

**CODE OF HYGIENIC PRACTICE FOR THE PROCESSING OF FROG LEGS**  
**CAC/RCP 30-1983**

1. **SECTION I - SCOPE**

This Code of Hygienic Practice applies to frog legs derived from edible frogs. It contains the minimum requirements of hygiene in the production, processing, handling, packing, storage, transportation and distribution of frog legs to ensure a healthful and wholesome supply of this product.

2. **SECTION II - DEFINITIONS**

For the purposes of this Code the following expressions have the meaning stated:

2.1 **Chilling** means the process of cooling to a temperature approaching that of melting ice;

2.2 **Contamination** means occurrence of any objectionable matter in the product.

2.3 **Disinfection** means the reduction, without adversely affecting the food, by means of hygienically satisfactory chemical agents and/or physical methods, of the number of microorganisms to a level that will not lead to harmful contamination of food.

2.4 **Establishment** means any building(s) or area(s) in which food is handled after harvesting and the surroundings under the control of the same management.

2.5 **Fresh frog legs** means the skinless hind legs of freshly killed frogs.

3. **SECTION III - HYGIENE REQUIREMENTS IN PRODUCTION/HARVESTING AREA**

3.1 **Environmental Hygiene in Areas from which Frog Legs are Obtained**

3.1.1 **Protection from contamination by wastes.** Frogs should be protected in so far as practicable from contamination with human, animal, domestic, industrial and agricultural wastes and adequate precautions should be taken to ensure that these wastes are not used or disposed of in a manner which may constitute a health hazard through the food.

3.1.2 **Pest and disease control.** Control measures involving treatment with chemical, physical or biological agents should only be undertaken by or under direct supervision of personnel who have a thorough understanding of the potential hazards to health, particularly those which may arise from residues in the food. Such measures should only be carried out in accordance with the recommendations of the official agency having jurisdiction.

3.1.3 **Harvest areas.** The environment where frogs are caught or collected should be protected in so far as practicable against contamination which may constitute a health hazard to the consumer through the product.

## 3.2 Harvesting and Production

### 3.2.1 Techniques

3.2.1.1 Methods and procedures associated with harvesting and production should be hygienic and such as not to constitute a potential health hazard or result in contamination of the product.

3.2.1.2 To prevent deterioration in the quality of frog legs, it is essential that steps should be taken to prevent the live frogs from:

- (i) injury or bruising of the flesh during catching, for example, from use of unsuitable equipment;
- (ii) contamination with dirt or any other extraneous matter;
- (iii) exposure to unfavourable temperatures; and
- (iv) rough handling, such as improper stacking of containers.

3.2.1.3 Harvesting should be carried out under conditions of minimal stress, such as proper fill to avoid overloading containers.

3.2.2 **Equipment and product containers.** Equipment and containers used for harvesting should be so constructed and maintained as not to constitute a hazard to health. Containers which are re-used should be of such material and construction as will permit easy and thorough cleaning. They should be maintained clean and, where necessary, disinfected. Containers used for toxic materials should not subsequently be used for holding foods or food ingredients.

3.2.3 **Removal of obviously unfit raw materials.** Unfit frogs, for example those less active, that are injured or have blood clots or parasites in the flesh, should be segregated during collection to the fullest extent practicable prior to delivery to the processing plant. Similarly, on arrival, unfit frogs should be removed as soon as possible and segregated for disposal in an appropriate manner. Arrangements for removal and segregation should be approved by the official agency having jurisdiction.

3.2.4 **Protection against contamination and damage.** Suitable precautions should be taken to protect the frogs from being contaminated by animals, insects, vermin, birds, chemicals or microbiological contaminants or other objectionable substances during handling and storage.

3.3 **Storage at the Place of Production/harvesting.** Frogs that are stored alive should be kept alive in a sanitary environment until they are processed. Frogs that die, become weak or appear abnormal in any way should be immediately removed from the live store and discarded.

### 3.4 Transportation

3.4.1 **Conveyances** for transporting the harvested frogs from the production area or place of harvest or storage should be adequate for the purpose intended and should be of such material and construction as will permit easy and thorough cleaning. They should be maintained clean, and where necessary disinfected.

