceptability.

2. SCOPE

This standard applies to packaged fresh and frozen whole or dressed fish and fillets excluding those species covered by the Fresh and Frozen Groundfish Block and Fillet Standard or any other specific fresh or frozen product standard.

Fresh and frozen fish shall be prepared from sound, wholesome raw material processed using good manufacturing practices.

Documents used to determine good manufacturing practice and compliance include:

1) Recommended International Code of Practice - General Principles of Food Hygiene, CAC/RCP 1-1969 Rev. 1.

2) Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL 6.5) CAC/RM 42-1969.

3) Recommended International Code of Practice for Fresh Fish, CAC/RCP 9-1976.

4) Recommended International Code of Practice for Frozen Fish, CAC/RCP 16-1978.

5) Code of Practice - General Principles of Food Hygiene for Use by the Food Industry in Canada, Health Protection Branch, Health and Welfare Canada, 1983.

3. NOMENCLATURE

The name of the product shall be that recognized in common usage in Canada and in accordance with the Fish Inspection Regulations and any requirements of the applicable Codex Alimentarius Recommended International Standard.

4. FORMS OF PRODUCT PRESENTATION

4.1 Fresh and frozen finfish may be presented as uneviscerated, eviscerated, fillets or blocks with or without skin, scales or bones, as appropriate to the style of pack.

4.2 Fresh and frozen finfish may also be presented as minced fish blocks.

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

a) is sufficiently distinctive from the forms of presentation set out in 4.1 and 4.2; and

b) meets all other Canadian regulatory requirements; and

c) is adequately described on the label and in accordance with all regulatory labelling requirements.

5. SAMPLING

The sampling and tolerance plans at the front of this manual shall be used to determine the acceptability of the lot. The sampling plans dictate the minimum sample size to be taken. If necessary, in the opinion of the inspector, more than the minimum sample size specified may be taken.

5.1 Sampling of lots for the sensory examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plan for Prepackaged Foods (AQL 6.5) (CAC/RM 42-1969) except that a lower acceptance number for decomposition shall be used as indicated in the sampling tables.

The tables specify the minimum number of sample units to be used for the following types of inspections:

a) Level I - Sensory examination of all products subject to inspection other than lots which are subject to reinspection.

b) Level II - Sensory examination of all products which are under reinspection.

5.2 Size of Sample Unit

The sample unit shall consist of a container of fish and the contents thereof.

In the case of large containers (sample unit sizes of 10 kg or greater) of bulk **packaged** fresh or individually frozen whole or dressed fish or fresh or individually frozen fillets, the individual fish or fillet can be considered the sample unit for the purpose of collecting samples for examination.

6. DESCRIPTION OF DEFECTS

6.1 Taint

A unit will be considered tainted when more than 10% of the declared weight is affected by any of the following conditions:

a) Rancid
Odour characterized by the distinct or persistent odour of oxidized oil; or

Flavour characterized by that of oxidized oil which leaves a distinct bitter aftertaste.

b) Abnormal
Distinct and persistent uncharacteristic odours or flavours such as burnt or acrid, metallic, associated with feed or strong iodoform and not defined as rancid or decomposed.

6.2 Decomposition

A unit will be considered decomposed when more than 10% of the declared weight is affected by any of the following conditions:

a) Odour or flavour
Persistent, distinct and uncharacteristic odour or flavour including but not limited to the following:

ammonia, bilge, faecal, fruity, hydrogen sulphide, musty, putrid, saltfish-like, sour, sour milk-like, vegetable, and yeasty.

b) Discolouration
Fish showing abnormal discolouration of the flesh, such as green or

black as associated with decomposition.

c) Texture
Textural breakdown of the flesh associated with decomposition which is characterized by muscle structure which is very tough or dry, or muscle structure which is mushy, or in the case of whole or dressed fish, perforated bellies or broken bellies or belly walls, caused by enzymatic action.

6.3 A sample unit shall be classified as defective when more than 10% of the declared weight of the sample unit is affected by any combination of tainted or decomposed conditions.

6.4 Unwholesome

a) Critical Foreign Material
A lot will be considered defective when any of the following conditions are found:

the presence of any material which has not been derived from fish and which poses a threat to human health (such as glass, etc.); or

distinct and persistent odour or flavour of any material which has not been derived from fish and which poses a threat to human health (such as solvents, fuel oil, etc.).

b) Foreign Material
A unit will be considered defective when the following condition is found:

the presence of readily detectable material which has not been derived from fish but does not pose a threat to human health (such as insect pieces, sand, etc.).

c) Other Defects
A unit will be considered defective when any of the following conditions are found:

1) **Dehydration (Freezer burn)**
More than 10% of the declared weight of the fish or fillets in the unit are affected by dehydration affecting more than 10% of their surface area.

2) **Parasites**
Only nematodes or copepod parasites having capsular diameter of greater than 3 mm or, if not encapsulated, a length of greater than 10 mm will be considered in determining whether the lot is acceptable with respect to parasites. For packs of 1 kg and

greater, the presence of 2 or more parasites per kg of sample unit will result in rejection of the sample. For packs of less than 1 kg, the presence of parasites at a rate of infestation greater than an average of 1 parasite per kg of total sample will result in rejection of the sample. For example, a sample consisting of 13 units of 500g each would be rejected if 7 or more parasites were found.

The following parasite occurrences will result in the sample unit being classified as **defective:**

Pack Size	Reject Parasite Level
1 kg	Use average as described above
5 lb	3
10 lb	5
15 lb	7
16.5 lb	8
18.5 lb	9
20 lb	10
50 lb	23

3) **Bones (Boneless packs only)**
One bone ≥ 1 mm in diameter or ≥ 10 mm in length per kg fish.

4) **Undesireable Parts**
Each incidence of viscera.

7. EXAMINATION METHODS

7.1 Complete net weight determination, according to defined procedures (deglaze as required).

7.2 Examine the frozen fish for the presence of dehydration by measuring those areas which can only be removed with a knife or other sharp instrument. Measure the total surface area of the fish or fillet, and determine the percentage affected using the following formula:

$$\frac{\text{area affected}}{\text{total surface area}} \times 100 = \% \text{ affected by dehydration}$$

7.3 Thaw as necessary. The fresh or defrosted fish or fillets in the entire unit are examined individually for the presence of foreign matter, undesirable parts, nematodes and copepods, and other parasites with defined tolerances. Parasite examination for nematodes and copepods will be non-destructive, that is the fish are not filleted or the skin removed from fillets to assist in parasite detection. The parasites are removed and the total number of incidents counted to determine sample unit

compliance.

7.4 Each entire sample unit of fresh or defrosted fillets is examined in its entirety for odour, colour and texture. In the case of a reinspection, where an inspector is unable to make a decision on acceptance or rejection of a unit without evaluating flavour, the portion of the unit requiring confirmation of odour/flavour may be cooked using a boil-in-bag or similar procedure, or by oven heating or microwaving in a closed container, until the protein at the centre of the fish has coagulated. (Depending on the method chosen and the equipment available, cooking times may vary. For example, a 500 g thawed sample unit should require a cooking time of 3-4 minutes at a microwave power of 700 watts; the unit should be turned once during this procedure to ensure even heating.).

Let cool slightly, then assess odour, flavour and texture of cooked unit. Calculate percentage of unacceptable fish in the unit.

7.5 In the case of whole or dressed fish, the entire sample unit is to be examined in its presented form, using the criteria outlined in Section 5, for the determination of taint, decomposition and unwholesomeness. A thorough examination is to be made of the belly walls for evidence of perforated or broken bellies caused by enzymatic action of the stomach content (autolysis). Should there be evidence of perforated or broken belly walls or other signs of decomposition then the entire unit is further examined for flesh odours by tearing or making a cut across the back of the neck such that the exposed surface flesh can be evaluated for decomposition or taint.

Where no broken or perforated bellies are encountered, a minimum of at least 10% of the declared weight of each unit, or a minimum of 10 fish, whichever is greater, will be further examined for flesh odours by tearing or making a cut across the back of the neck.

7.6 Record defects on the appropriate worksheet.

8. CLASSIFICATION OF "DEFECTIVES"

A sample unit shall be classified as "defective" when it fails the defects for decomposition, tainted, or unwholesome conditions as described in section 6, or when more than 10% by declared weight of the sample unit is affected by any combination of tainted or decomposed conditions.

