PCD 755:2025
ICS 65.150

DRAFT ZANZIBAR NATIONAL STANDARD

Live and Raw Bivalve and gastropod — Code of Practice

ZANZIBAR BUREAU OF STANDARDS

First edition

Foreword

This draft Zanzibar National Standard has been prepared by Fish, Fisheries and Aquaculture Standards Technical Committee. In accordance with the Zanzibar Bureau of Standards general procedures, this draft is here by presented to the public in order to receive any technical comment concerns.

The ZBS was established under Standard Act No. 1 of 2011.

In the preparation of this Standard, the reference was made to the following sources:

PNS/BAFS 236: 2017 Code of Practice for Live and Raw Bivalve and gastropod; published by Philippine National Standard.

Acknowledgement is hereby made for the assistance derived from these sources.

In reporting the results of a test or analysis made in accordance with this Zanzibar National Standard, the final value, observed or calculated shall be rounded off in accordance with ZNS 94, Rounding off numerical values

Technical Committee Representatives

This Draft Zanzibar National Standard was prepared by Fish, Fisheries and Aquaculture Standards Technical Committee which consists of representatives from the following organizations:

Chief Government Chemist Laboratory Agency (CGCLA)
Deep Sea Fishing Authority (DSFA)
Institute of Marines Sciences (IMS)
Ministry of Blue economy and Fisheries (MoBF)
Pemba Sea Food Association
Sea power
Zanzibar Fisheries and Marine Resources Research Institute (ZAFIRI)
Zanzibar Fisheries Company (ZAFICO)
Zanzibar Food and Drug Agency (ZFDA)
Zanzibar Bureau of Standards (ZBS) - Secretariat

PO Box 1136
Zanzibar
Tel: +255 24 2232225
Fax: +255 24 2232225
E-mail: info@zbs.go.tz
Web: www.zbs.go.tz

Live and Raw Bivalve and gastropod — Code of Practice

1 Scope

This Code applies to the sourcing, preparation, handling, processing, packaging, storage and transport of live and raw Bivalve and gastropod that are intended for human consumption or for further processing.

2 Normative references

The following referenced documents are indispensable for the application of this Zanzibar National Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies;

3 Terms and definitions

For the purpose of this Standard, the following (terms and) definitions shall apply:

3.1
accepted/acceptable/approved
means accepted by the competent authority

3.2
competent authority
an entity/agency who has the knowledge, expertise and authority as designated by law

3.3
conditioning
placing live Bivalve and gastropod in tanks, floats or natural sites to remove sand, mud or slime and improve product acceptability

3.4
distribution center
an approved onshore or offshore installation or establishment for the reception, conditioning, washing, cleaning, grading and packaging of live Bivalve and gastropod fit for human consumption from which the Bivalve and gastropod are dispatched alive

3.5
growing area
brackish and marine areas approved for the production or harvesting of Bivalve and gastropod either by natural growth or by aquaculture destined for human consumption. The growing areas may be approved as production or harvesting areas for Bivalve and gastropod for direct consumption, or they may be approved as production or harvesting areas for Bivalve and gastropod for either depuration or relaying

3.6
heat shocking
process of subjecting Bivalve and gastropod in the shell to any form of heat treatment, such as steam, hot water or dry heat, for a short period to facilitate rapid removal of meat from the shell for the purpose of shucking

3.7
depuration
reduction of microorganisms to a level acceptable for direct consumption by the process of holding live Bivalve and gastropod for a period of time under approved, controlled conditions in natural or artificial seawater suitable for the process, which may be treated or untreated

3.8

depuration center
any approved establishment for the depuration of live Bivalve and gastropod

3.9
relaying
removal of Bivalve and gastropod from a microbiologically contaminated growing area to an acceptable growing or holding area under the supervision of the competent authority and holding them there for the time necessary for the reduction of contamination to an acceptable level for human consumption

