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CODEx COMMITTEE ON FOOD HYGIENE

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ALIGNMENT OF CODEx TEXTS DEVELOPED BY CCFH WITH THE REVISED *GENERAL PRINCIPLES OF FOOD HYGIENE* (CXC 1-1969)

(Prepared by the United Kingdom)

Codex Members and Observers wishing to submit comments on the discussion paper should do so as instructed in CL 2024/12-FH available on the Codex webpage/Circular Letters 2024: <https://www.fao.org/fao-who-codexalimentarius/resources/circular-letters/en/>

1. Introduction

1.1 At the 53rd session of the Codex Committee on Food Hygiene (CCFH), under Agenda Item 2 (Matters referred by the Codex Alimentarius Commission and/or other Codex subsidiary bodies to the committee), the Codex Secretariat confirmed that CAC45 had adopted the *General Principles of Food Hygiene* (CXC 1-1969) and reported that CAC45 requested that CCFH undertake necessary work on the alignment of all food hygiene texts with the latest version of CXC 1-1969, in line with its work management approach. This was because the adoption of the revision to CXC 1-1969 had concluded an extensive revision of that text, which is foundational to many Codex food hygiene texts and extensively cross-referenced in other Codex texts.

1.2 CCFH53 requested that the United Kingdom prepare a document for CCFH54 to initiate work and provide options for the approach for the alignment of Codex food hygiene texts with the revised *General Principles of Food Hygiene* (CXC 1-1969). The purpose of the alignment is to create consistency across texts and is not to alter the standards themselves.

1.3 The United Kingdom agreed to begin the work on alignment, provide suggestions for the optimal approach to be taken, and to update CCFH54 on progress made. The Chairperson encouraged other Members to support this effort noting the extent of work to be undertaken.

1.4 This discussion paper is being made available for Members and Observers' consideration prior to CCFH54. Comments are requested on the paper including on the identified questions and preferred option for alignment. Comments will be used to produce a revised paper that will be presented for discussion at CCFH54. The discussion paper includes three options for alignment, a worked example used to illustrate requirements for alignment, and consideration to the future work plan to open discussion as to the prioritization and feasibility of carrying out this work.

2. Background

2.1 The *General Principles of Food Hygiene* (CXC 1-1969) is the basis for all codes of hygienic practice developed by CCFH. This standard is widely used and referenced internationally, providing food business operators worldwide with the basis for producing food that is safe and suitable for consumption. Since its inception, HACCP has become the universal system for the control of food safety, on which most regulatory food control systems and international food safety standards (e.g. ISO 22000) are based.

2.2 Since its initial adoption in 1969, the *General Principles of Food Hygiene* (CXC 1-1969) has been revised four times. At CCFH46 in 2014, CCFH began revision of CXC 1-1969 and its HACCP Annex with revised text recommended for adoption to CAC at CCFH51. This introduced significant changes to the text and format of the document which was split into 3 sections: the introduction, part one covering good hygienic practices (GHPs) and part two covering the HACCP system and guidelines for its application.

2.3 CAC45 adopted the final additions to the *General Principles of Food Hygiene* (CXC 1-1969) completing another major revision. This means that all Codex food hygiene texts no longer follow the same format as, or cross-reference correctly to CXC 1-1969.

2.4 At CCFH53, it was agreed that the United Kingdom (UK) would propose an approach for aligning the food hygiene texts so next steps could be agreed at CCFH54. This was in response to the request of CAC45 to CCFH to start work to align the other food hygiene related Codex texts with the *General Principles of Food Hygiene* (CXC 1-1969), noting this was an extensive task.¹

3. Discussion

3.1 As requested at CAC45, CCFH must undertake work on the alignment of all food hygiene texts with the *General Principles of Food Hygiene* (CXC 1-1969). There are clear benefits to ensuring texts are consistent, uniform and for content to be up to date:

3.1.1 Accuracy: With the most recent update to CXC 1-1969, references may no longer be accurate and definitions and details may need to be updated or streamlined to bring them in line with the updated CXC 1-1969. Where possible, there are benefits to simply amending relevant texts to make direct reference to CXC 1-1969.

3.1.2 Coherence: Alignment of Codex texts is important to ensure documents follow the same structure and are presented in a format so that texts are organized in a coherent manner.

3.2 Alignment of the various texts will be a significant undertaking and will require coordination and collaborative working by Members and Observers.