9. LOT ACCEPTANCE

A lot will be considered unacceptable when:

a) any single instance of critical foreign matter occurs; or

b) the total number of sample units found defective for taint, decomposition or unwholesomeness, individually or in combination, exceeds the acceptance number for the sample size designated in the sampling plans; or

c) the total number of sample units found defective for decomposition exceeds the acceptance number shown in parentheses for the sample size designated in the sampling plans.

CHAPTER 3, STANDARD 4

FRESH AND FROZEN SCALLOP STANDARD

1. INTRODUCTION

This standard for fresh or frozen scallop meats, scallops with roe attached, and whole scallops derives its authority from the Fish Inspection Act and Regulations. It defines minimum acceptability for taint, decomposition, unwholesomeness and other requirements, other than weight, as defined in the Fish Inspection Act and Regulations and describes methods for determining that acceptability.

2. SCOPE

This standard applies to all fresh or frozen or previously frozen shucked-scallop meats (adductor muscle) with or without roe attached and whole scallops from any species of the family Pectinidae.

Fresh or frozen scallops shall be prepared from sound, wholesome raw material processed using good manufacturing practices.

Documents used to determine good manufacturing practice and compliance include:

a) Recommended International Code of Practice - General Principles of Food Hygiene, CAC/RCP 1-1969 Rev. 1.

b) Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL 6.5) CAC/RM 42-1969.

c) Recommended International Code of Practice for Fresh Fish, CAC/RCP 9-1976.

d) Recommended International Code of Practice for Frozen Fish, CAC/RCP 16-1978.

e) Code of Practice - General Principles of Food Hygiene for Use by the Food Industry in Canada, Health Protection Branch, Health and Welfare Canada, 1983.

3. NOMENCLATURE

The name of the product shall be "Scallops" or "Scallop Meats" except as noted below:

a) Scallops of the species Argopecten gibbus and Argopecten irradians shall be designated as "Calico Scallops" and "Bay Scallops" respectively.

b) If desired, "X Scallops" may be used where "X" is the name of a country or geographic area from which the scallops originate, or where "X" is the common name of the species.

c) Whole scallops and scallops with roe attached shall be designated as such.

d) Pieces of scallop meats shall be identified with an appropriate name such as "Scallop Pieces".

e) Any descriptive terms used must accurately represent the contents of the container.

f) Green Tube is defined as the rear portion of the intestinal tract which is normally green in colour but may be white or gray.

g) Viscera is defined as all internal organs including roe, but does not include the rear portion of the intestinal tract, referred to as the "green tube".

h) Adductor Muscle With Roe Attached: It is recognised that viscera for Adductor Muscle With Roe Attached means all viscera except the roe.

4. FORMS OF PRODUCT PRESENTATION

4.1 Adductor Muscle Only

a) Fresh - Whole adductor muscles.

b) IQF - Individually quick-frozen whole adductor muscles.

c) Block - Whole adductor muscles frozen together in a uniform block.

4.2 Adductor Muscle with Roe Attached

a) Fresh - Whole adductor muscles with roe attached.

b) IQF - Individually quick-frozen whole adductor muscles with roe attached.

c) Block - Whole adductor muscles with roe attached frozen together in a uniform block.

4.3 Whole Scallops

a) Fresh - Live scallops marketed in the shell.

b) IQF - Individually quick-frozen whole scallops marketed in the shell.

4.4 Other Presentations

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

a) is sufficiently distinctive from the forms of presentation set out above;

b) meets all Canadian regulatory requirements; and

c) is adequately described on the label and in accordance with all regulatory labelling requirements.

5. SAMPLING

The sampling and tolerance plans, found in the Sampling Section of the Fish Products Standards and Methods manual, shall be used to determine the acceptability of the lot. The sampling plans dictate the minimum sample size to be taken. If in the opinion of the inspector it is necessary to obtain more than the minimum sample size specified, the number of sample units taken must correspond to a sample size in the plan with a corresponding acceptance number.

5.1 Sampling of lots for the sensory examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plan for Prepackaged Foods (AQL 6.5) (CAC/RM 42-1969) except that a lower

acceptance number for decomposition shall be used as indicated in the sampling tables. The tables specify the minimum number of sample units to be used for the following types of inspections:

a) Level I - Sensory examination of all products subject to inspection other than lots which are subject to re-inspection.

b) Level II - Sensory examination of all products which are under re-inspection.

5.2 Size of Sample Unit

The sample unit shall consist of a container of scallops and the entire contents thereof.

For IQF and fresh bulk packages 2.00 kilograms or greater, a 1 kilogram sub-sample of product may be obtained if the sub-sample is representative. When sub-samples are taken, each sub-sample shall be obtained from a different unit.

If a representative sub-sample cannot be obtained the entire unit must be examined.

6. DESCRIPTION OF DEFECTS

6.1 Taint

A unit will be considered tainted when more than 10% of the actual weight is affected by any of the following conditions:

a) Rancid

Odour characterised by the distinct or persistent odour of oxidized oil; or

Flavour characterised by that of oxidized oil which leaves a distinct bitter aftertaste.

b) Abnormal

Distinct and persistent uncharacteristic odours or flavours such as metallic, burnt or acrid and not defined as rancid or decomposed.

6.2 Decomposition

A unit will be considered decomposed when more than 10% of the actual weight is affected by the following condition:

Odour or Flavour

Persistent, distinct and uncharacteristic odour or flavour associated with spoilage, including but not limited to the following:

ammonia, bilge, faecal, fruity, hydrogen sulphide, musty, putrid, saltfish-like, vegetable, turnip or yeasty.

6.3 Taint/Decomposed

A sample unit shall be classified as defective when more than 10% of the actual weight of the sample unit is affected by any combination of tainted or decomposed conditions.

6.4 Unwholesome

6.4.1 Foreign Material

a) Critical Foreign Material

A lot will be considered defective for all forms of product presentation when any of the following conditions are found:

i) the presence of any material which poses a threat to human health (such as glass, etc.); or

ii) distinct and persistent odour or flavour of any material which poses a threat to human health (such as solvents, fuel oil, etc.).

b) Foreign Material

A unit will be considered defective for all forms of product presentation when the following condition is found:

the presence of readily detectable material which has not been derived from scallops but does not pose a threat to human health (such as insect pieces, wood, etc., except sand and

seaweed as described below).

c) Habitat-Related Foreign Material

A unit will be considered defective for all forms of product presentation when any of the following conditions are found:

i) piece(s) of seaweed which measures 25 mm in any dimension singularly or in combination, based on a unit size of 1 kg and pro-rated to smaller or larger sample units; or

ii) the presence of sand affecting more than 10% of the sample unit by weight.

6.4.2 Undesirable Parts

A unit will be considered defective for all forms of product presentation when the following condition is found:

piece(s) of shell fragments which measure greater than 10 mm in any dimension singularly or in combination, based on a unit size of 1 kg and pro-rated to smaller or larger sample units.

6.4.3 Other Defects

A lot will be considered defective for all forms of product presentation when any of the following conditions are found:

a) Moisture Content

Scallop meats exceeding the action level of 81.0% for moisture content.

b) Viscera Excluding Green Tube

Scallop meats, scallops with roe attached, and whole scallops must satisfy the requirement of the policy relating to biotoxins as determined by Health Canada and documented in the Canadian Guidelines for Chemical Contaminants and Toxins in Fish and Fish Products, Fish Seafood and Production Division, Canadian Food Inspection Agency (see Appendix A).

The requirements of the Canadian Shellfish Sanitation Program (CSSP) to control marine biotoxins in Adductor Muscle With Roe Attached and Whole Scallops (live in shell) must also be satisfied.

Note: The presence of a trace amount of membrane or a stain, due to viscera, roe, etc. is not a defect for the purpose of this standard.

A unit will be considered defective for all forms of product presentation when any of the following conditions are found:

c) Workmanship Defect - Viscera Excluding Green Tube

The presence of viscera affecting more than 10% of the sample by weight, where it has been demonstrated that the toxicity associated with the viscera satisfies the requirements of the policy relating to biotoxins according to section 6.4.3 b).

d) Dehydration (Freezer Burn)

i) Block: More than 10% of the surface area of the sample unit is affected by dehydration.

ii) IQF: More than 10% of the scallops by weight, in the sample, are affected by dehydration.

e) Parasites

For packs of 1 kg and greater, when the number of parasites per kg of sample unit is equal to or greater than 2.