3.4.2 All handling procedure should be such as will prevent raw materials from being contaminated. Care

should be taken keep the frogs alive, to protect against contamination and to minimize damage and stress. Special equipment - such as refrigeration equipment - should be used if distances involved so indicate. If ice is used in contact with the product it should be of the quality required in paragraph 4.4.1.2.

3.5 **Cutting Stations.** In butchering and cutting carried out at collection points or cutting centres away from the main processing plant, facilities and operating practices should comply with all applicable requirements contained in Sections 4, 5, 6 and 7, particularly Sub-Section 7.4.1 involving slaughter, cutting and de-skinning.

#### 4. SECTION IV - ESTABLISHMENT: DESIGN AND FACILITIES

##### 4.1 Location

Establishments should be located in areas which are free from objectionable odours, smoke, dust or other contaminants and are not subject to flooding.

4.2 **Roadways and Areas used by Wheeled Traffic** serving the establishment which are within its boundaries or in its immediate vicinity should have a hard paved surface suitable for wheeled traffic. There should be adequate drainage and provision should be made to allow for cleaning.

##### 4.3 Buildings and Facilities

4.3.1 Buildings and facilities should be of sound construction and maintained in good repair.

4.3.2 Adequate working space should be provided to allow for satisfactory performance of all operations.

4.3.3 The design should be such as to permit easy and adequate cleaning and to facilitate proper supervision of food hygiene.

4.3.4 The buildings and facilities should be designed to prevent the entrance and harbouring of pests and the entry of environmental contaminants such as smoke, dust, etc.

##### 4.3.5 Separation of processes.

Buildings and facilities should be designed to provide separation, by partition, location or other effective means, between those operations which may cause cross-contamination.

4.3.5.1 Any plant producing food not intended for human consumption should be entirely separate from a plant which is processing frog legs for human consumption. Processing of by-products not intended for human consumption should be conducted in separate buildings or in areas which are physically separated to prevent any possible contamination of frog legs.

4.3.6 Buildings and facilities should be designed to facilitate hygienic operations by means of a regulated flow in the process from the arrival of the raw material at the premises to the finished product without overcrowding of equipment and personnel, and should provide for appropriate temperature conditions for the process and the product.

4.3.7 In food handling areas:

**Floors** where appropriate, should be of water-proof, non-absorbent, washable, non-slip and non-toxic

materials, without crevices, and should be easy to clean and disinfect. Where appropriate, floors should slope sufficiently for liquids to drain to trapped outlets.

**Walls** where appropriate, should be of water-proof, non-absorbent, washable and non-toxic materials and should be light-coloured. Up to a height appropriate for the operation, they should be smooth and without crevices, and should be easy to clean and disinfect. Where appropriate angles between walls and floors, and between walls and ceilings should be sealed and covered to facilitate cleaning.

**Ceilings** should be so designed, constructed and finished as to prevent the accumulation of dirt and minimize condensation, mould development and flaking and should be easy to clean.

**Windows** and other openings should be so constructed as to avoid accumulation of dirt and those which open should be fitted with screens. Screens should be easily movable for cleaning and kept in good repair. Internal window sills, if present, should be sloped to prevent use as shelves.

**Doors** should have smooth, non-absorbent surfaces and, where appropriate, be self-closing and close fitting.

**Stairs**, lift cages and auxiliary structures such as platforms, ladders, chutes, should be so situated and constructed as not to cause contamination to food. Chutes should be constructed with inspection and cleaning hatches.

4.3.8 In food handling areas all overhead structures and fittings should be installed in such a manner as to avoid contamination directly or indirectly of food and raw materials by condensation and drip, and should not hamper cleaning operations. They should be insulated where appropriate and be so designed and finished as to prevent the accumulation of dirt and to minimize condensation, mould development and flaking. They should be easy to clean.

4.3.9 Living quarters, toilets and areas where animals are kept should be completely separated from and should not open directly on to food handling areas.

