



Arctic Development

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GOOD MANUFACTURING PRACTICES

SMOKED FISH PROCESSING

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INTRODUCTION

The purpose of these gmp's is to provide guidelines for the production and distribution of ready to eat seafood of acceptable quality. These gmp's supplement the requirements of the Fish Inspection Regulations and handbooks of compliance, standards and other documents issued by the department as well as other Canadian regulatory requirements, codes of practice, gmp's and guidelines. These gmp's are recommended only for frozen ready to eat seafoods.

In order to minimize the risk of contamination of final product with bacteria of public health significance, these gmp's are based on the principle of reducing or controlling bacterial loads at each step in production and suggest practices needed to avoid any cross contamination of product at all steps of the process.

These gmp's are accompanied by a flow chart which identifies the Critical Control Points and the sanitary zone(s) of the plant where particular attention must be paid to sanitation and to the prevention of cross contamination.

The annexes to these gmp's identify the general sanitary practices which must be followed in the sanitized zones of the pkmt to reduce bacterial loads and to prevent cross contamination of product by bacteria of concern.

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GOOD MANUFACTURING PRACTICES

SMOKED FISH PROCESSING

SECTION 1: RECEIPT, STORAGE AND TRANSPORT OF .
PACKAGING MATERIALS

GMP # 1.1 : RECEIPT OF PACKAGING MATERIALS

THIS IS A CRITICAL CONTROL POINT

Packaging materials **shall** meet Food and Drug Regulations requirements for **packaging material** in direct contact with food. **Badly damaged** or dirty packaging materials shall be refused.

REASON: Only packaging materials containing additives, **coatings, etc** permitted in **the** Food and Drug Regulations may be used for the packaging of foods.

Damaged packaging **materials** will not provide the desired protection to the product and **dirty** packaging materials may contaminate the **product**.

COMPLIANCE:

This GMP will *be* adhered to **when**:

- 1- packaging **materials** for **direct contact** with fish are ordered **specifying** they **must** be Food Grade Contact Packaging **Materials**;

and

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SECTION 1:- RECEIPT, STORAGE AND TRANSPORT
OF PACKAGING MATERIALS CONTINUED "

GMP # 1.1 : RECEIPT OF PACKAGING MATERIALS
CONTINUED

COMPLIANCE: CONTINUED

THIS IS A CRITICAL CONTROL POINT

2- packaging materials not meeting the purchase specifications are refused entry into the plant or clearly marked as "NOT TO BE USED";

and

3- damaged or & y packaging materials are refused entry into the plant or clearly marked as "NOT TO BE USED" and stored so as to present no risk of contamination to packaging materials, ingredients or fished product.

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SMOKED FISH PROCESSING

SECTION 1 : RECEIPT, STORAGE AND TRANSPORT
OF PACKAGING MATERIALS CONTINUED

GMP # 1.2 : STORAGE AND TRANSPORT OF PACKAGING
MATERIALS

Packaging materials " shall **be** stored in a **clean, dry storage** area designated for the storage of dry goods and, when transported to the packaging area, the requirements of Annex A **-Sanitary Zone(s)**, regarding the transfer of goods into a sanitized zone **shall be met.**

REASON: Packaging materials must be stored in a clean dry area designated for dry goods to **prevent** contamination. They must **be** transferred to the sanitized zone(s) in the manner **specified** in Annex A to prevent cross contamination of the product(s) being processed in the **sanitized** zone. ""

COMPLIANCE:

This GMY will be adhered to when:

1- the packaging materials are stored in a dry goods area **set** aside for packaging materials and ingredients **only**;

and

2- the outer protective wrappings for packaging materials are **cleaned** or removed prior to transfer into the **sanitized** zone(s);

and

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SECTION 1: RECEIPT, STORAGE AND TRANSPORT
- OF PACKAGING MATERIALS CONTINUED

GMP # 1.2: STORAGE AND TRANSPORT OF PACKAGING
MATERIALS CONTINUED

COMPLIANCE: CONTINUED

- 3- the packaging materials are transferred into the sanitary zone(s) in such a manner that the equipment used outside of the sanitized zone(s) does not enter the sanitized zone(s)-(see Annex A, A.3.2. page 64 for comments regarding the operation of fork lifts in sanitary zones).

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SMOKED FISH PROCESSING

SECTION 2 : RECEIPT, STORAGE AND TRANSPORT
- OF INGREDIENTS

GMP # 2.1 : RECEIPT OF INGREDIENTS

THIS IS A CRITICAL CONTROL POINT

Ingredients, including **additives**, shall meet Food and Drug Regulations requirements. Ingredients in badly damaged packages or dirty ingredients shall be refused entry into the **plant** or **clearly** and legibly marked in such a manner that they will not be used.

REASON: Only ingredients meeting the requirements of the Food and Drug Regulations may **be** used for **processing**.

Damaged **ingredient** packaging will not provide the desired protection to **the** product and dirty ingredients may contaminate the **product**.

COMPLIANCE:

This **GMP** will be **adhered to** when:

- 1- ingredients for use in fish are ordered specifying they must be Food Grade Ingredients:

and

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SECTION 2 : RECEIPT, STORAGE AND TRANSPORT
- OF INGREDIENTS CONTINUED

GMP # 2.1 : RECEIPT OF INGREDIENTS
CONTINUED

COMPLIANCE: CONTINUED

THIS IS A CRITICAL CONTROL POINT

- 2-“ ingredients not **meeting** the purchase **specifications** are refused entry **into** the plant or **clearly** marked as “ NOT TO BE USED “;
- and
- 3- the ingredients are transferred into the sanitized zone(s) in such a **manner that the equipment used outside** of the sanitized zone(s) does not **enter** the sanitized zone(s)-(see Annex A, A.3.2. page 65 for **comments regarding the operation of forklifts in sanitary zones**).

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"GOOD MANUFACTURING PRACTICES

SMOKED FISH PROCESSING

SECTION 2 : RECEIPT, STORAGE AND TRANSPORT
OF INGREDIENTS CONTINUED

GMP # 2.2: STORAGE AND TRANSPORT OF INGREDIENTS

Ingredients shall **be stored in a clean**, dry storage area designated **for the storage** of dry goods **and**, when transported to the packaging area & the requirements of Annex A -Sanitized Zone(s), regarding the transfer of goods into a sanitized zone, shall be **met**.

REASON: Ingredients must be **stored in a clean dry** area designated for **dry** goods to prevent contamination. They must be **transferred to the** sanitized zone(s) in the manner **specified** in Annex A to prevent cross contamination of the product(s) being processed in the sanitized zone(s).

COMPLIANCE:

This **GMP will be** adhered to when:

1- the ingredients are *stored in a dry goods area set aside for packaging materials and ingredients only*;

and

2- the **outer** protective wrappings for the ingredients **are** cleaned or removed prior to **transfer** into the sanitized **zone(s)**;

and

GOOD MANUFACTURING PRACTICES

SMOKED FISH PROCESSING

**SECTION 2 : RECEIPT, STORAGE AND TRANSPORT
OF INGREDIENTS CONTINUED**

**GMP # 2.2 : STORAGE AND TRANSPORT OF INGREDIENTS
continued**

COMPLIANCE CONTINUED

- 3 - the ingredients are transferred into the "sanitized zone(s) in such a manner that the equipment used outside of the sanitized zone(s), such as fork lifts, does not enter the sanitized zone(s).