3.10
shucking
removal of edible portion of the Bivalve and gastropod from the shell

4 Classification and monitoring of growing area

4.1 Classification of growing areas

4.1.1 Raw Surveys of the growing area, shoreline and land catchment should be conducted to determine sources of both domestic and industrial pollution that may affect the quality of the growing area water and Bivalve and gastropod. Sources may include municipal sewage outputs, industrial outputs, mine wastes, geophysical contaminants, domestic animal holding pens, nuclear power plants, refineries or other sources. Re-surveys should be conducted at an acceptable frequency as designated by competent authority and known pollution sources should be re-evaluated on a regular basis to determine any changes to their impact on the growing.

4.1.2 When pollution sources have been identified and evaluated, sampling stations for water and/or Bivalve and gastropod and/or sediments should be established and studies conducted to determine the effects of the pollutants on water and bivalve and gastropod quality. The data should be evaluated by the competent authority and growing areas should be classified according to official standards and criteria.

4.1.3 When interpreting growing area data, the competent authority should take into account variations that may affect the level of pollution during the most unfavorable hydrographic and climatic conditions as influenced by rainfall, tides, winds, methods of sewage treatment, population variations and other local factors, as Bivalve and gastropod respond rapidly to an increase in the number of bacteria or viruses in their environment by accumulating these agents. The agency should also consider that Bivalve and gastropod have the ability to accumulate toxic chemicals in their tissue in concentrations greater than the levels found in the surrounding water. for Live and Raw Bivalve and gastropod or existing international standards shall be used as a guide for acceptable levels.

4.1.4 The competent authority should immediately announce decisions concerning the classification of growing areas to the affected producers and depuration and distribution centers.

4.1.5 When sampling shellfish meats for classification purposes, if the limits of any biological or chemical hazard set in the end-product specification are exceeded, appropriate measures must be taken under the responsibility of the competent authority.

4.1.6 Classified growing areas should be clearly defined by the competent authority as either:

a) suitable for harvesting for direct human consumption, relaying in acceptable water or depuration in an approved depuration center or approved processing to reduce or limit target organisms; or
b) non-suitable for growing or harvesting Bivalve and gastropod.

4.2 Monitoring of Growing Areas

4.2.1 Growing areas should be routinely monitored for changes in water quality and/or bivalve and gastropod quality, and substandard areas patrolled to prevent harvesting for purposes other than that established by the competent authority.

4.2.2 Biotoxins in Bivalve and gastropod can be caused by plankton containing toxins. For early warning purposes, where appropriate, it is recommended to have a program present to monitor growing areas for the species of plankton that can produce toxins and to recognize other environmental signals that a toxic event may be developing.

4.2.3 Harmful chemical substances within Bivalve and gastropod should not be present in amounts such that the calculated dietary intake exceeds the permissible daily intake. A monitoring system should be present for harmful chemical substances.

4.2.4 When routine monitoring programs or re-surveys show that the growing area no longer meets the classification criteria, the area should be reclassified or closed for harvesting immediately by the competent authority.

4.2.5 In determining the public health suitability of bivalve and gastropod classified growing areas, the competent authority should consider the following actions:

a) Classification/reclassification of growing areas by sanitary survey, monitoring of E. coli/faecal coliforms or total coliforms at an appropriate frequency based on the risk of contamination sanitary control measures as applicable.
b) Classification/reclassification of growing areas by monitoring of pathogens at an appropriate frequency based on the probability of contamination in bivalve and gastropod meat.
c) Closure/reopening of growing areas by the monitoring of biotoxins in Bivalve and gastropod alone or in combination with the monitoring of phytoplankton in seawater at an appropriate frequency based on the probability of contamination.
d) Control of chemical contaminants

4.2.6 Under the responsibility of the competent authority, the growing areas providing Bivalve and gastropod for direct human consumption should meet the following requirements at time of harvest:

a) The area is not subject to contamination that may present an actual or potential hazard to human health.
b) The Bivalve and gastropod harvested meet the end-product specification. This can be determined by examination of the Bivalve and gastropod flesh or through adequate monitoring of the water, as appropriate.