4.3.10 Where appropriate, establishments should be so designed that access can be controlled.

4.3.11 The use of material which cannot be adequately cleaned and disinfected, such as wood, should be avoided unless its use would clearly not be a source of contamination.

4.3.12 Adequate facilities should be available to maintain frog legs in a chilled condition, as required.

4.3.13 Refrigeration and freezing equipment should be properly designed and constructed to accomplish rapid freezing and should be of adequate capacity.

4.3.14 Freezer and cold storage facilities should be adequate for the intended production and should be fitted with automatic temperature controlling and recording devices.

## 4.4 Hygienic Facilities

### 4.4.1 Water supply

4.4.1.1 An ample supply of **potable** water under adequate pressure and of suitable temperature should be

available with adequate facilities for its storage, where necessary, and distribution, and with adequate protection against contamination and pollution. The standards of potability should not be less than those contained in the latest edition of "International Standards of Drinking Water" (WHO).

4.4.1.2 **Ice** should be made from potable water and should be manufactured, handled and stored so as to protect it from contamination.

4.4.1.3 **Steam** used in direct contact with food or food contact surfaces should not contain any substances which may be hazardous to health or may contaminate the food.

4.4.1.4 **Non-potable water** should be carried in completely separate lines, identifiable preferably by colour, and used for steam production, refrigeration, fire control and other similar purposes not connected with food with no cross-connection with or back-siphonage into the system carrying potable water.

4.4.2 **Effluent and waste disposal.** Establishments should have an efficient effluent and waste disposal system which should at all times be maintained in good order and repair. All effluent lines (including sewer systems) should be large enough to carry peak loads and should be so constructed as to avoid contamination of potable water supplies.

4.4.3 **Changing facilities and toilets.** Adequate, suitable and conveniently located changing facilities and toilets should be provided in **all** establishments. Toilets should be so designed as to ensure hygienic removal of waste handled. These areas should be well lit, ventilated and where appropriate heated and should not open directly on to food handling areas. Hand washing facilities with warm or hot and cold water, a suitable hand-cleaning disinfectant and with suitable hygienic means of drying hands, should be provided adjacent to toilets and in such a position that the employee must pass them when returning to the processing area. Where hot and cold water are available mixing taps should be provided. Where paper towels are used, a sufficient number of dispensers and receptacles should be provided near to each washing facility. Taps of a non-hand operable type are desirable. Notices should be posted directing personnel to wash their hands after using the toilet.

4.4.4 **Hand washing facilities in processing areas.** Adequate and conveniently located facilities for hand washing and drying should be provided wherever the process demands. Where appropriate, facilities for hand disinfection should also be provided. Warm or hot and cold water and suitable hand cleaning preparations should be provided. Where hot and cold water are available mixing taps should be provided. There should be suitable hygienic means of drying hands. Where paper towels are used, a sufficient number of dispensers and receptacles should be provided adjacent to each washing facility. Taps of a non-hand operable type are desirable. The facilities should be furnished with properly trapped waste pipes leading to drains.

4.4.5 **Disinfection facilities.** Where appropriate adequate facilities for cleaning and disinfection of working implements and equipment should be provided. These facilities should be constructed of corrosion resistant materials, capable of being easily cleaned, and should be fitted with suitable means of supplying warm and cold water in sufficient quantities.

4.4.6 **Lighting.** Adequate natural or artificial lighting should be provided throughout the establishment. Where appropriate, the lighting should not alter colours and the intensity should not be less than:

540 lux (50 foot candles) at all inspection points

220 lux (20 foot candles) in work rooms

110 lux (10 foot candles) in other areas.

Light bulbs and fixtures suspended over food materials in any stage of production should be of a safety type and protected to prevent contamination of food in case of breakage.

4.4.7 **Ventilation.** Adequate ventilation should be provided to prevent excessive heat, steam condensation and dust and to remove contaminated air. The direction of the air flow should never be from a dirty area to a clean area. Ventilation openings should be provided with a screen or other protecting enclosure of non-corrodible material. Screens should be easily removable for cleaning.