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GOOD MANUFACTURING PRACTICES

SMOKED FISH PROCESSING

SECTION 3 : RECEIPT, MANUFACTURE, STORAGE AND
TRANSPORT OF ICE

GMP # 3.1 : RECEIPT OF ICE

THIS IS A CRITICAL CONTROL POINT
THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

Ice received shall be manufactured using water meeting the requirements of Annex B and shall be transported to the plant in clean sanitary containers and ice to be used in the sanitary zone(s) shall be handled according to the requirements of Annex A for sanitary zones.

REASON: Water meeting the requirements of Annex B must be used in the manufacture of ice to prevent the contamination of product that the ice will come in contact with by bacteria or toxic substances.

Ice transported in unsanitary containers or under conditions not meeting the requirements of Annex A will be a source of contamination.

COMPLIANCE:

This GMP will be adhered to when:

- 1- ice for use on fish is ordered specifying that it must be produced using water meeting the requirements of Annex B;

and

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GOOD MANUFACTURING PRACTICES

SMOKED FISH PROCESSING

SECTION 3 : RECEIPT, MANUFACTURE, STORAGE AND
TRANSPORT OF ICE

GMP # 3.1 : RECEIPT OF ICE CONTINUED

COMPLIANCE: CONTINUED

THIS IS A CRITICAL CONTROL POINT
THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

2- samples of ice are analyzed to ensure it meets the require-
ments outlined in Annex B;

and

3- shipments of ice delivered to the plant in unsanitary containers
are refused entry and returned to supplier;

and

4- shipments of ice received from plants not meeting the require-
ments outlined in Annexes A and B for sanitary zones and
water requirements are not used for direct fish contact.

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SMOKED FISH PROCESSING

SECTION 3 : RECEIPT, MANUFACTURE, STORAGE AND
TRANSPORT OF ICE CONTINUED

GMP # 3.2: MANUFACTURE OF ICE

**THIS IS A CRITICAL CONTROL POINT
THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE**

Ice **shall** be manufactured using water meeting the requirements of Annex B and under sanitary conditions as outlined in Annex A for sanitary zones.

REASON: Ice, which **will be** in contact with **product**, must be produced in such a manner as to reduce to a minimum **the** possibility of contaminating the product with bacteria of public **health significance** or with toxic substances.

COMPLIANCE:

This GMP will be adhered to when:

- 1 - the ice is prepared using water meeting the requirements of Annex B;
- and
- 2- the ice is produced under the conditions **outlined** in Annex A for a sanitary zone.

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SMOKED FISH PROCESSING

SECTION 3-: RECEIPT, MANUFACTURE, STORAGE AND
TRANSPORT OF ICE CONTINUED "

GMP # 3.3: STORAGE AND TRANSPORT OF ICE

THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

Ice for use in the sanitary zone(s) **shall** be stored and transported according to the sanitary conditions outlined in Annex A.

REASON: Ice must be transported and stored in such a **manner** as to reduce to a minimum the possibility of **contaminating** the **product** with bacteria of **concern** or with toxic **substances**.

COMPLIANCE:

This GMP will be adhered to when:

- 1- **the** ice is transported and stored according to the **conditions** outlined in Annex A for a sanitary zone;
- or
- 2- the ice is transported and stored **in** sealed sanitary containers. ”

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GOOD MANUFACTURING PRACTICES

SMOKED FISH PROCESSING

SECTION 4 : RECEIPT, STORAGE AND TRANSPORT OF
NON FOOD MATERIALS

GMP # 4.1 : RECEIPT, STORAGE AND TRANSPORT OF
NON FOOD MATERIALS

Non food **materials shall** be received and stored in a separate area in such a manner as to prevent the possible contamination of packaging materials, **ingredients, ice,** fish, in process goods and finished goods and shall not be transported through **processing** areas during operation. **Damaged** containers shall be refused entry into the **plant.**

REASON: Non food materials such as cleaning compounds *are* a possible source of contamination of **the product.**

COMPLIANCE:

This GMP will be *adhered* to when:

1- non food **materials are received** and stored in an area designated for *their* storage only;

and

2- *they are not* transported through processing zones;

and

3- Containers are refused entry into *the* plant in a damaged state.

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SMOKED FISH PROCESSING

SECTION 5 RECEIPT, STORAGE AND TRANSPORT OF SMOKE GENERATING MATERIALS

GMP 5.1: RECEIPT, STORAGE AND TRANSPORT OF SMOKE GENERATING MATERIALS

THIS IS A CRITICAL CONTROL POINT

Wood smoke generating materials shall be received and stored in a separate area away from packaging materials, ingredients, ice, fish, in process goods and finished goods and shall not be transported into or through processing areas during operation. Damaged containers shall be refused entry into the plant. .,"

REASON: Wood smoke generating materials are a possible source of contamination of the product in that in their unused state they could be a source of contamination by bacteria of concern.

COMPLIANCE:

This GMP will be adhered to when:

- 1- wood smoke generating materials are "received and stored in an area designated for their, storage only;
- and
- 2- they are not brought into or transported through processing zones during operation;
- and
- 3- damaged containers are refused entry into, the plant.

“ SMOKED FISH PROCESSING

SECTION 6: RECEIVING FROZEN AND ~~FROZEN~~ FISH

Each shipment of fish delivered shall be inspected and the lots not

THIS IS A CRITICAL CONTROL POINT

meeting the requirements of the DFO standard shall be refused or culled and the culls removed to the waste disposal area.

REASON: As processing cannot improve the quality of the fish, any fish not meeting the, requirements of the DFO standard must be removed prior to any further processing.

COMPLIANCE:

This section will be adhered to when:

- 1) each lot of fish received is evaluated in accordance with the standards established by the Department of Fisheries and Oceans (DFO) for that species;

and

GOOD MANUFACTURING PRACTICES

SMOKED FISH PROCESSING

SECTION 6: - . RECEIVING FROZEN AND UNFROZEN FISH
C O N T I N U E D

GMP6.1:.....RECEIVING UNFROZEN AND FROZEN FISH
C O N T I N U E D

THIS IS A CRITICAL CONTROL POINT

COMPLIANCE CONTINUED

2) any lot not meeting the requirements of that standard is re-
jected;

and

3) any rejected lot is removed from the premises immediately or
culled and the culls removed to the waste disposal;

and

4) records of the quality and condition of the shipment, containing
the following" information, are made and kept for a period not
less than two years after the shipment has been processed:

a) species;

and

COMPLIANCE CONTINUED

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SMOKED FISH PROCESSING

SECTION 6: 13 RECEIVING FROZEN AND UNFROZEN FISH CONTINUED

GMP 6.1: RECEIVING UNFROZEN AND FROZEN FISH CONTINUED

THIS IS A CRITICAL CONTROL POINT

- b) date of shipment receipt;
- and
- c) supplier name;
- and
- d) delivery vessel or transport company name;
- and
- e) average temperature of fish;
- and
- f) fish grades including reasons for grade.