4.2.7 Bivalve and gastropod harvested from the growing areas that are not compliant with the requirements stated in Section 4.2.6 shall be subjected to further treatment (e.g. purification, relaying, depuration or cooking by an approved method).

4.2.8 Escherichia coli/fecal coliforms/total coliforms

4.2.8.1 All growing water and/or Bivalve and gastropod flesh should be monitored for the presence of E. coli/fecal coliforms or total coliforms at an appropriate frequency based on the probability and degree of fecal contamination.
4.2.8.2 Tests for suitable indicator bacteria such as fecal coliforms or E. coli or total coliforms should be used to determine the degree of fecal contamination. The effectiveness of indicator bacteria used should be kept under constant review for their reliability as measures for the degree of fecal contamination. If fecal contamination exceeds a certain threshold level, relaying or depuration for a time approved by the competent authority may be allowed.
4.2.8.3 E. coli/fecal coliforms or total coliforms may be used as an indicator for the presence of fecal contamination. Because these indicators do not correlate well with the presence of viruses, other controls such as shoreline surveys should always be employed.
4.2.8.4 Other methods such as bacteriophage and viral detection could also be used as indicators when validated analytical methods become available in the future.

4.2.9 Pathogen monitoring

Shellfish sanitation programs rely upon the use of indicator organisms for the presence of contamination rather than upon attempts to monitor for specific pathogens. However, where there has been a shellfish-borne outbreak caused by an identified pathogen such as Salmonella and others (Vibrio spp. and viruses), monitoring the Bivalve and gastropod may be appropriate as part of the process of closure/reopening of the affected harvest area. The species, and typically the actual strain, should be known in order to ensure that monitoring is addressing the source of the pathogen. Predetermined acceptance/rejection levels for the pathogen should have been established in order to use such monitoring results for decision-making. Other conditions including the sanitary survey requirements should also have been satisfied as a condition of reopening this area.

4.2.10 Marine biotoxin control

4.2.10.1 Phytoplankton monitoring is a valuable complementary tool that can be used in combination with the required monitoring of marine biotoxins in shellfish tissue to optimize programs management and resources. Growing areas should also be monitored for environmental signals that a toxin event (e.g. harmful algal blooms) may be occurring, e.g. dead or dying birds, mammals or fish. The risk of blooms of toxic algae may show seasonal variability and areas may also be affected by toxic algae previously unknown in the surrounding sea or coastal waters. These risks should be recognized when drawing up monitoring schedules.

4.2.10.2 It is important to note that in using indicator shellfish species, the absence of toxicity in indicated species in assumed to imply the absence of toxicity in other species in the growing area. This implication must be verified for each shellfish species and for each group of toxins before defining a particular shellfish species as an indicator for that growing area.

4.2.10.3 The competent authority should close immediately and effectively patrol affected areas when acceptable levels are exceeded in edible portions of Bivalve and gastropod meats. These areas should not be opened before toxicological investigation has made clear that the Bivalve and gastropod meat is free from hazardous amounts of biotoxins.

4.2.10.4 The competent authority should immediately announce these decisions to the affected consumers, producers, depuration and distribution centers.

4.2.10.5 In establishing sampling program over space and time, consideration should be given to ensure adequate location and number of sampling sites. Testing for a particular biotoxin may not be appropriate when it has been demonstrated that this biotoxin has not been associated with Bivalve and gastropod in the growing and harvesting areas. Sampling frequency must be sufficient to address spatial–temporal changes in microalgae, toxins in shellfish and to cover the risks of rapid rises in shellfish toxicity.