4.4.8 **Facilities for storage of waste and inedible material.** Facilities should be provided for the storage of waste and inedible material prior to removal from the establishment. These facilities should be designed to prevent access to waste or inedible material by pests and to avoid contamination of food, potable water, equipment, buildings or roadways on the premises.

#### 4.5 **Equipment and Utensils**

4.5.1 **Materials.** All equipment and utensils used in food handling areas and which may contact food should be made of material which does not transmit toxic substances, odour or taste, is non-absorbent, is resistant to corrosion and is capable of withstanding repeated cleaning and disinfection. Surfaces should be smooth and free from pits and crevices. The use of wood and other materials which cannot be adequately cleaned and disinfected should be avoided except when their use would clearly not be a source of contamination. The use of different materials in such a way that contact corrosion can occur should be avoided.

#### 4.5.2 **Sanitary design, construction and installation**

4.5.2.1 All equipment and utensils should be so designed and constructed as to prevent hygienic hazards and permit easy and thorough cleaning and disinfection and, where practicable, be visible for inspection. Stationary equipment should be installed in such a manner as to permit easy access and thorough cleaning.

4.5.2.2 **Containers for inedible material and waste** should be leak-proof, constructed of metal or other suitable impervious material which should be easy to clean or disposable and be able to be closed accurately. Such containers, used on the processing line, should be located below the level at which the frog legs are processed and in such a way that there is no splashback on the processing line.

4.5.2 **Equipment identification.** Equipment and utensils used for inedible materials should be so identified and should not be used for edible products.

### 5. **SECTION V - ESTABLISHMENT: HYGIENE REQUIREMENTS**

5.1 **Maintenance.** The buildings, equipment, utensils and all other physical facilities of the establishment, including drains, should be maintained in good repair and in an orderly condition. As far as practicable, rooms should be kept free from steam, vapour and surplus water.

#### 5.2 **Cleaning and Disinfection**

5.2.1 Cleaning and disinfection should meet the requirements of this Code. For further information on cleaning and disinfection procedures see the *General Principles of Food Hygiene* (CAC/RCP-1969).

5.2.2 To prevent contamination of food, all equipment and utensils should be cleaned as frequently as necessary and disinfected whenever circumstances demand. Stock solutions such as hypochlorite should be analyzed for available chlorine prior to use.

5.2.3 Adequate precautions should be taken to prevent food from being contaminated during cleaning or

disinfection of rooms, equipment or utensils by water and detergents or by disinfectants and their solutions. Detergents and disinfectants should be suitable for the purpose intended and should be acceptable to the official agency having jurisdiction. Any residues of these agents on a surface which may come in contact with food should be removed by thorough rinsing with potable water before the area or equipment is again used for handling food.

5.2.4 Either immediately after cessation of work for the day or at such other times as may be appropriate, floors, including drains, auxiliary structures and walls of food handling areas should be thoroughly cleaned.

5.2.5 Changing facilities and toilets should be kept clean at all times.

5.2.6 Roadways and yards in the immediate vicinity of and serving the premises should be kept clean.

5.3 **Hygiene Control Programme.** A permanent cleaning and disinfection schedule should be drawn up for each establishment to ensure that all areas are appropriately cleaned and that critical areas, equipment and material are designated for special attention. A single individual who should preferably be a permanent member of the staff of the establishment and whose duties should be independent of production, should be appointed to be responsible for the cleanliness of the establishment. He should have a thorough understanding of the significance of contamination and the hazards involved. All cleaning personnel should be well-trained in cleaning techniques.

5.4 **By-Products.** By-products should be stored in such a manner as to avoid contamination of food. They should be removed from the working areas as often as necessary and at least daily.

5.5 **Storage and Disposal of Waste.** Waste material should be handled in such a manner as to avoid contamination of food or potable water. Care should be taken to prevent access to waste by pests. Waste should be removed from the food handling and other working areas as often as necessary and at least daily. Immediately after disposal of the waste, receptacles used for storage and any equipment which has come into contact with the waste should be cleaned and disinfected. The waste storage area should also be cleaned and disinfected.

5.6 **Exclusion of Domestic Animals.** Animals that are uncontrolled or that could be a hazard to health should be excluded from establishments.