3.3 The UK has reviewed the texts which fall under the remit of CCFH (Appendix A) and consider that they fall into four revision categories:

- Texts which do not require alignment with CXC 1-1969 due to their specific nature.
- New texts that are currently being drafted such as “Food Hygiene Control Measures in Traditional Food Markets”.
- Texts that are part of the forward work plan and either undergoing or expected to undergo revisions through an electronic working group (EWG), such as *Guidelines on the Application of General Principles of Food Hygiene to the Control of Pathogenic Vibrio Species in Seafood* (CXG 73-2010) or *Guidelines on the Application of General Principles of Food Hygiene to the Control of Viruses in Food* (CXG 79-2012).
- Texts not currently part of the forward work plan for revision, such as *Code of Hygienic Practice for Low-Moisture Foods* (CXC 75-2015).

3.4 To prioritize texts, we explored the use of digital tracking to assess the frequency of access to each Codex text (including each language version) via the Codex website, but this was not possible through the current system. Through discussion with the Codex Secretariat, we are aware this is being addressed but a different mechanism for prioritization will need to be developed in the meantime.

3.5 It will be necessary to incorporate alignment of existing texts into the new work/forward workplan and a strategic prioritization of texts will need to be agreed. The procedural approach will vary by text, with extent of revision required dictated by age and status of guidelines. As CCFH considers its future work plan, it will need to take into account alignment work. CCFH could consider setting up a Standing Working Group, similar to that established by the Codex Committee on Food Additives (CCFA) to coordinate and execute the process of aligning texts.

3.6 Alignment options are outlined for consideration by the Committee from a simple mechanical exercise of alignment by changing references in each text to a more methodical approach ensuring full alignment with CXC 1-1969 in both structure and content.

¹ REP22/CAC, paragraph 58

It is expected that where applicable newly developed text would be fully aligned with CXC 1-1969. The following options relate to any existing text that follows the structure of the *General Principle of Food Hygiene* (CXC 1-1969). Comments from Members and Observers are welcomed on each of the three options set out below which achieve varying levels of alignment of existing texts with CXC 1-1969.

Option 1 – Simple alignment

- Existing documents are revised with an updated reference to the correct section of CXC 1-1969 using a correlation table and any other reference to other Codex documents. No other changes made.

Option 2 – Full structural alignment

- As option 1 but with existing texts structurally aligned to CXC 1-1969.

Option 3 – Full structural and technical alignment with CXC 1-1969

- As option 2 with detailed review of definitions in each text and consideration of how changes and definitions in CXC 1-1969 will impact on the document being revised. Further scrutiny of references to GHPs and HACCP to ensure that they are being used correctly.
- Review of sections to propose areas where texts can be streamlined to refer to CXC 1-1969 thereby future proofing CCFH texts as far as possible.
- This option does not consider technical changes to the content of the paper based on updated science and evidence.

3.7 Japan alongside Chile have updated references to CXC 1-1969 in the proposed draft revision on the *Guidelines on the Application of General Principles of Food Hygiene to the Control of Pathogenic Vibrio Species in Seafood* (CXG 73-2010) as in CX/FH 25/54/8 which would be representative of a simple alignment as per Option 1. This option would ensure greater accuracy in terms of cross-referencing as references would be updated but does not ensure coherence in the structural alignment of texts or technical content.

3.8 A worked example of full structural alignment as per option 2 (Appendix C) is provided. This includes specific discussion questions for CCFH members to consider. This full structural alignment is using the *Guidelines on the Application of General Principles of Food Hygiene to the Control of Pathogenic Vibrio Species in Seafood* (CXG 73-2010). The document in Appendix C does not reflect the draft changes made through the EWG chaired by Japan and Chile. This option would ensure greater accuracy and coherence as texts would have updated references and be structurally aligned but not necessarily full accuracy and coherence of technical content.

3.9 A skeleton proposal of the full alignment process (Option 3) is provided at Appendix D indicating how this process could work. This option would provide the same benefits as option 1 and 2, but instead of a superficial alignment in terms of referencing and structure, would require additional analysis. This may require subsequent revision of the text to ensure the use of defined terms, references to good hygiene practices and HACCP etc., technically aligned with CXC 1-1969 which would more fully meet the direction of CAC45.

4. Recommendations

4.1 The process of alignment is not intuitive and for consistency in alignment of texts a formalized process needs to be agreed by CCFH. The alignment of all relevant texts will be time consuming and will require coordination and participation across CCFH. In this context it is recommended that:

- The work is prioritized, divided, and integrated into the future work plan.
- A standing working group is created to consider how the alignment of existing texts should be prioritized, how work can be divided, and to work with the Chairperson of the EWG on the forward work plan to update the future work plan.

4.2 Members and Observers are invited to consider this discussion paper, in particular focusing on the three outlined options and addressing the ten questions provided in Appendices C and D, and provide comments, so a revised paper with a preferred option can be presented at CCFH54.