For packs of less than 1 kg, when an average parasite per kg of the total sample is equal to or greater than 1.

Example:

A sample consisting of 13 sample units each weighing 500 grams would be considered defective if 7 or more parasites were found.

Total weight of sample: 500 g x 13 = 6.5 kg
Parasites per kilogram: 7 parasites/6.5 kg = 1.07

Calico Scallops: For the species *Agropectin gibbus*, the presence of

parasites affecting equal to or greater than 10% of the sample by weight.

f) Green Tube

When the rear portion of the intestinal tract, the "green tube", is longer than the catch muscle and more than 10% by weight of the scallops in the pack are affected by the presence of the "green tube" (see Appendix B).

6.5 Standard of Identity

a) Size Designation

When a count range is declared, a sample unit will be considered defective if the count is greater than the range specified on the label.

b) Scallop Meats

A 5% tolerance by sample weight will be applied to the presence of pieces of scallop meats found in scallop packs. Product exceeding this tolerance shall be identified with an appropriate name such as "Scallop Pieces".

"Scallop Pieces"

When the product is graded according to count, a scallop is considered to be a scallop piece when the weight of the scallop piece is less than fifty percent (50%) of the average weight of ten (10) whole scallops representing the highest count in the pack.

Example: 30-40 count pack

- Average weight of ten (10) whole scallops representing the highest count in the pack: In this example, add together the weight of ten whole scallops representing the 40 count and divide the total weight by ten. (11.4 + 11.6 + 11.4 + 11.6 + 11.8 + 11.6 + 11.8 + 11.6 + 11.6 + 11.4)/10 = 11.58 grams

- Fifty percent (50%) of the average weight: 11.58 x .5 = 5.79 grams

- Scallop Piece: any piece of scallop less than 5.79 grams.

When the product is not graded according to count, a scallop will be considered to be a scallop piece when the weight of the scallop piece is less than fifty percent (50%) of the average weight of ten (10) whole scallops contained in the pack.

Example:

- average weight of ten (10) whole scallops contained in the pack: Add together the weight of ten whole scallops in the pack and divide the total weight by ten. (9.1 + 9.3 + 9.5 + 9.5 + 9.4 + 9.6 + 9.4 + 9.3 + 9.2 + 9.2)/10 = 9.35 grams

- fifty percent (50%) of the average weight: 9.35 x .5 = 4.67 grams

- Scallop Piece: any scallop piece less than 4.67 grams.

7. EXAMINATION METHODS

The methodology described in this section outlines the procedure for the examination of scallop products. The examination shall be made on final products in the fresh, frozen and/or defrosted state for tainted, decomposed or unwholesome conditions and for failure to meet standards of identity.

7.1 Examination for Frozen State Defects

The frozen scallops in the container are examined for the presence of freezer burn, i.e., dehydration which can only be removed with a knife or other sharp instrument.

7.1.1 Dehydration - Block

The area affected by dehydration is measured and the total surface area of the block is determined. Inspectors shall then determine the percent area affected by using the following calculation:

$$\% \text{ of dehydration} = \frac{\text{Area affected}}{\text{Total surface area}} \times 100$$

7.1.2 Dehydration - IQF

In the case of IQF scallops, the weight of individual scallops affected by dehydration is determined. The total weight of scallops in the sample unit is also determined. Inspectors shall then calculate the percentage of scallops affected by using the following calculation:

$$\% \text{ of scallops affected} = \frac{\text{Weight of affected scallops}}{\text{Weight of scallops in sample unit}} \times 100$$

7.2 Examination of Fresh or Defrosted Scallop Packs

The fresh or defrosted sample unit is examined in its entirety for defects.

7.3 Determining the Cause for Rejection of a Sample Unit

Scallops within the sample units shall be classified according to whether they are acceptable or not acceptable. If not acceptable, the scallops will be classified as decomposed, tainted or unwholesome. Should the scallops be both tainted and decomposed, for the purpose of the application of this standard and the interpretation of the sampling plan, the scallops are deemed to be decomposed. In the case of tainted and/or decomposed scallops, the affected scallops are weighed to determine the percent of the sample unit which is affected in each category. The calculation is performed as follows:

$$\% \text{ Decomposed scallops} = \frac{\text{Weight of scallops affected}}{\text{Actual weight of sample}} \times 100$$

$$\% \text{ Tainted scallops} = \frac{\text{Weight of scallops affected}}{\text{Actual weight of sample}} \times 100$$

8. CLASSIFICATION OF "DEFECTIVES"

A sample unit of scallops shall be classified as defective when one or more of the following conditions are encountered:

a) **Decomposed:** When more than 10% of the actual weight of the scallops, as calculated in section 7.3 are found to be decomposed, the sample unit is considered decomposed as described in section 6.2.

b) **Tainted:** When more than 10% of the actual weight of the scallops, as calculated in section 7.3 are found to be tainted, the sample unit is considered tainted as described in section 6.1.

c) **Tainted/Decomposed:** The sample unit is considered tainted/decomposed when assessed individually and the quantity of tainted or decomposed scallops is each less than 10%, as calculated in section 7.3, but when in combination the quantity of tainted and decomposed scallops exceeds 10% of the actual weight, the sample unit is tainted/decomposed as described in section 6.3.

d) **Unwholesome** when**:**

i) the sample unit is affected by the presence of **foreign material** which exceeds the tolerance described in section 6.4.1 b) or c); or

ii) the sample unit is affected by the presence of **undesirable parts** which exceeds the tolerance described in 6.4.2; or

iii) the sample unit is affected by the presence of **other defects** which exceeds the tolerances as described in section 6.4.3.

e) **Standard Of Identity** when:

i) the count of scallop meats in the sample unit is greater than the declared count; or

ii) a unit labelled as scallop meats contains more than 5% by weight of Scallop Pieces.

9. LOT ACCEPTANCE

A lot will fail the requirements of this standard when:

a) any single instance of critical foreign matter is encountered; or

b) an occurrence of viscera presents a health and safety hazard due to the presence of marine biotoxin; or

c) scallop meats exceed the action level for moisture content pursuant to the policy in the Fish Products Inspection Manual; or

d) the total number of sample units found defective for tainted, decomposed or unwholesome conditions, individually or in combination, exceeds the acceptance number for the sample size designated in the sampling plans; or

e) the total number of sample units found defective for decomposition exceeds the acceptance number shown in parentheses for the sample size designated in the sampling plans; or

f) the total number of sample units found defective for standard of identity exceeds the acceptance number for the sample size designated in the sampling plans.

APPENDIX A

MARINE BIOTOXINS IN SCALLOPS

Marine biotoxins constitute a health and safety hazard associated with scallops. Marine biotoxins accumulate predominantly in the viscera of the scallop, although low levels of amnesic shellfish poison and paralytic shellfish poison may occur in the adductor muscle. Processors and importers of scallops in Canada are required to control the chemical hazard of marine biotoxins in scallops.