## 5.7 **Pest Control**

5.7.1 There should be an effective and continuous programme for the control of pests. Establishments and surrounding areas should be regularly examined for evidence of infestation.

5.7.2 Should pests gain entrance to the establishment, eradication measures should be instituted. Control measures involving treatment with chemical, physical or biological agents should only be undertaken by or under direct supervision of personnel who have a thorough understanding of the potential hazards to health resulting from the use of these agents, including those which may arise from residues retained in the product. Such measures should only be carried out in accordance with the recommendations of the official agency having jurisdiction.

5.7.3 Pesticides should only be used if other precautionary measures cannot be used effectively. Before pesticides are applied, care should be taken to safeguard all food, equipment and utensils from contamination. After application, contaminated equipment and utensils should be thoroughly cleaned to remove residues prior to being used again.

## 5.8 **Storage of Hazardous Substances**

5.8.1 Pesticide or other substances which may represent a hazard to health should be suitably labelled with a warning about their toxicity and use. They should be stored in locked rooms or cabinets used only for that purpose and handled only by authorized and properly trained personnel or by persons under strict supervision of trained personnel. Extreme care should be taken to avoid contaminating foods.

5.8.2 Except when necessary for hygienic or processing purposes, no substance which could contaminate food should be used or stored in food handling areas.

5.9 **Personal Effects and Clothing.** Personal effects and clothing should not be deposited in food handling areas.

## 6. SECTION VI - PERSONNEL HYGIENE AND HEALTH REQUIREMENTS

6.1 **Hygiene Training.** Managers of establishments should arrange for adequate and continuing training of every food handler in hygienic handling of food and in personal hygiene so that they understand the precautions necessary to prevent contamination of food. Instruction should include relevant parts of this Code.

6.2 **Medical Examination.** Persons who come in contact with food in the course of their work should have a medical examination prior to their employment if the official agency having jurisdiction, acting on medical advice, considers that this is necessary, whether because of epidemiological considerations, the nature of the food prepared in a particular establishment or the medical history of the prospective food handler. Medical examination of a food handler should be carried out at other times when clinically or epidemiologically indicated.

6.3 **Communicable Diseases.** The management should take care to ensure that no person, while known or suspected to be suffering from, or to be a carrier of a disease likely to be transmitted through food or while afflicted with infected wounds, skin infections, sores or with diarrhoea, is permitted to work in any food handling area in any capacity in which there is any likelihood of such a person directly or indirectly contaminating food with pathogenic micro-organisms. Any person so affected should immediately report to the management that he is ill.

6.4 **Injuries.** Any person who has a cut or wound should not continue to handle food or food contact surfaces until the injury is completely protected by a waterproof covering which is firmly secured, and which is conspicuous in colour. Adequate first-aid facilities should be provided for this purpose.

6.5 **Washing of Hands.** Every person, engaged in a food handling area, should wash his hands frequently and thoroughly with a suitable hand cleaning preparation under running warm, potable water while on duty. Hands should always be washed before commencing work, immediately after using the toilet, after handling contaminated material and whenever else necessary. After handling any material which might be capable of transmitting disease, hands should be washed and disinfected immediately. Notices requiring hand-washing should be displayed. There should be adequate supervision to ensure compliance with this requirement.

6.6 **Personal Cleanliness.** Every person engaged in a food handling area should maintain a high degree of personal cleanliness while on duty, and should at all times while so engaged wear suitable protective clothing including head covering and footwear, all of which articles should be cleanable unless designed to be disposed of and should be maintained in a clean condition consistent with the nature of the work in which the person is engaged. Aprons and similar items should not be washed on the floor. During periods where food is manipulated by hand, any jewellery that cannot be adequately disinfected should be removed from the hands. Personnel should not wear any insecure jewellery when engaged in food handling.

6.7 **Personal Behaviour.** Any behaviour which could result in contamination of food, such as eating, use



of tobacco, chewing (e.g. gum, sticks, betel nuts, etc.) or unhygienic practices, such as spitting, should be prohibited in food handling areas.