4.2.10.6 Spatial representational sampling

The selection of sampling stations for both benthic and suspended culture should be based on sites that have historically presented toxicity in the early stages of a toxic event. It is recognized that sampling, generally, cannot be carried out in a statistically valid way without excessive cost. In order to protect public health, the selection of sampling stations should give appropriate coverage of the extent of a toxic event or the likely “worst case scenario” in a growing area. This should be based on expert judgement using the following factors:

a) hydrography, known upwellings, fronts, current patterns and tidal effects
b) access to sampling stations in all weather conditions during harvesting
c) desirability of toxin and microalgal sampling at the same sampling station
d) need for secondary (complementary) and offshore stations in addition to primary (routine) stations
e) existence of in-situ growth (e.g. toxic microalgae from cyst beds)
f) advection of offshore toxic microalgal blooms into growing areas

Sampling for shellfish grown in suspension should at least involve an integrated sample composed of shellfish taken from the top, middle and bottom of the lines.

4.2.10.7 Temporal representational sampling

Minimum weekly sampling frequencies are adopted by most monitoring programs in areas where toxicity is prevalent and where harvesting is taking place or about to take place. Decisions on the frequency of sampling should be based on risk evaluation. Inputs into the decision may include factors such as seasonality (toxicity and/or harvesting), accessibility, historical baseline information, including toxin and microalgal data, and the effects of environmental factors such as wind, tide and currents.
Sampling frequency and the factors that may lead to it being changed should be described in a "marine biotoxin action plan" for the growing area.

4.2.10.8 Shellfish sample size

Sampling shall be done in accordance with CAC/GL 50. There may be high variability of toxicity among individual shellfish. The number of shellfish sampled should be sufficient to address this variability. For this reason, the number of shellfish in the sample, rather than the mass of the shellfish flesh, should be the determining factor for the sample size. In addition, the size of the sample should be sufficient to allow the test(s) for which the sample is being taken to be carried out, and the shellfish sampled should be of the size marketed.

4.2.10.9 Marine biotoxin test methods

Methods suitable for the determination of marine biotoxins are listed in the National Standard for live and raw Bivalve and gastropod and its future amendment. Any methods may be deemed suitable for screening purposes provided they are approved by the competent authority.

4.2.10.10 Chemical contaminants

Growing areas should be monitored for chemical contaminants on a sufficiently frequent basis to provide confidence that any identified sources of chemical contamination are not contaminating the shellfish. Shellfish growing areas where there are no known point sources of likely chemical contamination should only require occasional checks every few years. However, where there are known point sources of specific contamination, shellfish may need to be checked more frequently on a routine basis. There should also be the capacity to sample shellfish reactively if a defined event occurs – for example, a spillage of antifouling paint.

5 Harvesting and transportation of live Bivalve and gastropod

5.1 Dredges and other harvesting equipment, decks, holds and containers that are contaminated from use in a polluted area should be cleaned and disinfected (sanitized) before being used for Bivalve and gastropod from an unpolluted area.

5.2 Holds in which Bivalve and gastropod are held or containers should be constructed that the Bivalve and gastropod are held above the floor level and drained so that the Bivalve and gastropod are not in contact with washdown or bilge water, or shell fluid. Where necessary, a bilge pumping system must be provided.

5.3 Suitable precautions should be taken to protect Bivalve and gastropod from being contaminated by polluted water, droppings from sea birds, footwear that may have been in contact with fecal matter or by other polluted material. No overboard discharge of waste, including human fecal material, should occur from harvest vessels around shellfish growing areas. No animals should be allowed on harvest vessels.

5.4 Washdown pumps should draw water only from non-contaminated seawater

5.5 Bivalve and gastropod should be harvested from and stored in a growing area or relaying area declared safe by the competent authority.

5.6 On removal from water or during handling and transportation, Bivalve and gastropod should not be subjected to extreme heat or cold or sudden variations in temperature. Temperature control is critical in handling live Bivalve and gastropod. Special equipment, such as insulated containers and refrigeration equipment, should be used if prevailing temperatures and the time involved so require. Bivalve and gastropod should not be exposed to full sun or surfaces heated by the sun or come into direct contact with ice and other freezing surfaces, nor should they be held in closed containers with solid carbon dioxide.