Control is accomplished by:

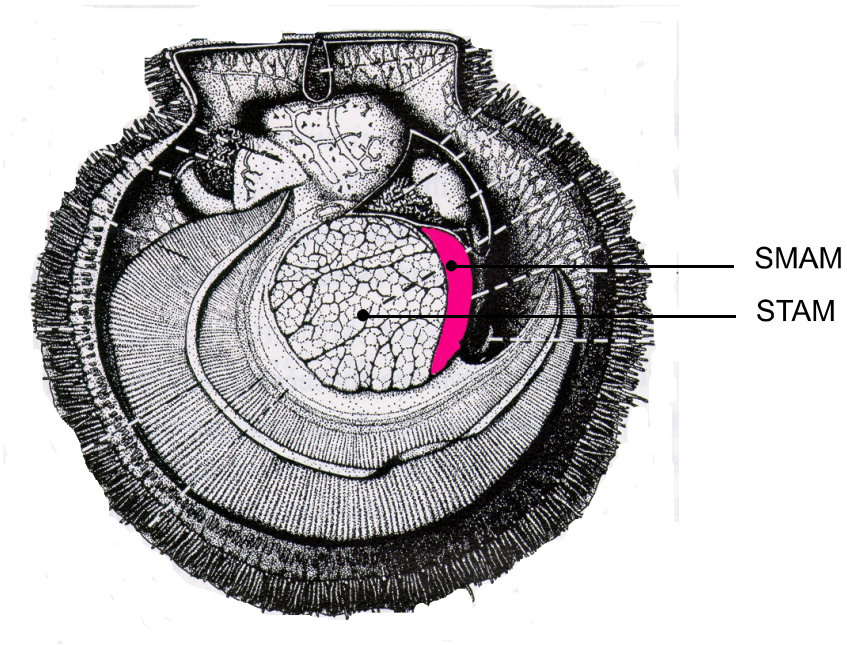
a) producing scallops which are free of viscera, as determined by a sampling plan described by the International Commission on Microbiological Specifications for Foods[1] (ICMSF). That is, for any lot size, sample size (n) = 5; acceptance number (c) = 0; or

b) if lots contain viscera in excess of the incidence described above in (a), test the lot for toxicity in accordance with the Canadian Guidelines for Chemical Contaminants and Toxins in Fish and Fish Products.

[1] See ICMSF "Microorganisms in Foods 2, Sampling for Microbiological Analysis: Principles and Specific Applications", Ch. 3, Table 2, pg. 22.

APPENDIX B

ADDUCTOR MUSCLE IN SCALLOPS



SMAM: Smooth adductor muscle also known as the "**catch muscle**"
STAM: Striated adductor muscle also known as the "**scallop meat**"

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Appendix I (A) - CFIA Aquaculture Therapeutant Residue Monitoring List

This reference list identifies the therapeutants that are currently being monitored in imported and domestically produced aquacultured fish and crustaceans for compliance with Canadian regulatory requirements. General information on therapeutant use in aquaculture in Canada can be found in Appendix I (B) Therapeutant Use in Aquaculture - Questions and Answers.

Therapeutant Information			Regulatory Status			Action Level *	
Class Name	**Substance Name**	**Marker Residue / Metabolite**	**Use Status**	**Species**	**Tissue**	**ug/g (ppm)**	**ng/g (ppb)**
Amphenicols	Florfenicol	Florfenicol amine	Approved [1]	Salmonids	Muscle	**0.8** [a]	**800** [a]
	Chloramphenicol		Banned [2]	All	N/A	**DTC**	**DTC**
	Thiamphenicol		Not accepted to be used	All	N/A	**DTC**	**DTC**
Avermectins	Emamectin Benzoate		Approved [1]	Salmonids	Muscle	**0.1** [AMRL]	**100** [AMRL]
	Ivermectin		Not accepted to be used	All	N/A	**DTC**	**DTC**
Benzoylureas	Teflubenzuron [h]		EDR	Salmonids	Muscle	**0.3**	**300**
					Skin	**3.2**	**3200**
Fluoroquinolones	Ciprofloxacin		Not accepted to be used	All	N/A	**0.0006** [b]	**0.6** [b]
	Danofloxacin		Not accepted to be used	All	N/A	**0.0006** [b]	**0.6** [b]
	Enrofloxacin		Not accepted to be used	All	N/A	**0.0006** [b]	**0.6** [b]
	Sarafloxacin		Not accepted to be used	All	N/A	**0.0006** [b]	**0.6** [b]
Macrolides	Erythromycin		EDR	Fish, Crustaceans	Muscle	**0.03** [c]	**30** [c]
Nitrofurans	Furaltadone	(AMOZ) 3-Amino-5-morphinomethyl-oxazolidin-2-one	Banned [2]	All	N/A	**DTC**	**DTC**
	Furazolidone	(AOZ) 3-Amino-2-oxazolidinone	Banned [2]	All	N/A	**DTC**	**DTC**
	Nitrofurantoin	(AHD) 1-Aminohydantoin hydrochloride	Banned [2]	All	N/A	**DTC**	**DTC**
	Nitrofurazone	(SEM) Semicarbazide	Banned [2]	All	N/A	**DTC**	**DTC**
Quinolones	Flumequine		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Oxolinic Acid		Not accepted to be used	All	N/A	**DTC**	**DTC**
Sulfonamides	Ormetoprim		Approved [1]	Salmonids	Edible Tissue	**0.1** [AMRL]	**100** [AMRL]
	Sulfadiazine		Approved [1]	Salmonids	Edible Tissue	**0.1**	**100**
	Sulfadimethoxine		Approved [1]	Salmonids	Edible Tissue	**0.1** [AMRL]	**100** [AMRL]
	Trimethoprim		Approved [1]	Salmonids	Muscle	**0.1**	**100**
	Sulfacetamide		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfachloropyridazine		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfadoxine		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfaguanadine		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfamerazine		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfamethazine		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfamethiazole		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfamethoxazole		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfamethoxypridazine		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfamonomethoxine		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfamoxole		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfanilamide		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfapyridine		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfaquinoxaline		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfathiazole		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Sulfisoxazole		Not accepted to be used	All	N/A	**DTC**	**DTC**
Tetracyclines	Oxytetracycline		Approved [1]	Salmonids, Lobsters	Muscle	**0.2**	**200**
	Chlorotetracycline		Not accepted to be used	All	N/A	**DTC**	**DTC**
	Tetracycline		Not accepted to be used	All	N/A	**DTC**	**DTC**
Triphenylmethane Dyes	Gentian Violet		Not accepted to be used	All	N/A	**Gentian Violet notes**	
		Leucogentian Violet	Not accepted to be used	All	N/A	**"f" and "g"**	
	Malachite Green		Not accepted to be used	All	N/A	**Malachite Green notes**	
		Leucomalachite Green	Not accepted to be used	All	N/A	**"d" and "e"**	

Canada

Appendix I (A) - CFIA Aquaculture Therapeutant Residue Monitoring List

*** ACTION LEVEL COLUMN**

For therapeutants where a predetermined guideline has been established by Health Canada (such as Maximum Residue Limits (MRLs), Administrative Maximum Residue Limits (AMRLs), interim guidelines, minimum performance Limit of Quanitification, etc.), the analytical laboratory must use a validated method that is capable of providing an accurate result so that an assessment can be made on whether the product meets the applicable guideline. The residue limits for these therapeutants in the sample are identified in the "Action Level" column.

For therapeutants where a predetermined guideline has not been established by Health Canada and are not accepted for use in aquaculture in Canada, any residue detected in the sample is a violation of Article 4 (a) and/or (d) of the *Food and Drugs Act* and Section 6 (1) (a) of the *Fish Inspection Regulations*. The analytical laboratory must use a validated method and report any of these residues that are detected and positively confirmed by Mass Spectrometry (MS).
The action level is indicated as "DTC" (i.e. Detected above the reporting limit) in the "Action Level" column.

LOT ACCEPTANCE

A lot of fish is considered unacceptable when residues of a substance found in the product exceed the action level specified in this list
(NOTE: for Triphenylmethane Dyes - refer to notes 'd', 'e', 'f' and 'g' for relevant information).

MONITORING LIST LEGEND / EXPLANATORY NOTES

Abbreviations / Terms

DTC - Detected above the reporting limit
EDR - Emergency Drug Release: Program administered by Health Canada - Veterinary Drugs Directorate.
Edible Tissue: includes muscle and skin
MRL - Maximum Residue Limit: As stipulated in *Food and Drug Regulations* , Division 15, Table III. Established value is found in the "Action Level" column.
AMRL - Administrative Maximum Residue Limit: The definition for AMRL and MRL are basically the same except AMRL is awaiting completion of the legal process for publishing in *Food and Drug Regulations* .