6.8 **Gloves.** Gloves, if used in the handling of food products, should be maintained in a sound, clean and sanitary condition. The wearing of gloves does not exempt the operator from having thoroughly washed hands. Gloves should be made of an impermeable material except where their usage would be inappropriate or incompatible with the work involved.

6.9 **Visitors.** Precautions should be taken to prevent visitors in food handling areas from contaminating food. These may include the use of protective clothing. Visitors should observe the provisions recommended in paragraphs 5.9, 6.3, 6.4 and 6.7.

6.10 **Supervision.** Responsibility for ensuring compliance by all personnel with all requirements of paragraphs 5.9 - 6.10, inclusive should be specifically allocated to competent supervisory personnel.

## 7. SECTION VII - ESTABLISHMENT: HYGIENIC PROCESSING REQUIREMENTS

### 7.1 Raw Material Requirements

7.1.1 Unfit frogs should not be accepted.

7.1.2 No raw material or ingredient should be accepted by the establishment if known to contain parasites, micro-organisms or toxic, decomposed or extraneous substances which will not be reduced to acceptable levels by normal plant procedures of sorting and/or preparation or processing.

7.1.3 Raw materials or ingredients should be inspected and sorted prior to being moved into the processing line and where necessary laboratory tests should be made. Only clean sound raw materials or ingredients should be used in further processing.

7.1.4 Raw materials and ingredients stored on the premises of the establishment should be maintained under conditions that will prevent spoilage, protect against contamination and minimize damage. Stocks of raw materials and ingredients should be properly rotated.

7.1.5 Frogs should be held under conditions of minimum stress.

### 7.2 Prevention of Cross-Contamination

7.2.1 Effective measures should be taken to prevent contamination of food material by direct or indirect contact with material at an earlier stage of the process.

7.2.2 Persons handling raw materials or semi-processed products capable of contaminating the end-product should not come into contact with any end-product unless and until they discard all protective clothing worn by them during the handling of raw materials or semi-processed products which have come into direct contact with or have been soiled by raw material or semi-processed products and have changed into clean protective clothing.

7.2.3 Each employee should be assigned his definite place and duty on the processing line to prevent intermingling or movement of employees from more contaminated to less contaminated areas.

7.2.4 Ice should be supplied along the processing line only by the employees assigned for this purpose, using clean containers and being fully aware of the danger of cross contamination. Any left-over ice should be discarded.

7.2.5 Any containers and utensils used for ice, water, chlorine, salt solutions, or other food contact material or containing frog legs should be kept off the floor,. Small, elevated, readily cleanable platforms or standards may be utilized.

7.2.6 All equipment and utensils used in the processing of frog legs should be assigned exclusively for this purpose. Processing of frog legs should be carried out as a separate operation divorced entirely from other food processing operations such as for shrimp, shellfish, or other fish.

7.2.7 If there is a likelihood of contamination, hands should be washed thoroughly between handling products at different stages of processing.

7.2.8 All equipment which has been in contact with raw materials or contaminated material should be thoroughly cleaned and disinfected prior to being used for contact with end-products.

### 7.3 Use of Water

7.3.1 As a general principle only potable water, as defined in the latest edition of "International Standards of Drinking Water" (WHO), should be used in food handling.

7.3.2 Non-potable water may be used with the acceptance of the official agency having jurisdiction for steam production, refrigeration, fire control and other similar purposes not connected with food. However, non-potable water may, with specific acceptance by the official agency having jurisdiction, be used in certain food handling areas provided this does not constitute a hazard to health.

7.3.3 Water recirculated for re-use within an establishment should be treated and maintained in a condition so that no health hazard can result from its use. The treatment process should be kept under constant surveillance. Alternatively, recirculated water which has received no further treatment may be used in conditions where its use would not constitute a health hazard and will not contaminate either the raw material or the end-product. Recirculated water should have a separate distribution system which can be readily identified. The acceptance of the official agency having jurisdiction should be required for any treatment process and for the use of recirculated water in any food process.

7.3.4 When in-plant chlorination of water is used the residual content of free chlorine should be maintained at no more than the minimum effective level for the use intended. Chlorination systems should not be relied upon to solve all hygienic problems. The indiscriminate use of chlorine cannot compensate for unhygienic conditions in a processing plant.