GOOD MANUFACTURING PRACTICES

SMOKED FISH PROCESSING

SECTION 6.1: RECEIVING FROZEN AND UNFROZEN FISH
CONTINUEI)

GMP 6.1: RECEIVING UNFROZEN AND FROZEN FISH
CONTINUED

THIS IS A CRITICAL CONTROL POINT

COMPLIANCE CONTINUED

and

g) lot code assigned which will relate to final product;

and

5) records are maintained for at least two years.

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SMOKED FISH PROCESSING

SECTION 6 : RECEIVING FROZEN AND UNFROZEN FISH
CONTINUED

GMP" 6.2: WASHING UNFROZEN FISH

THIS IS A CRITICAL CONTROL POINT

Upon receipt, fish shall be washed with water meeting the requirements of Annex B. -

REASON Bacteria of concern may be present on fish received. Washing or rinsing fish prior to evisceration" assists. in reducing the bacterial load.

COMPLIANCE

This Section will be adhered to when:

- 1) prior to further processing fish are washed or rinsed with water meeting the requirements of Annex B, and all blood, excess slime, and other debris are removed from the surface of fish. .

Note: seawater systems are not recommended as an alternative.

SMOKED FISH PROCESSING

SECTION 7: EVISCERATION AND WASHING

GMP 7.1: EVISCERATION AND WASHING

Round fish shall be eviscerated and washed immediately upon receipt. Fish temperatures shall be kept at 4°C (39°F) or colder..

REASON Prompt evisceration of round fish is necessary to prevent quality deterioration due to enzymatic and bacterial action. The gut cavity and external surface of each fish must be washed thoroughly to remove blood, visceral material, and to reduce bacterial loads as much as possible. The temperature specified must be adhered to in order to minimize bacterial growth.

COMPLIANCE

This section will be adhered to when:

- 1) the evisceration and washing of a lot of fish is carried out immediately upon receipt;

and

SMOKED FISH PROCESSING

SECTION 7: EVISCERATION AND WASHING
CONTINUED

GMP 7.1: EVISCERATION AND WASHING
CONTINUED

COMPLIANCE CONTINUED

2- the water used for evisceration and washing meets the requirements of Annex B;

and

3- the fish are thoroughly washed to remove all signs of blood, viscera, slime or other undesirable parts;

and

4- fish unsuitable for smoking are segregated and redirected to other processing;

and

5- fish temperatures are maintained at 4°C (39°F) or less.

SMOKED " FISH PROCESSING

SECTION 8: STORAGE OF EVISCERATED WASHED "FISH AND WASHING

GMP 8.1: STORAGE OF EVISCERATED WASHED FISH . .

THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

Eviscerated fish which cannot be processed immediately shall be iced and stored in sanitary, approved containers to achieve and maintain flesh temperatures below 4°C (39°F) and held in refrigerated storage "rooms" meeting the requirements of Annex, C.

REASON Fish will spoil and bacterial growth will accelerate rapidly if the fish is held at higher temperatures. The fish must be stored in covered containers to protect other products held in the refrigerated storage.

Compliance

This section will be adhered to when:

1. fish fresh temperatures are kept below 4°C (39°F);

and

SMOKED FISH PROCESSING

SECTION 8: STORAGE OF EVISCERATED WASHED FISH AND WASHING CONTINUED

GMP 8.1: STORAGE OF EVISCERATED WASHED FISH CONTINUED

COMPLIANCE CONTINUED

2. the refrigerated storage meets the requirements of Annex C;
- and
- 3) the fish boxes are of a type that will preclude any contamination.

SMOKED : FISH PROCESSING

SECTION 8: STORAGE OF EVISCERATED WASHED FISH AND
WASHING CONTINUED

GMP 8.2: WASHING

**THIS IS A CRITICAL CONTROL POINT
THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE**

Fish shall be thoroughly washed with water meeting the requirements of Annex B prior to further processing.

REASON Spoilage micro-organisms generally come from the surface of fish **and their gut cavity**. Experience has shown that a significant portion of these micro-organisms can be removed by proper washing **prior to further processing**.

COMPLIANCE

This section will be adhered to when:

- 1) the water supply meets the requirements of Annex B;
- and
- 2) **washed fish are free of** excess slime, blood, remnants of viscera, ice and extraneous materials.

SMOKED " FISH PROCESSING

SECTION 9: . FREEZING AND FROZEN STORAGE .

GMP 9.1: FREEZING

**THIS IS A CRITICAL CONTROL POINT
THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE**

Fish shall be rapidly frozen to a minimum core temperature of -21°C (-6°F).

REASON If fish is not rapidly frozen, there will quality degradation.

COMPLIANCE

This Section will will adhered to when:

- 1- freezing facilities for fish are capable of reducing the temperature at the center of a 25 mm (1 inch) thick **block** of **unpackaged fillets** to -21°C (-6°F) in two hours or less;

and"

- 2- blast freezers shall be able to freeze fish by means of air at a **temperature** of -30°C (-22°F) or **colder** using air moving at a velocity of not less than 2 **meters per second** or 400 feet per minute;

and

SMOKED " FISH PROCESSING

SECTION 9: FREEZING AND FROZEN STORAGE
CONTINUED

GMP 9.1: FREEZING CONTINUED

**THIS IS A CRITICAL CONTROL POINT
THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE**

COMPLIANCE CONTINUED

3) all fish remain in freezing facilities until the temperature at the center of the thickest section of the fish is -21°C (-6°F) or colder;

and

4) fish are frozen individually, or in blocks no greater than eight centimeters thick, and so arranged to prevent physical distortion of the body;

and

5) where blast freezers are used, the design of fish holding racks and their arrangement provides the circulation of cold air throughout the room and around each layer of fish;

and

SMOKED FISH PROCESSING

SECTION 9: FREEZING AND FROZEN STORAGE
CONTINUED

GMP 9.1: FREEZING CONTINUED

THIS IS A CRITICAL CONTROL POINT
THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

COMPLIANCE CONTINUED

- 6) the frozen storage meets the requirements of Annex D.

SMOKED FISH PROCESSING

SECTION 9: FREEZING AND FROZEN STORAGE
CONTINUED

GMP 9.2: FROZEN STORAGE

Frozen fish received for frozen storage, and fish held in frozen storage shall be protected from dehydration and oxidation and shall be held at -26°C (-15°F).

REASON Frozen fish that are not adequately protected from dehydration and oxidation will develop freezer bum and rancidity. Fish with freezer burn will not effectively take on a glaze for further storage protection. A minimum temperature of -26°C (-15°F) is required to minimize quality deterioration.

COMPLIANCE

This Section will be adhered to when:

- 1) fish received for frozen storage and fish held in frozen storage are completely covered and maintained with a glaze, or otherwise protected with an approved wrapping which provides an oxygen and moisture barrier;

and

- 2) the glaze is prepared using water meeting the requirements of Annex B;

and

- 3) frozen storages meet the requirements of Annex D.