NOTES

"Approved 1" - Approved -Veterinary drugs that are authorized for sale by Health Canada for use in food-producing aquatic animals
http://www.hc-sc.gc.ca/dhp-mps/vet/legislation/pol/aquaculture_anim-eng.php
- Action levels presented are derived from Health Canada - Veterinary Drugs Directorate: Table 1. Administrative Maximum Residue Limits (AMRLs) and Maximum Residue Limits (MRLs) set by Health Canada.
http://www.hc-sc.gc.ca/dhp-mps/vet/mrl-lmr/mrl-lmr_versus_new-nouveau-eng.php

"Banned 2" Banned drugs are those drugs which are prohibited for sale and use on animals (including fish) that produce food or that are intended to be consumed as food as stipulated in the *Food and Drug Regulations* . Scientific evidence has demonstrated that exposure to these substances at any level could pose a risk to human health.

a - A lot of fish will be considered reject when the sum of florfenicol (parent drug) and florfenicol amine (metabolite) detected in the sample exceeds the florfenicol MRL.
b - As a minimum performance level of the laboratories testing for fluoroquinolones, the laboratory must have a limit of quantification (LOQ) of at least 0.6 ng/g for fluoroquinolones.
c - Interim action level set by Health Canada.

Appendix I (A) - CFIA Aquaculture Therapeutant Residue Monitoring List

Malachite Green and Leucomalachite Green Notes

d - As a minimum performance level of the laboratories testing for Malachite Green (MG) or Leucomalachite Green (LMG), the laboratory must have a limit of quantification (LOQ) of at least 0.5 ng/g for MG or LMG.

e - The "*Interim Guidelines for the Presence of Malachite Green (MG) and Leucomalachite Green (LMG) in Aquaculture Fish Products*" established by Health Canada and published in the CFIA Industry Notice of March 29, 2006 are as follows:

- Malachite green is not permitted in Canada for use during any part of the aquaculture fish production life-cycle.
- The interim guidelines from Health Canada and CFIA's product acceptability criteria applicable to imported and domestic fish products are described below:

MG or LMG Levels	Product Action
≤ 0.50 ng/g for MG or LMG (Interim LOQ for MG or LMG)	No regulatory actions will be taken.
> 1.00 ng/g for MG or LMG	Product is unacceptable. Appropriate regulatory actions will be taken.
> 0.50 ng/g to ≤1.00 ng/g for MG or LMG (NOTE: Gathering ofinformation will be required to determine deliberate use)	Product is unacceptable unless a review of information gathered shows there has been no deliberate use. Appropriate regulatory actions will be taken, as required.

- For products found to contain levels > 0.50 and ≤1.00 ng/g of MG or LMG, the following approach will be used:
  - Importers will have the option of gathering information in order to provide evidence of non-deliberate use. The importers should contact the local CFIA office. On a case by case basis, the CFIA will determine when the option for gathering information is available. This will be based on the importer's Quality Management Program and/or on the presence of foreign arrangements or regulatory links with the respective foreign authorities. CFIA will take the appropriate regulatory action.
  - Federally registered processors will be required to notify the CFIA of these results and take the appropriate corrective actions according to their QMP plan. Appropriate corrective actions should include gathering information to determine if deliberate use of MG occurred during any part of the aquaculture fish production life cycle. The processor will provide their findings to the CFIA and the information will be reviewed to determine the regulatory compliance. The CFIA may complete a Compliance Verification to determine whether the QMP requirements have been met.

Gentian Violet and Leucogentian Violet Notes

f - As a minimum performance level of the laboratories testing for Gentian Violet (GV) or Leucogentian Violet (LGV), the laboratory must have a limit of quantification (LOQ) of at least 0.5 ng/g for GV or LGV.

g - Gentian violet is not permitted in Canada for use during any part of the aquaculture fish production life-cycle.
As a result of on-going discussions with Health Canada regarding Gentian Violet as a therapeutant and as a possible contaminant, the interim guidelines for the presence of GV and LGV and CFIA's product acceptability criteria applicable to imported and domestic aquacultured fish products have been modified as follows:

GV or LGV Levels	Product Action
< 0.50 ng/g for GV and/or LGV (Interim LOQ for GV or LGV)	No regulatory actions will be taken.
Sum GV & LGV ≥ 1.0 ng/g Specifically: GV ≥ 1.0 ng/g & LGV < 0.5 ng/g OR GV < 0.5 ng/g & LGV ≥ 1.0 ng/g OR GV ≥ 0.5 ng/g & LGV ≥ 0.5 ng/g	Product is unacceptable. Appropriate regulatory actions will be taken.
GV < 0.5 ng/g & LGV ≥ 0.5 ng/g and < 1.0 ng/g OR **GV ≥ 0.5 ng/g and < 1.0 ng/g & LGV < 0.5 ng/g**	This result will trigger a follow-up investigation for possible therapeutant use prior to making a lot decision.
GV ≥ 0.5 ng/g & LGV not detected at the reporting limit	This result will trigger a follow-up investigation for possible post harvest contamination prior to making a lot decision.

- When a follow up investigation is needed, laboratory reports/results (e.g. from a QMPI importer) should be forwarded to a CFIA inspector.
  The CFIA Inspector will communicate with their respective Regional/Area Program Staff who will liase with the National Manager Technical Standards (or delegate), Fish, Seafood & Production Division.
  The follow up investigation approach may include, but not limited to gathering evidence of non-deliberate use, collecting and reviewing additional information, etc., for an assessment and this will be determined on a case by case basis.

Teflubenzuron Notes

h - The monitoring of teflubenzuron in aquaculture products is under review and is not applicable at this time.

Version: January 1, 2011

Appendix 1 (B)
Therapeutant Use in Aquaculture - Questions and Answers

Preamble: This document outlines key information, for importers and domestic processors of fish and fish products, on the Canadian regulatory and testing requirements for therapeutants in aquaculture production. Fish importers and domestic processors are responsible for ensuring product compliance by implementing measures to address therapeutants in aquacultured fish and crustaceans intended for human consumption.

CONTENT

GENERAL

Q: What are therapeutants and why are they used in aquaculture?

A: Therapeutants are chemical substances used on fish farms or aquaculture operations when necessary to keep aquatic animals (i.e. fish or crustaceans) healthy while they are being raised. Therapeutants could be drugs or pesticides.

In Canada, therapeutants are prescribed by licensed veterinarians after they have diagnosed health problems in aquatic animals under their care. Veterinarians are responsible for treatment using the prescribed therapeutant on the fish farm and are also involved with the aquaculture operator to ensure that the treated fish or crustaceans are safe for human consumption.

While other countries may have different procedures for administrating therapeutants, the final fish product imported into Canada must be safe for human consumption.

Q: What is a veterinary drug?

A: A veterinary drug is a therapeutant that is used to treat a disease in aquatic animals and is usually given to them to consume (for example, through medicated feed). However, some drugs may be given by injection. At this moment, most aquaculture therapeutants in Canada are delivered through feed and are regulated by Health Canada's Veterinary Drugs Directorate (VDD) under the Canadian *Food and Drugs Act and Regulations*. Information on veterinary drugs and the VDD can be found at: http://www.hc-sc.gc.ca/dhp-mps/vet/legislation/pol/aquaculture-eng.php

Q: What is a pesticide?

A: When certain therapeutants (such as some antiparasitic products) are added to the water to specifically control only external parasites (e.g. topically applied to fish by submersion in a bath), they are deemed a pesticide and are regulated under the Canadian *Pest Control Products Act and Regulations*. The Pest Management Regulatory Agency (PMRA) within Health Canada approves pesticides under the *Pest Control Products Act*. Information on pesticides and the PMRA can be found at: http://www.hc-sc.gc.ca/ahc-asc/branch-dirgen/pmra-arla/index-eng.php

KEY ROLES IN FOOD SAFETY

HEALTH CANADA: SETTING THE STANDARDS

Q: What is Health Canada's role with respect to veterinary drugs?

A: The Veterinary Drugs Directorate (VDD) within Health Canada is responsible for protecting human and animal health and the safety of Canada's food supply. Through the VDD, Health Canada evaluates and monitors the safety, quality and effectiveness, sets standards and promotes the prudent use of veterinary drugs administered to food-producing and companion animals. For drug products used in food-producing animals, VDD establishes mandatory withdrawal times and sets maximum residue limits (MRLs) and administrative maximum residue limits (AMRLs) for veterinary drugs after it has conducted an extensive review of data submitted by manufacturers and has assessed the veterinary drugs' safety and risk.

Q: What is a Maximum Residue Limit (MRL)?