5.7 Bivalve and gastropod should be free from excessive mud and weed soon after being harvested by washing with clean seawater under suitable pressure. Wash water should not be allowed to flow over Bivalve and gastropod already cleaned.

5.8 The interval between harvesting and immersion in water for relaying, storage, conditioning or depuration should be kept as short as possible. This also applies to the interval between final harvesting and handling in a distribution center.

5.9 If Bivalve and gastropod are to be re-immersed after harvest, they should be re-immersed in clean seawater.

5.10 Appropriate documentation should be maintained for harvesting and transportation activities.

6 Relaying

6.1 Relaying operations should be strictly supervised by the competent authority to prevent contaminated Bivalve and gastropod from being diverted directly to the consumer market or from cross-contamination of other Bivalve and gastropod. Boundaries of relaying areas should be clearly identified by buoys, poles or other fixed means. These areas should be adequately separated from the Bivalve and gastropod in adjacent waters and suitable control systems should be in place to prevent cross-contamination and commingling.

6.2 Holding time and minimum temperature in the accepted area prior to harvest will be determined by the competent authority according to the degree of contamination before relaying, the temperature of the water, the Bivalve and gastropod species involved and local geographic or hydrographic conditions to ensure that contamination levels have been adequately reduced.

6.3 Relaying sites could become biotoxin from a bloom, or could become an unexpected source of environmental pathogens such as Vibrio bacteria, and should therefore be monitored as appropriate while they are being used for relaying.

6.4 Dead or damaged Bivalve and gastropod should be removed before the relaying process.

6.5 Bivalve and gastropod should be laid out at a density that will permit them to open and undergo natural depuration.

6.6 Appropriate documentation should be maintained for relaying operations.

7 Depuration

7.1 Depuration centers and tanks should be approved by the competent authority.

7.2 Bivalve and gastropod subjected to the depuration process should not contain metallic ions, pesticides, industrial wastes or marine biotoxins in such quantities that they represent a health hazard for the consumer.

7.3 Use only shell stock designated as acceptable by the competent authority.

7.4 The process and the equipment, e.g. tanks, used for depuration should be acceptable to the competent authority.

7.5 Dead or damaged Bivalve and gastropod should be removed before the depuration process, when practicable. Surfaces of shells should be free from mud and soft commensal organisms. If necessary, the Bivalve and gastropod should be washed with clean seawater before the depuration process.

7.6 The length of the period of depuration should be adapted to the water temperature and physical water quality parameters (clean seawater, salinity, dissolved oxygen and pH levels suitable to permit the Bivalve and gastropod to function normally), the degree of contamination before depuration and the Bivalve and gastropod species. Microbiological investigation of process water and of Bivalve and gastropod meat should be used to assess depuration parameters. It should be taken into account that viruses and Vibrio spp. are more persistent during depuration than the indicator bacteria mostly used for microbiological monitoring and that the reducing of the number of indicator bacteria does not always reflect the real situation as regards contamination by viruses and Vibrio.

7.7 Water used in depuration tanks should be changed continuously or at suitable intervals or, if recirculated, be treated properly. The flow of water per hour should be sufficient to the amount of Bivalve and gastropod treated and should depend on the degree of contamination of the Bivalve and gastropod.

7.8 Bivalve and gastropod undergoing depuration should remain immersed in clean seawater until they satisfy the sanitary requirements of the competent authority.

7.9 Bivalve and gastropod should be laid out at a density that will permit them to open and undergo natural depuration.

7.10 During the process of depuration, the water temperature should not be allowed to fall below the minimum at which Bivalve and gastropod remain physiologically active; high water temperatures that adversely affect the pumping rate and the depuration process should be avoided; tanks should be protected from the direct rays of the sun when necessary.