SMOKED FISH PROCESSING

SECTION 10: PREPARATION FOR SMOKING

GMP 10.1: THAWING, SORTING, CULLING AND PREPARATION FOR SMOKING

THIS IS A CRITICAL CONTROL POINT
THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

Frozen fish to be used immediately for further processing shall be uniformly thawed to a temperature not to exceed 4°C (39°F) in air or water that does not exceed 21°C (70°F). Water used for thawing shall meet the requirements of Annex B. Recycling of thaw water shall not be used except in automated systems equipped with filters and only when the water is changed every two hours. During sorting, culling and filleting (or boning or portioning) the fish shall be kept at 4°C (39°F) or colder.

REASON The fish must be kept at 4°C (39°F) or colder at all times to minimize the growth of bacteria of concern. Recycling without filtration will result in increased bacterial loads.

COMPLIANCE

This section will be adhered to when:

fish are thawed:

- a) in & rata maximum temperature of 21°C (70°F) and precautions are taken to minimize surface drying;

or.

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SMOKED FISH PROCESSING

SECTION 10: PREPARATION FOR SMOKING CONTINUED

GMP 10.1: THAWING, SORTING, CULLING AND PREPARATION FOR SMOKING CONTINUED

**THIS IS A CRITICAL CONTROL POINT
THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE**

b in **running** water meeting the requirements of Annex B and the water does not exceed 2 °C (36 °F);

and

2- once thawed the fish flesh is maintained at 4°C (39°F) or colder before entering the smoking process;

and

3- the thawed fish proceeds immediately to further processing or are refrigerated to maintain a temperature of 4°C (39°F) or colder using refrigerated storages meeting the requirements of Annex C;

and

SMOKED . FISH PROCESSING

SECTION 10: PREPARATION FOR SMOKING CONTINUED

GMP 10.1: THAWING, SORTING, CULLING AND PREPARATION FOR SMOKING CONTINUED

**THIS IS A CRITICAL CONTROL POINT
THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE**

COMPLIANCE CONTINUED

4- fish not meeting the requirements of the DFO standard for that species are culled and the culls removed immediately to the waste disposal area;

and

5- fish are properly sorted by species and size;

and

6- all visible parasites are removed;

and

SMOKED FISH PROCESSING

SECTION 10: PREPARATION FOR SMOKING CONTINUED

GMP 10.1: THAWING, SORTING, CULLING AND PREPARATION FOR SMOKING CONTINUED

THIS IS A CRITICAL CONTROL POINT
THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

COMPLIANCE CONTINUED.

7- the product is washed using water meeting the requirements of Annex B and all undesirable fish pieces are removed;

and

8- recycling of water is used only in automatic systems equipped with filters and the water is changed at least every two hours.

SMOKED FISH PROCESSING

SECTION 11: BY-PRODUCTS

GMP 11.1: BY-PRODUCTS

Any fish by-product, reclaimed from previous operations shall be packaged and refrigerated or frozen within two hours and stored in refrigerated or, frozen storages meeting the requirements of Annexes C or D.

REASON By-products are suitable for use in the preparation of other products but must be protected by packaging and chilling or freezing to preserve the quality.

COMPLIANCE

This section will be adhered to when:

- 1- all reclaimed fish is processed within two hours of collection;

or

- 2- all reclaimed fish flesh is packaged and refrigerated or frozen within two hours of collection;

and

- 2- the packaged by-products are stored in refrigerated or frozen stored meeting the requirements of Annexes C or D.

SMOKED FISH PROCESSING

SECTION 12: BRINING, DRY SALTING, DRYING, SMOKING AND COOLING

GMP 12.1: BRINING

THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

Brining shall be carried out using a brine prepared from water meeting the requirements of Annex B. The brine shall be used on the day of preparation, shall be maintained at 4°C (39°F) or colder. Fish shall be completely immersed in the brine and the temperature of the fish shall not be allowed to exceed 4°C (39°F) during this operation. Recycling of brine shall not be allowed.

REASON Bacterial contamination and growth will be minimized in brine prepared in this manner. Complete immersion of the fish in brine will promote uniform salt absorption.

COMPLIANCE

. This section will be adhered to when:

1-the brine is prepared using water meeting the requirements of Annex A;

and

2-the. brine temperature is kept at 4°C (39°F) or colder;

and

GOOD MANUFACTURING PRACTICES

SMOKED FISH PROCESSING

SECTION 12: -BRINING, 'DRY SALTING, DRYING, SMOKING
AND COOLING CONTINUED

GMP 12.1: BRINING CONTINUED

THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

COMPLIANCE CONTINUED

3- the brine is used on the day it is prepared;

and

4- the brine is not used for more than one treatment of fish;

and

5- records are kept of the brine preparation including time of preparation and the time that the brine batch was used "up;

and

6- the fish shall be ~~be~~ immersed and periodically agitated in the brine;

and

7- the temperature of the fish shall be kept at 4°C (39°F) or colder during the brining operation:

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SMOKED FISH " PROCESSING

SECTION 12: BRINING, DRY SALTING, DRYING, SMOKING " AND COOLING CONTINUED

GMP 12.2: DRY SALTING

THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

Dry salting of fish shall be carried out in a uniform manner and the extracted moisture continuously removed from the product and the temperature shall not exceed 4°C (39°F) during this step of the process.

REASON Uniform salt penetration is required to obtain an acceptable product and the temperature of the product has to be maintained at 4°C (39°F) or colder to minimize bacterial growth.

COMPLIANCE

This section will be satisfied when:

- 1- the fish is dry salted by either sprinkling or by immersion to achieve uniform salt adsorption;

and

- 2- the fish temperature remains at 4°C (39°F) or colder during this process;

and

- 3- the moisture extracted is removed from the product on a continuous basis.

SMOKED FISH PROCESSING

SECTION 12: BRINING, DRY SALTING, DRYING, SMOKING AND COOLING CONTINUED

GMP 12.3: RINSING

THIS OPERATION IS 'CARRIED OUT IN A SANITARY ZONE'

AU fish which has been brined or dry salted shall be, rinsed with water meeting the requirements of Annex B. Fish shall be kept at a temperature of 4°C (39°F) or colder.

REASON: Rinsing removes **blood**, dissolved protein and excess salt from the surface of the fish as well as most of the surface bacteria Using water at a temperature so that the fish flesh is kept at 4°C" (39°F) or colder that meets the requirements of Annex B will minimize the possibility of **bacterial** contamination and growth.

COMPLIANCE

This section will be adhered to when:

- 1- the water used meets the requirements of Annex B;
- a n d
- 2.- the temperature of the water used is such that the temperature of the fish is kept at 4°C (39°F) or colder;
- a n d
- 3- **blood**, dissolved protein, and excess salt is removed from the surface of the fish.

SMOKED FISH PROCESSING

SECTION 12: BRINING, DRY SALTING, DRYING, SMOKING AND COOLING'

GMP 12.4: DRYING

THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

Drying of brined, dry salted or rinsed fish shall be carried out in a controlled atmosphere.

REASON Where it is necessary prior to the smoking process to remove surface moisture, a controlled atmosphere will reduce the possibility of contamination of the product and minimize quality degradation.