A: A Maximum Residue Limit (MRL) is an amount of drug residue present in treated aquatic animals that will not pose adverse human health effects if the food is consumed daily over a lifetime. A MRL applies to a specific tissue for a specific species. For example, sulfadiazine (in the approved drug, Tribressen 40% Powder), a drug approved for use in salmonids in Canada, could be administered to salmonids and the residual level in the edible tissues of fish offered for sale cannot exceed the MRL of 0.1 μg/g.

Q: What is an Administrative Maximum Residue Limit (AMRL)?

A: The definition of an Administrative Maximum Residue Limit (AMRL) and a MRL are basically the same since the process and rigour that the VDD uses to assess the safety and risk of a veterinary drug are the same. The only difference is that, for an AMRL, the Canadian legal process to publish this information in the *Food and Drug Regulations* is in progress. Once the legal process is complete, the AMRL is officially known as an MRL. While their legal status differ, there is no difference between an MRL and AMRL in terms of scientific validity and thus the VDD posts a formal list of established AMRLs on its website. In this context, AMRLs can be a factor in considering if a food is acceptable for sale in Canada and considering action to be taken where the possible adulteration of foodstuffs is suspected or known.

Q: How does Health Canada establish a MRL for a veterinary drug or expand the scope of application of an existing MRL to a new species or target tissue?

A: MRLs are established only after the VDD has conducted extensive reviews of data submitted by manufacturers and has determined that foods containing these veterinary drug residues up to the established levels are safe for human consumption. Health Canada's website provides additional information on the risk assessment and approval process for establishing MRLs:
http://www.hc-sc.gc.ca/dhp-mps/vet/mrl-lmr/mrl-lmr_levels-niveaux-eng.php
http://www.hc-sc.gc.ca/dhp-mps/vet/applic-demande/proces/approval-approbation-eng.php

Q: What if a veterinary drug, which has not been approved by Health Canada, is needed for the emergency treatment of aquatic animals in Canada?

A: Health Canada may provide, under the Emergency Drug Release (EDR) program, an authorization for the sale of a drug, under the *Food and Drug Regulations* [1]. This authorization permits the manufacturer of a new drug to sell a limited quantity of the new drug to a veterinarian.

- The new drug is one which is not marketed in Canada and is requested by a veterinarian as an emergency treatment for aquatic animals under his or her care.

- Before the request is authorized, the veterinarian must provide the VDD with detailed information regarding the emergency treatment of the aquatic animal(s), safety data (including human safety) of the drug, and any other relevant information. Once the evaluation has been completed, the VDD may issue the EDR authorization along with the conditions which must be met (for example, adhering to a withdrawal time).

- Veterinarians are responsible for reporting on the drug use results. Health Canada's website provides additional information on the Emergency Drug Release program.

Q: What if a pesticide, which has not been approved by Health Canada, is needed for the emergency treatment of aquatic animals in Canada?

A: The Pest Management Regulatory Agency (PMRA) within Health Canada may grant emergency release permits for pesticides under the *Pest Control Products Act*. More information concerning this program can be found at: http://www.hc-sc.gc.ca/ahc-asc/branch-dirgen/pmra-arla/index-eng.php

[1] Section C.08.010 and C.08.011 of the *Food and Drug Regulations*.

INDUSTRY: IMPLEMENTING CONTROLS AND VERIFYING PRODUCT SAFETY

Q: What do importers and domestic processors need to know about therapeutant use in aquacultured fish and crustaceans?

A: Fish importers and domestic processors should be aware that not all therapeutants that may be accessible to fish farms or aquaculture operations are accepted to be used in aquacultured aquatic animals intended for human consumption. Importers and domestic processors should be knowledgeable of therapeutants which are "banned", "approved" and "accepted to be used" in Canada in relation to aquacultured products so that they can take actions to reduce or eliminate the consumer exposure to therapeutants that may pose a food safety risk.

Q: What are "banned" drugs?

A: According to the *Food and Drug Regulations* [2], banned drugs are those drugs which are prohibited for sale for administration to animals that produce food or that are intended to be consumed as food because the drug contains one of the following:

- chloramphenicol or its salts and derivatives
- a 5-nitrofuran compound
- clenbuterol or its salts and derivatives
- a 5-nitroimidazole compound or
- diethylstilbestrol or other stilbene compounds.

Scientific evidence has shown that exposure to these substances, at any level, is unsafe for consumers. Fish and crustaceans containing any residue from these drugs are in violation of the *Food and Drug Regulations* [3] and the *Fish Inspection Regulations* and would not be permitted for sale in the Canadian market.

Q: What are "approved" drugs in Canada?

A: Drugs that have a Drug Identification Number (DIN) on the label are drugs that are approved by Health Canada. A list of veterinary drugs approved for sale by Health Canada to be used in aquatic animals can be found at:
http://www.hc-sc.gc.ca/dhp-mps/vet/legislation/pol/aquaculture_anim-eng.php

Any drug residue present in the food must not exceed the MRL or AMRL for that drug set by Health Canada.

Q: Which therapeutants are "accepted to be used" in aquaculture in Canada?

A: A therapeutant "accepted to be used" in aquaculture in Canada can be either of the following:

- A drug authorized for sale by Health Canada to be used specifically in aquatic animals. Health Canada's website provides additional information:
  http://www.hc-sc.gc.ca/dhp-mps/vet/legislation/pol/aquaculture-eng.php

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[2] C.01.610.1 of the *Food and Drug Regulations*

[3] Article B.01.048(1)(2)(d) of the *Food and Drug Regulations*.

- A drug authorized for sale by Health Canada through an Emergency Drug Release (EDR) when the drug has not been approved in Canada;

- A drug authorized for sale by Health Canada for testing purposes under an Experimental Studies Certificate (ESC);

- A drug authorized for sale by Health Canada as an Investigational New Drug Submission for clinical trials;

- A drug, prescribed by a licensed veterinarian, as extra-label drug use (ELDU) (only applies to products with a Drug Identification Number (DIN) assigned by Health Canada). Please refer to the ELDU Policy Statement of Health Canada for more information: http://www.hc-sc.gc.ca/dhp-mps/vet/label-etiquet/index-eng.php

- A pesticide that is approved to be used in aquatic animals by the Pest Management Regulatory Agency (PMRA) within Health Canada. This pesticide should be used according exactly to the label instructions;

- A pesticide which has been granted an emergency release permit by PMRA under the *Pest Control Products Act*.

Q: Can I import or process fish products that contain therapeutants not "accepted to be used" in aquaculture in Canada?

A: No, any therapeutants which are not considered "accepted to be used" are essentially unapproved and their residues should not be present in fish offered for sale in Canada.

Q: How can importers provide assurances regarding the safety of the aquaculture products they import with respect to therapeutants?

A: All importers should be aware that there could be a food safety risk associated with therapeutants in the aquaculture products they import. To help ensure that consumers are not exposed to non-compliant products, importers are responsible for discussing the potential of therapeutant use and residues in aquaculture products with their suppliers. Fish importers need to take affirmative actions when sourcing product by dealing with suppliers that can provide assurances that the products meet the applicable Canadian requirements and do not contain illegal drug residues. Affirmative actions may include, but are not limited to, providing suppliers with a description of all Canadian regulatory standards for aquaculture products as a part of their product specification outlined in a buyer-seller agreement or selecting producers that use a Hazard Analysis Critical Control Point (HACCP) based system in the production of their fish and seafood products.

Additional information on affirmative actions and importing fish and seafood products into Canada can be found at: http://www.inspection.gc.ca/english/fssa/fispoi/import/pol/queste.shtml

Quality Management Program Importer (QMPI) licence holders must verify that each lot of imported aquatic animals complies with Canadian regulatory requirements and applicable product standards by conducting inspection activities as outlined in their QMPI plan. The QMPI licence holder is also required to review their QMPI plan annually and perform routine verification activities as appropriate, to ensure it is functioning effectively.

Q: How can domestic processors provide assurances regarding the safety of the aquaculture products they process with respect to therapeutants?

A: Domestic processors should discuss the potential for therapeutant use and residues with their suppliers of aquaculture products when establishing drug residue controls under their Quality Management Program (QMP) plan. Buyer-seller agreements, such as a Supplier Quality Assurance (SQA) agreement and/or product testing are examples of measures that can be implemented to assure that the product meets Canadian requirements. Processors should also ensure that their SQA's and/or HACCP plan related to therapeutants are kept up to date as needed.