### 7.4 Processing

#### 7.4.1 Operating practices - General considerations

7.4.1.1 Only sound frogs and frog legs of good quality should be accepted for processing.

7.4.1.2 The quantity of frogs or frog legs received for processing should be regulated and scheduled to prevent large accumulations resulting in prolonged holding time prior to processing, which may permit the growth of pathogenic and spoilage micro-organisms. If the frogs are alive prolonged holding time may increase conditions of stress, which may also increase microbial contamination of the meat.

7.4.1.3 Sampling and inspection procedures for evaluation of frogs or frog legs received for processing should not unduly delay the entry of the frogs or frog legs to the processing line.

7.4.1.4 The segregation of unfit food material shall be such that it cannot contaminate food material fit for human consumption. Unsound frogs shall be destroyed with minimal suffering to the animal.

7.4.1.5 Frogs and frog legs should be handled, processed and packaged with care and under conditions which will prevent the possibility of contamination with or the growth of pathogenic and spoilage micro-organisms.

7.4.1.6 Frog legs should at all times be processed rapidly and kept chilled during processing.

7.4.1.7 Any food additives used for dipping or spraying the frog legs should meet the requirements of the official agency having jurisdiction.

7.4.1.8 Methods of preservation and necessary controls should be such as to protect against contamination or development of a public health hazard and against deterioration within the limits of good commercial practice. It is recommended that water chlorinated to a free residual chlorine content of 20-40 parts per million is used to reduce the growth of micro-organisms in the plant.

7.4.1.9 Processing should be supervised by technically competent personnel.

7.4.1.10 Rough treatment of containers should be avoided to prevent possibility of contamination of the processed product.

7.4.1.11 After each step of the handling operations, cutting, skinning, trimming and grading, the frog legs should be washed by spraying with water in compliance with Sub-Section 7.4.1.8.

## 7.4.2 Preparatory operations

7.4.2.1 **Washing or other preparation.** Frogs should be washed to remove any contamination. Water used for washing and rinsing should comply with the recommendations laid down in Sub-Section 7.3.

7.4.2.2 The washing of the frogs should be done in running water for at least 24 hours in a clean holding tank, with a false bottom of wire, with a series of outlets at one side of the bottom and a series of water inlets at the upper-side opposite the side of the outlets, to remove soil, faeces and slime.

## 7.4.3 Slaughter and butchering

7.4.3.1 Before slaughtering the live frogs should be stunned, so they are relieved from pain during the cutting. This should be done in a humane manner, e.g. by electricity (and not by putting them in a 10% solution of common salt).

7.4.3.2 The killing should be done immediately after stunning in such a manner that either the head is severed from the body or the brain is destroyed by pithing.

7.4.3.3 The hind legs should be removed by extending them fully and then severing them from the body by a cut close to the waist made in such a manner that the intestines are not damaged. Any remaining viscera and the cloaca and surrounding skin should be removed immediately as hygienically as possible.

#### 7.4.4 **Bleeding**

7.4.4.1 The legs should be washed and bled immediately after cutting. They should be immersed in chilled brine (maximum 4°C) to prevent clotting and allow thorough bleeding.

7.4.4.2 If the legs are to be processed immediately after bleeding, they should be skinned before immersion in the chilled brine.

7.4.4.3 If the legs are not processed immediately after bleeding, the skin should be left on to reduce the possibility of contamination of the flesh.

#### 7.4.5 **Skinning and trimming**

7.4.5.1 The removal of the skin and clipping of the feet should be carried out on a clean board over which runs a continuous supply of water in compliance with Sub-Section 7.4.1.8.

7.4.5.2 After skinning and clipping, the legs should be trimmed by removing remnants of membrane and hanging pieces of flesh. During this operation, the dressed material should be carefully examined for parasites, bruises, blood spots and other defects.

7.4.5.3 The skinned and trimmed legs should be washed thoroughly in several changes of water at 4°C. This water should be chlorinated as in Sub-Section 7.4.1.8.