C O M P L I A N C E

This section will be adhered to when:

- 1- the air temperature does not exceed 28°C (82°F);
- and.
- 2- the relative humidity of the air is reduced to 70% or less during the drying operation.

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SMOKED FISH PROCESSING

SECTION 12: BRINING, DRY SALTING, DRYING, SMOKING AND COOLING CONTINUED -

GMP 12.5: SMOKING

THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

Smoking equipment shall be constructed so that air and product temperature and the relative humidity of the air can be controlled, monitored and recorded and designed so as to not contaminate the product being smoked.

REASON, It is necessary to be able to control air and product temperature as well as air humidity to obtain the desired quality. In the case of hot smoked product careful control of the temperature is required to produce a safe shelf stable product and to ensure that hot smoked products are subjected to the heat required. Improperly designed smokers can result in the contamination of the product with carbonaceous material.

COMPLIANCE

This section will be adhered to when:

- 1- the generated smoke is filtered to remove carbonized particles before coming in contact with the product;
- and

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SMOKED FISH PROCESSING

SECTION 12: BRINING, DRY SALTING, DRYING, SMOKING
AND COOLING CONTINUED

GMP 12.5: SMOKING CONTINUED

THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

COMPLIANCE CONTINUED

2- the temperature sensing device is so located as to measure the average temperature of the **smoke/air** mixture and connected to a gauge located prominently on the outside of the smoker and preferably connected to a high temperature alarm;

and

3- the temperature control system should be capable of controlling the temperature to within $\pm 5^{\circ}\text{C}$ ($\pm 9^{\circ}\text{F}$);

and

4- the equipment has a reliable means of controlling the relative humidity in the smoker;

and

SMOKED FISH PROCESSING

SECTION 12: BRINING, DRY SALTING, DRYING, SMOKING AND COOLING CONTINUED

GMP 12.5: SMOKING CONTINUED

THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

COMPLIANCE CONTINUED

- 5- recording devices are available to record both air/ smoke and product temperature;

and

- 6- hot smoked products are heated to a centre temperature of at least 80°C (176°F);

and

- 8- records are kept of each load of fish smoked specifying the date, the process used and the temperatures attained.

SMOKED FISH PROCESSING

SECTION 12: BRINING, DRY SALTING, DRYING, SMOKING
ANI) COOLING CONTINUED

GMP 12.6: COOLING

THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

The product shall be cooled immediately after smoking to a temperature of 4°C (39°F) or colder.

REASON: This is necessary to prevent further bacterial growth and to maintain the quality of the product.

COMPLIANCE

This section will be adhered to when:

- 1- the product is cooled to 10°C (50°F) in three hours or less and then to 4°C (39°F) in five hours or less and maintained at this temperature in a refrigerated storage meeting the requirements of Annex C or frozen and kept in a frozen storage meeting the requirements of Annex D.

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SMOKED FISH PROCESSING

SECTION 13: TEMPERING, GRADING, TRIMMING AND SLICING

GMP 13.1: TEMPERING, GRADING, TRIMMING AND SLICING

THIS IS A CRITICAL CONTROL POINT
THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

Tempering, grading, trimming and slicing of smoked products shall be carried out as quickly as possible and the product temperature shall be kept at 4°C (39°F) or colder.

REASON Tempering of cold smoked and frozen products is required to facilitate slicing and maintaining the product at 4°C (39°F) or colder is required to minimize the growth of bacteria of concern..

COMPLIANCE

This section will be adhered to when:

- 1- the product temperature does not exceed 4°C (39°F) during the grading, trimming and slicing processes;

and

- 2- the grading, trimming and slicing processes are carried out promptly and the accumulated trim waste and product residues are removed at least every two hours to the waste disposal area.

SMOKED FISH PROCESSING

SECTION 14: PACKAGING :

GMP 14.1: PACKAGING

THIS OPERATION IS CARRIED OUT IN A SANITIZED ZONE :

Packaging of smoked fish products shall be carried out in such a way that the product is packaged within one hour, is maintained at a temperature of 4°C (39°F) or colder and is frozen at one stage during the process, i.e. either processed using frozen fish or frozen after processing.

REASON To prevent quality deterioration, to minimize the growth of bacteria of concern and to kill any parasites present in the product.

“COMPLIANCE

This section will be adhered to when:

1- culled and defective product if separated from product to be packaged and immediately removed to the waste disposal area;

and

2- is kept at a temperature of 4°C (39°F) or colder;

a n d

SECTION 14: PACKAGING

CONTINUED

GMP 14.1:

PACKAGING

CONTINUED

COMPLIANCE

CONTINUED

THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

3- the area or zone in which the packaging takes place is maintained according to the requirements of Annex A for a sanitary zone;

and

4- and is frozen at some stage during its preparation, i.e.:

a- is processed using frozen fish;

or

b- is frozen at some stage during the process;

or

"c" is frozen after packaging;

5- the product is immediately chilled or frozen after packaging and prior to going into storage.

SMOKE '... - ' FISH PROCESSING

SECTION 15: 'STORAGE AND DISTRIBUTION

GMP 15.1: STORAGE AND DISTRIBUTION

THIS OPERATION IS CARRIED OUT IN A SANITARY ZONE

Frozen and unfrozen packaged product shall be transferred to storage and distributed in such a manner as to minimize temperature increases.

REASON": The temperature of the unfrozen product is kept at 4°C (39°F) or colder and the temperature increase of frozen product is kept ... to less than 5°C (9°F) to prevent quality deterioration.

COMPLIANCE:

This GMP will be adhered to when:

1- the unfrozen product is kept at 4°C (39°F) or colder and the unfrozen products does not increase by more than 5°C (9°F) between packaging and frozen or refrigerated storage;

and

2- the refrigerated storage is operated according to the requirements of Annex C;

and

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SMOKED FISH PROCESSING

SECTION 15: STORAGE AND DISTRIBUTION

CONTINUED

GMP 15.1: STORAGE AND DISTRIBUTION CONTINUED

COMPLIANCE CONTINUED

- 3- the frozen storage is operated according to the requirements of Annex D;
and
- 4- the refrigerated product temperature is kept at 4°C (39°F) or colder;
a n d
- 5 - .s. the frozen product temperature is maintained at -26°C (-15°F) or colder.

↑
How long will the quality of the product hold at this temperature?

GOOD MANUFACTURING PRACTICES

SMOKED FISH PROCESSING

INTRODUCTION

ANNEXES

The criteria outlined in these annexes do not replace the requirements of the **Fish Inspection Regulations (FIR)**. They are rather special requirements needed to:

- 1- reduce bacterial loads on incoming fish;

a n d

- 2- minimize bacterial growth during processing;

and

- 3- prevent the contamination of in process and finished goods.

These criteria are especially important in the production of ready to eat fish and fish products, i.e. fish and fish products which do not require cooking prior to consumption.

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SMOKED FISH PROCESSING

ANNEX A: SANITARY-ZONE(S) CONTINUED

A.1.1: CONSTRUCTION OF EQUIPMENT AND ZONES

All equipment coming into contact with fish, packaging materials, raw materials and ice shall be built of non-corrodible materials excluding all wood and shall be designed for easy maintenance and sanitation. Personnel entrances to sanitary zones shall be equipped with foot baths. Equipment used for the transportation of goods and materials in the sanitary zone shall not be used outside of the sanitary zones. Production lines shall be designed as continuous processing units arranged so that fish moves uniformly fast through the line. Each step in the processing line shall be large enough to handle the maximum production load encountered.