7.11 Equipment in contact with water, i.e. tanks, pumps, pipes or piping, and other equipment should be constructed of non-porous, non-toxic materials. Copper, zinc, lead and their alloys should preferably not be used in tanks, pumps or piping systems used in depuration processing.

7.12 To avoid recontamination of Bivalve and gastropod undergoing depuration, unpurified Bivalve and gastropod should not be placed in the same tank as Bivalve and gastropod that are already undergoing depuration.

7.13 On removal from the depuration system, Bivalve and gastropod should be washed with running potable water or clean seawater, and handled in the same manner as living Bivalve and gastropod taken directly from a non-polluted area. Bivalve and gastropod that are dead, with broken shells or otherwise unwholesome should be removed.

7.14 Before removing the Bivalve and gastropod from the tanks, drain the water from the system to avoid re-suspension and re-ingestion. The tanks should be cleaned after each use and disinfected at suitable intervals.

7.15 After depuration, the Bivalve and gastropod should meet the end-product specification.

7.16 Appropriate documentation should be maintained for depuration.

8 Processing of Bivalve and gastropod in a distribution center or an establishment

8.1 Reception

8.1.1 Stress and excessive shocks to Bivalve and gastropod that will be dispatched live from a distribution center or other establishment must be avoided.

8.1.2 Distribution center and other establishments that prepare live Bivalve and gastropod should only accept Bivalve and gastropod that meet the end-product specification and that originate directly from approved growing areas or after relaying in an approved relaying area or after depuration in an approved depuration center or tank.

8.2 Conditioning and storage of Bivalve and gastropod

8.2.1 The process of storing Bivalve and gastropod in seawater tanks, basins, floats, natural sites or rafts can be used if it is acceptable to the competent authority.

8.2.2 Only clean seawater should be used in the tanks, floats, natural sites or rafts and should be of an adequate salinity and adequate physical water quality parameters to permit the Bivalve and gastropod to function normally. Optimal salinity will vary with Bivalve and gastropod species and with the harvesting area. Water condition has to be of adequate quality for the process. Where natural sites are used for conditioning, these should be classified by the competent authority.

8.2.3 Before conditioning or storage, Bivalve and gastropod should be washed to remove mud and soft commensal organisms and dead or damaged Bivalve and gastropod should be removed when practicable.

8.2.4 During storage, Bivalve and gastropod should be laid out at a density and under such conditions that will permit them to open and function normally.

8.2.5 The oxygen content in the seawater should be maintained at an adequate level at all times.

8.2.6 The temperature of the water in storage tanks should not be allowed to rise to such levels as to cause weakness in the Bivalve and gastropod. If ambient temperatures are excessively high, tanks should be placed in a well-ventilated building or away from the direct rays of the sun. The length of the period of conditioning should be adapted to the water temperature.

8.2.7 Bivalve and gastropod should be stored in clean seawater only for such time as they remain sound and active.

8.2.8 Tanks should be drained, cleaned and disinfected at suitable intervals.

8.2.9 Recirculating wet storage systems shall have the approved water treatment systems.

8.3 Washing, declumping, debyssing and grading

8.3.1 All steps in the process, including packaging, should be performed without unnecessary delay and under conditions that will prevent the possibility of contamination, deterioration and the growth of pathogenic and spoilage microorganisms.
8.3.2 Damage to shells and stress will shorten the shelf-life of Bivalve and gastropod and increase the risk of contamination and deterioration. Therefore, Bivalve and gastropod have to be handled carefully:

a) excessive handlings of Bivalve and gastropod should be minimized
b) excessive shocks should be avoided

8.3.3 The different process steps should be supervised by technically competent personnel.
8.3.4 The outsides of the shells should be washed free of mud, and all soft adhering organisms should be removed. Hard adhering organisms should also be removed when possible, care being taken not to chip lips of shells by vigorous washing. Washing should be carried out using pressurized clean seawater or potable water.
8.3.5 Bivalve and gastropod having formed clumps should be declumped and debyssed as appropriate. The equipment used should be designed and adjusted to minimize the risk of damage to the shells.