#### 7.4.6 **Grading**

7.4.6.1 Size grading should be done before packing and freezing.

#### 7.4.7 **Holding and transporting for further processing**

7.4.7.1 Frog legs which are not processed immediately should be cooled to at least 4°C as soon as possible and held in this condition until the next processing stage. Cooling (chilling) should be done in a blast chiller or other appropriate equipment. Chill store rooms should not be used to cool the frog legs but only to maintain them chilled after cooling.

7.4.7.2 Frog legs should not be held chilled for longer than necessary but should proceed as soon as possible to packaging and freezing. It is not advisable to transport frog legs, even though chilled, to another plant for further processing.

#### 7.5 **Packaging**

7.5.1 All packaging material should be stored in a clean and hygienic manner. The material should be appropriate to the product to be packed and to the expected conditions of storage and should not transmit to the product substances unacceptable to the official agency having jurisdiction. The packaging material should be sound, new and should provide appropriate protection from contamination.

7.5.2 Product containers should not have been used for any purpose which may lead to contamination of the product. Where practicable containers should be inspected immediately before use to ensure that they are in a satisfactory condition and, where necessary, cleaned and disinfected; when washed they should be well drained before filling. Only packaging material required for immediate use should be kept in the packing or filling area.

7.5.3 Packing should be done under conditions that preclude contamination of the product. The legs should either be wrapped hygienically, individually in polyethylene film or preferably inserted into small polyethylene bags.

7.6 **Freezing.** The legs should be frozen in the minimum possible time. Bruised, squeezed or broken legs should not be used for freezing. After freezing, the material should be transferred into cold storage, the temperature of which should not be higher than  $-18^{\circ}\text{C}$ .

## 7.7 **Storage and Transport of the End-Product**

7.7.1 The end-product should be stored and transported under such conditions as will preclude the contamination with and/or proliferation of micro-organisms and protect against deterioration of the product or damage to the container. During storage, periodic inspection of the end-product should take place to ensure that only food which is fit for human consumption is despatched and that end-product specifications should be complied with when they exist. The product should be despatched in the sequence of the lot numbers.

7.7.2 Doors should not be left open for extended periods and should be closed immediately after use.

7.7.3 No chilling room and cold storage should be loaded beyond its designed capacity.

7.7.4 Where recording thermometers are not used, temperature should be read at regular intervals and the readings recorded in a log book.

7.7.5 Frozen frog legs should be stored at a uniformly low temperature if a considerable quality loss is to be avoided. Freezer stores should be able to operate at  $-18^{\circ}\text{C}$ . Thermometers, or other temperature recording devices, should be capable of being read easily within a two-degree accuracy. More detailed requirements for the construction and operation of a freezer store are given in the *Code of Practice for Fish and Fishery Products* (CAC/RCP 52-2003).

7.8 **Laboratory Control Procedures.** In addition to any control by the official agency having jurisdiction, it is desirable that each plant in its own interest should have access to laboratory control of the sanitary quality of the product processed. Such control should reject all products that are unfit for human consumption. Laboratory procedures used should preferably follow recognized or standard methods in order that the results may be readily interpreted. Where appropriate, representative samples of the production should be taken to assess the safety and wholesomeness of the product. Laboratories checking for pathogenic micro-organisms should be well separated from food processing areas.

## 8. **SECTION VIII - END-PRODUCT SPECIFICATIONS**

Appropriate methods should be used for sampling and examination to determine the compliance with the following specifications:

8.1 Frog legs should, to the extent possible in good manufacturing practice, be free from objectionable matter and parasites.

8.2 Frog legs should be free from micro-organisms in amounts harmful to man, free from parasites harmful to man and should not contain any substances originating from micro-organisms in amounts which may represent a hazard to health.

8.3 Frog legs should be free from chemical pollutants in amounts which may represent a hazard to health.

8.4 Frog legs should comply with any requirements set forth by the Codex Alimentarius Commission on pesticide residues and food additives as contained in permitted lists of Codex Commodity Standards, or should comply with the requirements on pesticide residues and food additives of the country in which the frog legs will be sold.