The plant shall be so ventilated as to prevent air transfer into the sanitized zone(s) and drains shall be so constructed as to prevent air back up into sanitized zone(s). Cooking equipment shall be located in a separate zone, area or room for that purpose only or the zone or area in which it is located shall be equipped with an exhaust system to remove excessive steam in such a manner as to draw air from areas inside of the sanitized zone(s) or from an exterior source as appropriate.

SMOKED FISH PROCESSING

ANNEX A: SANITARY ZONE(S) CONTINUED

A.1.1 CONSTRUCTION OF EQUIPMENT AND ZONES CONTINUED

REASON Corrodible materials on equipment, such as rusty screws, can harbour bacteria of public health significance and protect them from sanitizers and disinfectants. Wood is also a very good surface for harboring bacteria.

Floors are a good source of possible contamination by bacteria of public health significance and foot baths at each entrance will minimize the transfer of such organisms.

The time taken to process a product must be minimized to prevent excessive growth of bacteria.

Proper ventilation of areas adjacent to the sanitary zone(s) prevents the migration of bacteria from other processing areas by means of air currents.

Exhausting steam from cooking areas will prevent the development of condensation on walls and ceilings which could lead to the contamination of products.

SMOKED FISH PROCESSING

ANNEX A: SANITARY ZONE(S) CONTINUED .

A.1.1: CONSTRUCTION OF EQUIPMENT AND ZONES
CONTINUED

C O M P L I A N C E :

This section will be adhered to when:

- 1- all equipment coming in contact with fish, packaging materials, raw materials and ice is **built** of noncorrodible material, excluding **all** wood;

and

- 2- all entrances are equipped with foot baths so that personnel cannot enter without passing through the foot baths;

and

- 3- all equipment is designed and **installed** in such a manner as to be easily maintained and cleaned;

and

SMOKED FISH PROCESSING

1. ANNEX A: SANITARY ZONE(S) CONTINUED “

A.1.1: CONSTRUCTION OF EQUIPMENT AND ZONES
CONTINUED

COMPLIANCE C O N T I N U E D

4- all production lines are so designed that the equipment can
“handle all of the products being fed. into the system without
undue delay; “

and

5- the plant is ventilated so that no air can enter the sanitized zone
from other areas of the plant which are of concern

and

6- there is no condensation on the walls or ceilings of the sanitary
zone(s).

SMOKED FISH PROCESSING

ANNEX A: SANITARY ZONE(S) CONTINUED

GMP A.1.2: EQUIPMENT AND ZONE SANITATION

All equipment and sanitary zones shall be cleaned and sanitized on a regular basis.

REASON: Some bacteria, especially those which are of concern in ready to eat foods, can survive and in fact grow at temperatures as low as 4 °C (39°F). The use of disinfectants and sanitizers will reduce the presence of viable organisms to acceptable levels.

COMPLIANCE

This section will be adhered to when:

- 1 - all equipment is cleaned using a cleaning compound designed for the removal of proteinaceous material, thoroughly rinsed and sanitized;

and

- 2- effective sanitizers are used at the recommended concentrations;

and

SMOKED FISH PROCESSING

ANNEX A: SANITARY ZONE(S) ,,, CONTINUED)

A.1 .2: EQUIPMENT AND ZONE SANITATION
CONTINUED

COMPLIANCE CONTINUED

3- the cleaners and sanitizers are used according to- supplier instructions;

and

4- the sanitary zones are sanitized in such a manner that all areas surrounding equipment, including under the equipment, are reached and all equipment that has been sanitized or equipment located in rooms that have had a sanitizing mist applied are thoroughly rinsed prior to use;

and

5- high pressure cleaning systems are used in such a manner as to not cause splash or contaminate equipment that has already been cleaned and sanitized;

and

SMOKED FISH PROCESSING

ANNEX A: SANITARY' ZONE(S) CONTINUED

A.1.2: EQUIPMENT AND ZONE SANITATION
CONTINUED

COMPLIANCE CONTINUED

- 6- equipment is cleaned at least once per shift and frequently enough that build-ups of materials on the equipment are not allowed to occur:

and
- 7- sanitary zones are cleaned at the end of every day;

- and
- 8- drains in a sanitary zones are cleaned at least once every day in a manner so as to not contaminate the plant and equipment (for example: hand cleaning and flushing with sanitizing solutions).

SMOKED FISH PROCESSING

ANNEX A: SANITARY ZONE(S) CONTINUED,

A.2.1: PERSONNEL HYGIENE

All personnel entering the sanitary zone(s) shall wear footwear suitable for immersion in foot baths and clean, washable and sanitizable outerwear apparel and headgear, "shall maintain themselves in a clean and sanitary manner and shall not be infected with any communicable diseases.

REASON: Humans can be sources of contamination by bacteria of public health significance either directly or through wearing dirty or unsanitary wear apparel.

COMPLIANCE .

This section will be adhered to when:

- 1) **clean** outer work **clothing** including coveralls, smocks, or coats and effective hair restraints are worn by employees working in the sanitary zone, and the wear apparel **shall** be:
 - a) functional to the operation the employee is engaged in, and **easily cleaned** and sanitized;and

SMOKEFISH PROCESSING

ANNEX A: SANITARY ZONE(S) CONTINUED

A.2.1: PERSONNEL HYGIENE CONTINUED

COMPLIANCE CONTINUED

b) worn at all times by employees when engaged in the **sanitary zone**;

and

c) worn only in the **sanitary zone** and change rooms provided and shall not be worn inside toilet areas or removed from the **sanitary zone(s)** and change area except for laundering;

and

2) waterproof aprons **shall** be cleaned at each work break, at the end of each work shift or **working** day, or more frequently if necessary;"

and

3 every **working** in the sanitary zone(s) washes his hands under warm water meeting **the** requirements of Annex B using a suitable hand cleaner and dips his hands using a suitable hand dip, prior to commencing work, after each absence from duty and after using toilet facilities;

and

*E

GOOD MANUFACTURING PRACTICES

SMOKED FISH PROCESSING

ANNEX A: SANITARY ZONE(S) CONTINUED

A.2.1: PERSONNEL HYGIENE CONTINUED

COMPLIANCE CONTINUED:

- 4) notices **are prominently** displayed regarding hand washing and sanitizing requirements.

a n d ,

- 5) the company has an adequate training **programme** to ensure that employees are fully familiar with all personal hygiene requirements;

and

- 6) employees taking special precautions (see item 4), for lesions or wounds are not allowed to discontinue these precautions until the wounds or lesions are cured.

SMOKED FISH PROCESSING

ANNEX A: SANITARY ZONE(S) CONTINUED.

A.3.1: CROSS CONTAMINATION - MATERIALS

Outer wrappers for packaging materials and ingredients shall be cleaned or removed immediately prior to transporting these goods into the sanitized zone.