8.4 Packaging and labeling

8.4.1 Packaging and labeling of live Bivalve and gastropod

8.4.1.1 Before packaging, Bivalve and gastropod should undergo visual inspection. Bivalve and gastropod that are dead, with broken shells, with adhering soil or otherwise unwholesome should be rejected.
8.4.1.2 8.4.1.2 The packaging material should avoid contamination and should be drained.

8.4.1.3 Labels should be clearly printed and must comply with the labelling laws of the country where the product is marketed. The packaging material may be used to bear an indication as to how the Bivalve and gastropod should be kept from the time they were bought at the retailer. It is recommended that the date of packaging be included.

8.4.1.4 All packaging materials should be stored in a clean and sanitary manner. Product containers should not have been used for any purpose that may lead to contamination of the product. Packaging materials should be inspected immediately before use to ensure that they are in a satisfactory condition and, where necessary, disposed of or cleaned and/or 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.

8.4.2 Packaging and labeling of raw Bivalve and gastropod

8.4.2.1 Labels should be clearly printed and must comply with the labelling laws of the country where the product is marketed. The packaging material or label may be used as a means to convey appropriate storage instructions to the consumer after retail purchase. It is recommended that the date of packaging be included.

8.4.2.2 All packaging materials should be stored in a clean and sanitary manner. Only packaging material required for immediate use should be kept in the packing or filling area.

8.4.2.3 Shucked and post-harvest treated product should be packed and chilled or frozen as soon as possible.
8.4.2.4 Quick freezing is recommended to retain the quality of the Bivalve and gastropod.

8.4.2.5 If labels on post-harvest treated raw Bivalve and gastropod make safety claims relating to the post-harvest treatment, the claims should be specific to the target hazard that has been eliminated or reduced.

8.5 Storage

8.5.1 Storage of live Bivalve and gastropod

8.5.1.1 The end product should be stored under conditions that will preclude contamination with and/or proliferation of microorganisms. The packaging material of the end product should not have direct contact with the floor but should be placed on a clean, raised surface.

8.5.1.2 Storage periods should be kept as short as possible.

8.5.1.3 Re-immersion in or spraying with water of live Bivalve and gastropod must not take place after they have been packaged and have left the distribution center or establishment except in the case of retail sale at the distribution center.

8.5.2 Storage of raw Bivalve and gastropod

8.5.2.1 Storage periods should be kept as short as possible.

8.5.2.2 Damage to packaging of frozen product should be avoided.

8.6 Distribution/transportation

8.6.1 Distribution of live Bivalve and gastropod

8.6.1.1 The product should be dispatched in the sequence of the lot numbers.

8.6.1.2 Appropriate temperature should be maintained during distribution to control microbial growth.

8.6.1.3 Bivalve and gastropod intended for human consumption should only be distributed in closed packaging.

8.6.1.4 The means of transportation should provide sufficient protection of the Bivalve and gastropod against damage to the shells from shocks. The Bivalve and gastropod should not be transported with other products that might contaminate them

8.6.2 Distribution of raw Bivalve and gastropod

8.6.2.1 Appropriate temperature should be maintained during distribution to control microbial growth.

8.6.2.2 The product should be dispatched in the sequence of the lot numbers.

8.6.2.3 Transportation should be able to maintain chilled or frozen product for safety and quality

9 Processing to reduce or limit target organisms

9.1 Any treatment developed to eliminate or reduce pathogens should be thoroughly validated scientifically to ensure that the process is effective [see the Guidelines for the validation of food safety control measures (CAC/GL 69-2008)].

9.2 The control treatments (heat, pressure, etc.) should be closely monitored to ensure that the product does not undergo textural changes in the flesh that are unacceptable to the consumer.