Domestic processors must conduct monitoring activities so that each lot of incoming aquatic animals complies with Canadian regulatory requirements and applicable product standards as outlined in their QMP plan. The processor is also required to review their QMP plan annually and perform routine verifications, including their HACCP plan, to ensure it is functioning effectively.

When establishing drug residue controls, establishments that process aquacultured aquatic animals in Canada should also give consideration to Health Canada's Emergency Drug Release Program, which allows veterinarians controlled access to drugs which have not been approved for use in aquaculture.

Q: What is the policy for using private laboratory services to test fish and fish products for therapeutants to determine regulatory compliance?

A: Importers and domestic processors that use a private (third party) laboratory to test fish and fish products to verify regulatory compliance shall adhere to the "CFIA Policy on the Use of Third Party Laboratories for Testing Fish and Fish Products Under the Fish Inspection Program" which can be found at: http://www.inspection.gc.ca/english/fssa/fispoi/product/thitiee.shtml

CANADIAN FOOD INSPECTION AGENCY: MONITORING AND COMPLIANCE VERIFICATION ACTIVITIES

Q: What is the Canadian Food Inspection Agency's (CFIA) role with respect to therapeutants and assuring food safety?

A: The CFIA's inspection program routinely monitors commercially sold aquaculture products to verify that the residue limits established by Health Canada have not been exceeded and that the products do not contain illegal therapeutants. Product analysis, using fully validated methods, are performed in accredited CFIA laboratories based on an ISO17025 system. The CFIA will take appropriate regulatory action on non-compliant aquaculture products.

By conducting product monitoring and other verification activities, the CFIA is able to assess whether effective controls have been implemented by domestic processors and licensed importers that will provide reasonable assurance that aquaculture products consistently meet Canadian regulatory requirements concerning therapeutants.

Q: Where can I find a list of aquaculture therapeutants currently monitored by the Canadian Food Inspection Agency (CFIA)?

A: A list of aquaculture therapeutants that the CFIA currently monitors (imported and domestically produced aquacultured products), including but not limited to, "banned" drugs and "accepted to be used" therapeutants, can be found at:
http://10.141.237.58:81/english/fssa/fispoi/man/samnem/app1ae.shtml

APPENDIX 2
BACTERIOLOGICAL GUIDELINES FOR FISH AND FISH PRODUCTS

Test Organism [1]	Product Type	Number of sample units	Acceptance number (c) [2]	m/g [2]	M/g [2]	Criteria for action
Escherichia coli	Cooked or ready-to-eat products	5	1	4	40	Reject if 2 or more units exceed m, or if any unit exceeds M
Escherichia coli	Raw molluscan shellfish	5	1	230/100 g	330/100 g	Reject if 2 or more units exceed m, or if any unit exceeds M
Escherichia coli	All other types	5	2	4	40	Reject if 3 or more units exceed m, or if any unit exceeds M
Coagulase-Positive *Staphylo-cocci*	All types	5	1	1000	10000	Reject if 2 or more units exceed m, or if any unit exceeds M
Salmonella	All types	5	Absent in each 25 g sample or in pooled samples of 125 g.	-	-	Reject if *Salmonella* spp is detected
Vibrio cholerae	Cooked or ready-to-eat products	5	Absent in each 25 g sample or in pooled samples of 125 g	-	-	Reject if *Vibrio cholerae* is detected.

Listeria monocytogenes (From Health Canada' s "Policy on *Listeria monocytogenes* in Ready-to-Eat Foods") available at: http://www.hc-sc.gc.ca/fn-an/legislation/pol/policy_listeria_monocytogenes_2010-eng.php

Product Type / Category[3]	Laboratory method to be applied	Action Level
RTE Fish products in which the growth of *L. monocytogenes* CAN occur and could exceed 100 CFU/g before the end of the stated shelf-life. Includes all products that do not fall in either above-mentioned product types. (Equivalent to **Category 1** foods in the HC *Listeria* policy)*****	**Presence/absence in 125 g** (MFHPB-30[6] or equivalent) on 5 sample units of 25 g each	**Detected**
RTE Fish products in which the growth of *L. monocytogenes* CAN occur but is limited to levels no greater than 100 CFU/g over the course of their stated shelf-life. RTE products that have a refrigerated shelf-life of 5 days or less fall under this category. Other products require validation data[4] demonstrating growth cannot exceed 100 CFU/g[5]. (Equivalent to **Category 2A** foods in the HC *Listeria* policy)	**Enumeration in 50 g** (MFLP-74[6] or equivalent) on 5 sample units of 10 g each	**> 100 CFU/g**[5]
RTE Fish products in which growth of *L. monocytogenes* CANNOT occur over the course of the stated shelf-life. Products with the following characteristics fall under this category: • products that are frozen, or • have a pH<4.4 regardless of the a_w, or • have an a_w<0.92 regardless of the pH, or • have a pH<5.0 AND an a_w <0.94 For products that don't meet the above characteristics, validation data[4] demonstrating the absence of growth is required. (Equivalent to **Category 2B** foods in the HC *Listeria* policy)	**Enumeration in 50 g** (MFLP-74[6] or equivalent) on 5 sample units of 10 g each	**> 100 CFU/g**[5]

Notes:

1. The analysis of all fish or fishery products shall be conducted in accordance with approved methods

2. m - number of bacteria per gram separating acceptable from marginally acceptable samples, c - number of samples that may exceed this number of bacteria per gram, M - no sample can exceed this number of bacteria per gram

3. For further guidance on the determination of a product category, see Figure 1 of this appendix: Decision Tree - Determination of the ready-to-eat (RTE) product category that a fish product falls under in accordance with the 2010 Health Canada (HC) *Listeria* Policy.

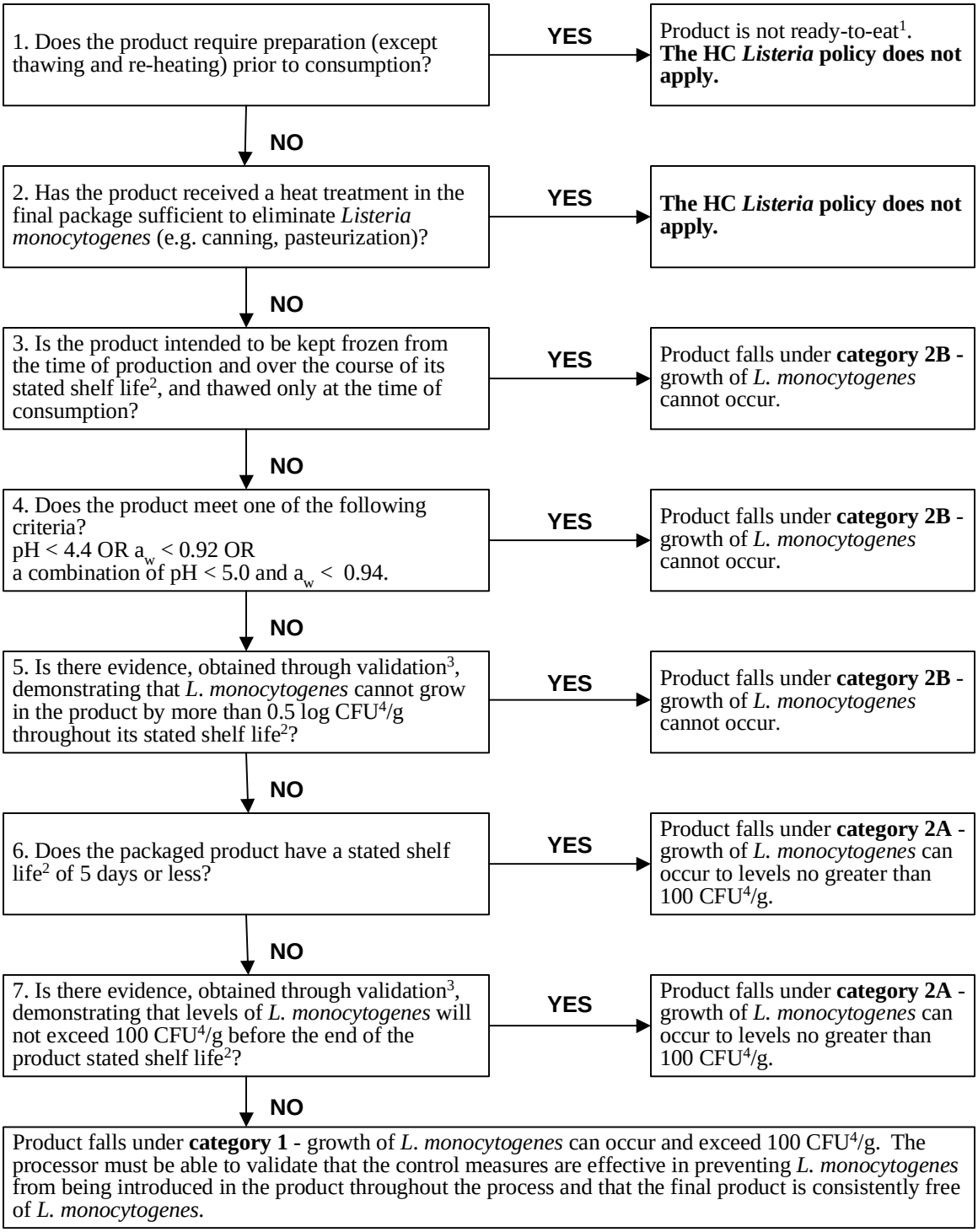
4. See HC's guide on "*Listeria monocytogenes* Challenge Testing of Ready-to-Eat Refrigerated Foods" for information on challenge testing as part of validation at:
http://www.hc-sc.gc.ca/fn-an/legislation/pol/listeria_monocytogenes-eng.php