REASON Outer wrappers are a possible source of contamination of goods in the sanitized zone. As the goods in the sanitized zone(s) cannot be usually subjected to any further processing which will reduce bacterial loads, every precaution must be taken to prevent the introduction of bacteria of public health significance.

COMPLIANCE:

This section will be adhered to when:

- 1- outer wrappers are cleaned or removed from packaging materials and ingredients immediately prior to entry into the sanitized zone(s).

SMOKED . . . FISH “ PROCESSING

ANNEX A: SANITARY -ZONE(S) CONTINUED

A.3.2: CROSS CONTAMINATION - EQUIPMENT

No processing, handling or transport equipment, from outside the sanitized zone(s) shall be allowed to enter the sanitized zone(s) and any equipment removed from the sanitized zone(s) shall be sanitized prior to being returned to the sanitized zone(s).

REASON: Equipment located, used in or transported through zones other than the sanitized zone(s) are possible” sources of contamination with bacteria of concern.

COMPLIANCE:

This section will be adhered to when:

- 1- goods are transferred into the sanitized zone(s) in such a manner that equipment from outside the sanitized zone(s) does not enter the sanitized zone(s) unless it has been cleaned and sanitized;

and

SMOKED FISH PROCESSING

ANNEX A: SANITARY ZONE(S) CONTINUED

A3.2: CROSS CONTAMINATION - EQUIPMENT
CONTINUED

COMPLIANCE CONTINUED

- 2- equipment removed from the sanitized zone(s) is thoroughly cleaned and sanitized **prior to** being transferred back into the sanitized zone(s) or **alternatively** the sanitized zone and the equipment in it are all thoroughly cleaned and sanitized after bringing equipment back into the sanitized zone(s).

SMOKED FISH PROCESSING

ANNEX A: SANITARY ZONE(S) CONTINUED ""

A.3.3: CROSS CONTAMINATION - PERSONNEL

Personnel including all employees, visitors, service people or government employees shall not enter the sanitized zone(s) without taking the necessary precautions and wearing proper apparel.

REASON: Unless precautions are taken, personnel entering the sanitized zone(s) will contaminate the zone with bacteria of public health significance.

COMPLIANCE:

This section will be adhered to when:

- 1- all personnel, whether employed by the company or not, wear acceptable footwear and other wear apparel as outlined in A.2.1, prior to each entry into a sanitized zone;

and

- 2- all personnel entering a sanitized zone do so by walking through the footbath provided;

and

-W SMOKED FISH PROCESSING

ANNEX A: SANITARY ZONE(S) CONTINUED

A.3.3 CROSS CONTAMINATION - PERSONNEL CONTINUED

COMPLIANCE CONTINUED

- 3- all personnel entering the sanitized zone(s) wash their hands thoroughly and rinse them in the hand dips provided;

and

- 4- the hand dips are provided at the start of each shift or more often if required;

and

- 5- the hand dips are prepared according to the supplier's instructions;

and

- 6- Notices are prominently displayed regarding hand washing and sanitizing requirements.

SMOKED FISH PROCESSING

ANNEX B - WATER REQUIREMENTS

B.1.1 WATER REQUIREMENTS

Water shall be treated to reduce bacteria of concern to an acceptable level.

REASON: Bacteria of concern must not be introduced onto an edible product through the waters used in the process

COMPLIANCE:

This section will be adhered to when:

1- the water has a **coliform** bacteria count of *no* more than 2 per 100-millilitres as determined by DFO Standard Procedures for Bacteriological Analysis for water;

and

2- the water has a residual chlorine level of 2 ppm or an equivalent level of another permitted water treating agent;

and

3- the water has been treated by chlorine or equivalent system equipped with an alarm or a fail safe device that shuts off the water supply when water treatment to the fish processing area(s) of the plant is interrupted.

GOOD MANUFACTURING PRACTICES'
SMOKED FISH PROCESSING

ANNEX B - WATER REQUIREMENTS CONTINUED

B.1 ..2: WATER INSTALLATIONS

Water systems shall be installed so as to preclude the possibility of contamination after treatment.

REASON: Improperly installed systems can result in the contamination of treated water by water containing bacteria of public health significance.

COMPLIANCE:

This section will be adhered to when:

1- all hoses, taps, cross connections or similar sources of possible contamination are equipped with anti-back flow devices;

and

2- the system does not contain any cross connections to non-acceptable water supplies such as those used for fire protection, boiler feed water or other auxiliary uses;

and

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ANNEX B - WATER REQUIREMENTS CONTINUED

B.1.2: WATER INSTALLATIONS CONTINUED

COMPLIANCE CONTINUED

3- all non acceptable water supplies as discussed in 2-above are "clearly marked by name and function, such as 'boiler water", to ". . prevent the possibility of cross connection;

and

4- water recycling is not used except with an automatic system and only when equipped with filters and when the water. is changed at least every two hours;

and

5- the water pressure is a minimum of 1.4 kg/cm² (20 psi) when the system is in full operation. "

SMOKED FISH PROCESSING

ANNEX C: REFRIGERATED STORAGE

C.1.1 : REFRIGERATED STORAGE ROOMS

what about raw product

The refrigerated storage shall be kept at a temperature sufficient to maintain unfrozen lobster at a temperature of 0 to 2°C (32 to 36°F). The refrigerated storage shall be equipped with an accurate thermometer or temperature measuring device. Temperature readings shall be taken daily and recorded in a suitable log book or a temperature recorder used. The log book or the charts from the recorder, suitably marked to identify the storage room and the date, shall be kept for at least one year.

REASON: Fish shall be kept cool, at a temperature of 0 to 2°C (32 to 36 F), to minimize bacterial growth and to maintain quality. Records of storage shall be kept to ensure that the necessary conditions have been maintained.

COMPLIANCE:

This section will be adhered to when:

- 1- the product in the refrigerated storage is kept at a temperature of 0 to 2°C (32 to 36°F) at all times;

and

- 2 - the refrigerated storage room is equipped with an accurate thermometer or temperature recording device;

and

SMOKED FISH PROCESSING

REFRIGERATED STORAGE CONTINUED

C.1.1 REFRIGERATED STORAGE ROOMS CONTINUED

COMPLIANCE CONTINUED

3- records of temperature readings are kept. in a suitable log book or the charts from the recorder are suitably marked to identify the storage room and the date; ...

and

4- the log book or the charts are maintained on file for a minimum of one year.

SMOKED FISH PROCESSING

ANNEX C: REFRIGERATED STORAGE CONTINUED

C.1.2 STORAGE OF CONTAINERS “

Containers shall be stacked on pallets in such a way as to provide for air circulation between and around the containers. Pallets or totes shall be located in the refrigerated storage so as to provide for good air circulation between and around each pallet or tote.

REASON: When containers are packed tightly together and pallets full of stacked containers, or totes, are stacked tightly together, the outer layer of containers on the pallets and the outer stacks of pallets, or totes, act as insulators and the products in the center may not be brought down to the desired temperature of 0 to 2°C (32 to 36°F).

COMPL ANCE:

This section will be adhered to when:

- 1- containers are stacked on the pallets at least 1 cm apart;
and
- 2- pallets or totes are located at least 10 cm from the wall and 5 cm apart to provide for good air circulation.