9.3 The treatment parameters established to reduce or limit pathogens should be approved by the competent authority.

9.4 Each establishment that purifies Bivalve and gastropod with a heat treatment must develop a heat treatment process schedule, acceptable to the competent authority, that addresses such critical factors as the species and size of Bivalve and gastropod, time of exposure to heat, internal Bivalve and gastropod temperature, type of heat process used, water/steam to Bivalve and gastropod ratios, nature of heat equipment, measurement devices and their calibration, post- heating chilling operations, cleaning and sanitizing of heat process equipment.

10 Shucking

10.1 Hand and mechanical shucking and washing

10.1.1 Care should be taken to eliminate excess mud, detritus and sand from the shucking tables.

10.1.2 The product should be examined to ensure that cuts and tears are minimized.

10.1.3 Shucked Bivalve and gastropod should be rinsed or washed to eliminate mud, sand and detritus and to reduce the microbiological level of the products.

10.2 Heat shocking of Bivalve and gastropod followed by packaging

10.2.1 The Bivalve and gastropod must come from approved growing areas and/or after relaying in an approved relaying area or depuration in an approved depuration center or tank. Each establishment that heat shocks Bivalve and gastropod should develop a heat shock process schedule, acceptable to the competent authority, that addresses such critical factors as the species and size of Bivalve and gastropod, time of exposure to heat, internal Bivalve and gastropod temperature, type of heat process used, water/steam to Bivalve and gastropod ratios, nature of heat equipment, measurement devices and their calibration, post-heating chilling operations, cleaning and sanitizing of heat process equipment.

10.2.2 All Bivalve and gastropod should be washed with [pressurized] potable water or clean seawater and culled for damaged and dead Bivalve and gastropod prior to heat treatment.

10.2.3 Before heat shocking, the Bivalve and gastropod should be inspected to determine whether the Bivalve and gastropod are alive and not badly damaged.

10.2.4 Heat -shocked Bivalve and gastropod should be cooled to 7 °C or less within two hours of being heat treated (this time includes the shucking process). This temperature should be maintained during transportation, storage and distribution.

10.2.5 The heat shocked Bivalve and gastropod should be packed as soon as possible. Before packaging, the Bivalve and gastropod should be examined for objectionable matter such as shell pieces.

11 Documentation

11.1 The transportation of live Bivalve and gastropod from a growing area to a distribution center, depuration center, relaying area or establishment should be accompanied by a documentation for the identification of batches of live Bivalve and gastropod.

11.2 Storage and transportation temperatures should be indicated. Permanent, legible and dated records of relaying and depuration should be kept concerning each lot. These records should be retained for a period of at least one year.

11.3 Depuration centers or tanks and distribution centers and establishments should only accept lots of live Bivalve and gastropod with documentation issued by or accepted by the competent authority. Where appropriate, this documentation should contain the following information:

a) gatherer's identity and signature;
b) date of harvesting;
c) common and/or scientific name and quantity of Bivalve or gastropod;
d) location of the growing area and the status of this area (suitable for harvesting, direct human consumption, relaying, depuration, approved processing to reduce or limit target organisms);
e) distribution centers and establishments, if appropriate, the date and duration of depuration and the identity and signature of the person responsible;
f) distribution centers and establishments, if appropriate, the date and duration of relaying, the location of the relaying area and the identity and signature of the person responsible.

11.4 Complete records of harvest area and date of harvest and length of time of relaying or depuration of each lot should be maintained by the distribution center or establishment for a period designated by the competent authority.

12 Lot identification and recall procedures

Each product should have an easy identifiable lot number. This lot number must include an identification code, the number of the establishment that distributes the product, the country of origin and day and month of packaging, in order to facilitate the traceability/product tracing. A record-keeping system should be based on these lot numbers so that individual lots of Bivalve and gastropod can be traced from the growing area to the end user.