5. Counts between 5 and 100 CFU/g can be an indication of a possible loss of control and should prompt the processor to verify and/or re-evaluate his process controls.

6. Recognized methods to determine compliance with bacteriological guidelines as outlined in Health Canada's Compendium of Analytical Methods available at:
http://www.hc-sc.gc.ca/fn-an/res-rech/analy-meth/microbio/index-eng.php

* Health Canada's "Policy on *Listeria monocytogenese* in Ready-to-Eat Foods" will be referred to as the "HC *Listeria* Policy"

Appendix 2. Figure 1: Decision Tree - Determination of the ready-to-eat (RTE)[1] product category that a fish product falls under in accordance with the Health Canada "Policy on *Listeria monocytogenes* in Ready-to-Eat Foods"



1. Ready-to-eat (RTE): Foods not requiring any further preparation before consumption, except perhaps washing/rinsing, thawing or warming.
2. Shelf life: The period, commencing on the day on which a pre-packaged product is packaged for retail sale, during which the product, when it is stored under conditions appropriate to that product, will retain, without any appreciable deterioration, its normal wholesomeness, palatability, nutritional value and any other qualities claimed for it by the manufacturer. (*Food and Drug Regulations* B.01.001)
3. Validation refers to obtaining evidence that a control measure or combination of control measures, if properly implemented, is capable of controlling the hazard to a specified outcome. For example, challenge tests (through the inoculation with *L. monocytogenes* of a representative product batch) have demonstrated that throughout the stated shelf life, the growth of *L. monocytogenes* cannot occur (category 2B) or will not exceed 100 CFU/g (category 2A), while stored under reasonably foreseeable conditions of distribution, storage and use.
4. CFU (Colony Forming Unit): A measure of viable (living) cells in a sample per millilitre (mL) or gram (g).

APPENDIX 3
CANADIAN GUIDELINES FOR CHEMICAL CONTAMINANTS AND TOXINS IN FISH AND FISH PRODUCTS

CONTAMINANTS	PRODUCT TYPE	ACTION LEVEL [1]
Mercury	All fish products (except swordfish, shark, fresh and frozen tuna, escolar, orange roughy and marlin)	0.5 ppm
Mercury	Swordfish, shark, fresh and frozen tuna, escolar, orange roughy and marlin	1.0 ppm
Arsenic	Fish protein concentrate	3.5 ppm
Lead	Fish protein concentrate	0.5 ppm
Fluoride	Fish protein concentrate	150 ppm
2,3,7,8 TCDD (Dioxin)	All fish products	20 ppt ***under review***
DDT and Metabolites (DDD and DDE)	All fish products	5.0 ppm
PCB	All fish products	2.0 ppm ***under review***
Piperonyl butoxide	Dried Cod	1.0 ppm
Other agricultural chemicals or their derivatives	All fish products	0.1 ppm

[1] Based on contaminants level of edible weight

Notes:

Sampling: Samples to consist of a minimum of 5 units representative of the lot. Analysis may be carried out on a composite of all sample units.

Criteria for action: A lot of fish will be considered reject if the sample value exceeds the action level. Fish or fish products exceeding these guidelines may be permitted for export if they do not violate regulations of the importing country.

TOXINS	PRODUCT TYPE	ACTION LEVEL
Histamine [2] (Scombroid Poisoning)	Enzyme ripened products (e.g., anchovies, anchovy paste, fish sauce)	20 mg/100 g
Histamine [2] (Scombroid Poisoning)	All other scombroid fish products (e.g., canned or fresh or frozen tuna, mackerel, mahi-mahi)	10 mg/100 g
Saxitoxins (PSP) [3]	Molluscan shellfish (edible portion)	80 µg/100 g

Domoic Acid (ASP) [3]	Molluscan shellfish (edible portion)	20 µg/g
Okadaic Acid (OA) + DTX1 + DTX2 + OA esters + DTX1 esters + DTX2 esters (DSP) [3]	Molluscan shellfish (edible portion)	0.2 µg/g* (interim)
Pectenotoxins: PTX-1, PTX-2, PTX-3, PTX-4, PTX-6 and PTX-11	Molluscan shellfish (edible portion)	0.2 µg/g

ADDITIONAL COMMENTS:

[2] **Histamine**

- Samples are collected according to Sampling Plan 1 (AQL 6.5) for Initial inspection and Sampling Plan 2 (AQL 6.5) for reinspection.
- Any sample exceeding 50 mg/100 g will result in the lot being rejected with no right to reinspection.
- The acceptance number is that corresponding to the number for decomposition.

[3] PSP, ASP and DSP (Paralytic Shellfish Poisoning, Amnesic Shellfish Poisoning - Domoic Acid, Diarrhetic Shellfish Poisoning - Okadaic Acid and/or DTX-1)

- Procedures for closure of shellfish areas, and possible recall of product due to samples of shellfish containing toxin levels equal to or greater than the above action levels can be found in Chapter 11 of the Canadian Shellfish Sanitation program
- The minimum acceptable sample is that which when shucked will produce 100 g of drained meats from 5 pooled sub-samples. Depending on the size of animals, the total number of shellfish required varies from 3 (geoduck) to 25 (pink scallops)

BACKGROUND LEVELS FOR NON-PERMITTED ADDITIVES

ADDITIVE[4]	PRODUCT TYPE	BACKGROUND LEVEL[5]
Nitrites	All fish and fish products (except marine mammal meat[6])	15 ppm (see note 2)
Nitrates	All fish and fish products	15 ppm (see note 2)
Sulphites[7]	Clams (raw and canned)	10 ppm
Phosphates[8]	Shrimp (raw, cooked and canned)	1.60 %
Phosphates[8]	Scallops (raw)	1.47 %
Phosphates[8]	Fish fillets	1.37 %

Phosphates[8]	Crab (raw and cooked)	1.70 %
Phosphates[8]	Lobster (raw and cooked)	1.47 %
Phosphates[8]	Surf clams (raw and cooked)	1.00 %

[4] The compounds listed in this table are food additives; however some background levels may occur naturally in some foods.

[5] When the additive **is not** permitted, then the action level is the background level or detection limit; when the additive **is** permitted, then the action level is the background level or detection limit **plus** the permitted amount.

[6] Marine mammals, including seals are included in the definition of "fish" as per the Canadian Food and Drug Regulations. Sodium nitrite is permitted in marine mammal meats at the maximum level of 200 ppm.

[7] Calculated as sulphur dioxide.

[8] Calculated as sodium phosphate, dibasic.

Note:

1. If a processor can provide reliable data for naturally occurring background levels that are higher than those shown above, this may be considered before product action is taken.

2. Some herbs, including parsley, contain high levels of naturally occurring nitrates. This has to be considered when nitrates are detected in fish products containing herbs as an ingredient.