SMOKED FISH PROCESSING

ANNEX C: REFRIGERATED STORAGE CONTINUED

C.1 ..3 CROSS CONTAMINATION AND SANITATION

The refrigerated storage shall not be used to store in process fish and fish for processing at the same time unless the fish for processing is protectively packaged to prevent contamination. The refrigerated storage shall be cleaned and sanitized before it is used for in process goods and whenever the refrigerated storage is empty and at "least once per week.

REASON: The-storage of unprocessed fish within process fish could result in the contamination of the in process fish with bacteria of concern. As some of the bacteria of concern can grow at temperatures as low as 4°C (39°F), it is important to keep the refrigerated storage rooms clean and sanitized.

COMPLIANCE:

This section will be adhered to when:

- 1- unpackaged in process and unprocessed fish are not found in the refrigerated storage at the same time; . .

and

- 2- the refrigerated storage is cleaned and sanitized before introducing in process fish;

and

- 3- the refrigerated storage is cleaned and sanitized whenever empty and at least once per week.

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SMOKED FISH PROCESSING

ANNEX D: FROZEN STORAGE

D.1.1 " FROZEN STORAGE ROOMS

The frozen storage shall be kept at a temperature of **-26°C (-15°F)** or colder. The frozen storage shall be equipped with an accurate thermometer or temperature measuring device. Temperature readings shall be taken daily and recorded in a suitable log book or a temperature recorder used. The log book or the **charts** from the recorder, suitably marked to identify the storage room and the date, shall be kept for at least three years..

REASON: A temperature of **-26°C (-15°F)** or colder is required to maintain the quality of frozen fish. Records of storage **shall be kept** to ensure that the necessary conditions have been maintained.

COMPLIANCE:

This section will be adhered to when:

- 1- the frozen storage is kept at a temperature of **-26°C (-15°F)** or colder at **all** times.

and

- 2- the frozen storage is equipped with an accurate thermometer or temperature recording device;

and

S M O K E D " F I S H P R O C E S S I N G

ANNEX D : FROZEN STORAGE S CONTINUED .

D.1 .1 FROZEN STORAGE ROOMS CONTINUED "

COMPLIANCE CONTINUED

3- records of temperature readings are kept in a suitable log book or the charts from the recorder are suitably marked to identify the storage room and the date;

and

4- the log book or the charts are maintained on file for at least three years.

SMOKED FISH PROCESSING

ANNEX D : FROZEN STORAGE CONTINUED .

D.1 .2 STORAGE OF CONTAINERS,

Containers shall be stacked on pallets in such a way as to provide for air circulation between and around the containers. Pallets shall be located in the frozen storage so as to provide for good air circulation between and around each pallet.

REASON: When containers are packed tightly together and pallets full of stacked containers are stacked tightly together, the outer layer of containers on the pallets and the outer stacks of pallets act as insulators and the products in the center may not be kept at the desired temperature of -26°C (-15°F).

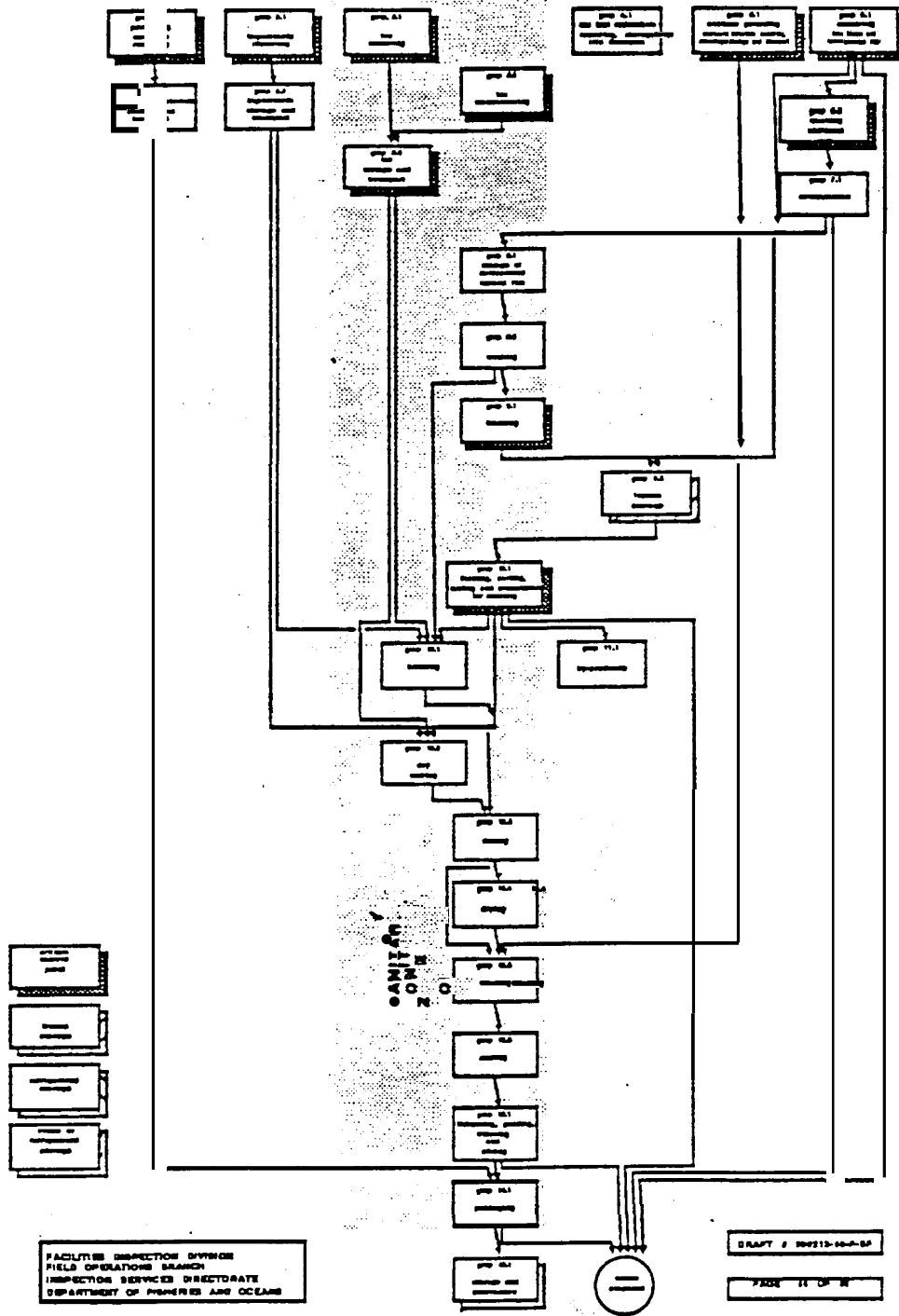
COMPLIANCE:

This section will be adhered to when:

- 1- containers are stacked on the pallets at least 1 cm apart:
and
- 2- " pallets are located at least 10 cm from the wall and 5 cm apart to provide for good air circulation.

GOOD MANUFACTURING PRACTICES

SMOKED FISH PROCESSING



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