Appendix A: List of documents to be revised

Appendix B: Heading Options

Appendix C: Example of Full Structural Alignment

Appendix D: Skeleton Proposal for Option 3

Appendix A – List of texts developed by CCFH

Unless indicated, all documents are translated into all 6 Codex languages (EN, FR, ES, AR, ZH and RU)

Reference	Title	Last Modified
Texts which are considered to not require alignment with CXC 1-1969 due to their specific nature.		
CXG 96-2022	Guidelines on the Management of Biological Foodborne Outbreaks	2022
CXG 30-1999	Principles and Guidelines for the Conduct of Microbiological Risk Assessment	2014
CXG 21-1997	Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods	2013
CXG 63-2007	Principles and Guidelines for the Conduct of Microbiological Risk Management (MRM)	2008
CXS 106-1983	General Standard for Irradiated Foods	2003
CXG 69-2008	Guidelines for the Validation of Food Safety Control Measures*	2013
CXG 99-2023	Guidelines for the control of Shiga Toxin Producing <i>Escherichia coli</i> (STEC) in Raw Beef, Fresh Leafy Vegetables, Raw Milk and Raw Milk Cheeses and Sprouts	2023
CXG 100-2023	Guidelines for the safe use and reuse of water in food production	2023
Texts that are part of the forward work plan and either undergoing or expected to undergo revisions through an electronic working group		
CXG 73-2010	Guidelines on the Application of General Principles of Food Hygiene to the Control of Pathogenic <i>Vibrio</i> Species in Seafood	2010
CXG 79-2012	Guidelines on the Application of General Principles of Food Hygiene to the Control of Viruses in Food	2012
CXG 78-2011	Guidelines for the Control of <i>Campylobacter</i> and <i>Salmonella</i> in Chicken Meat	2011
CXG 73-2010	Guidelines on the Application of General Principles of Food Hygiene to the Control of Pathogenic <i>Vibrio</i> Species in Seafood	2010
CXG 61-2007	Guidelines on the Application of General Principles of Food Hygiene to the Control of <i>Listeria monocytogenes</i> in Foods	2009
CXC 80-2020	Code of Practice on Food Allergen Management for Food Business Operators**	2020
Texts not currently part of the forward work plan for revision		
CXC 75-2015	Code of Hygienic Practice for Low-Moisture Foods***	2018
CXC 53-2003	Code of Hygienic Practice for Fresh Fruits and Vegetables***	2017
CXG 87-2016	Guidelines for the Control of Nontyphoidal <i>Salmonella</i> spp. in Beef and Pork Meat	2016
CXG 88-2016	Guidelines on the Application of General Principles of Food Hygiene to the Control of Foodborne Parasites	2016
CXG 86-2015	Guidelines for the Control of <i>Trichinella</i> Spp. in Meat of Suidae	2015
CXG 85-2014	Guidelines for the Control of <i>Taenia saginata</i> in Meat of Domestic Cattle	2014
CXC 33-1985	Code of Hygienic Practice for Collecting, Processing and Marketing of Natural Mineral Waters***	2011
CXC 57-2004	Code of Hygienic Practice for Milk and Milk Products	2009
CXC 66-2008	Code of Hygienic Practice for Powdered Formulae for Infants and Young Children***	2009
CXC 15-1976	Code of Hygienic Practice for Eggs and Egg Products	2007
CXC 19-1979	Code of Practice for Radiation Processing of Food	2003
CXC 47-2001	Code of Hygienic Practice for the Transport of Food in Bulk and Semi-Packed Food	2001
CXC 48-2001	Code of Hygienic Practice for Bottled/Packaged Drinking Waters (Other than Natural Mineral Waters)	2001
CXC 46-1999	Code of Hygienic Practice for Refrigerated Packaged Foods with Extended Shelf Life	1999

CXC 23-1979	Code of Hygienic Practice for Low and Acidified Low Acid Canned Foods	1993
CXC 39-1993	Code of Hygienic Practice for Precooked and Cooked Foods in Mass Catering	1993
CXC 40-1993	Code of Hygienic Practice for Aseptically Processed and Packaged Low-Acid Foods	1993
CXC 30-1983	Code of Hygienic Practice for the Processing of Frog Legs	1983

* Could be considered for revision due to the nature of the document

** Noting conclusions of CCFH51² that the COP could be revised upon completion of the work on precautionary allergen labelling in CCFL and advice from FAO/WHO and comments at CCFH53³ on the forward workplan that CCFH should anticipate the need for revisions to this document in the near future.

*** Not translated into Arabic

² REP20/FH Paragraph 26

³ REP23/FH Appendix VII

Appendix B – Heading Options**Option 1 – Main Headings only**

1. Introduction
2. Objectives
3. Scope
4. Use
5. GENERAL PRINCIPLES
6. Definitions
- Part one GOOD HYGIENE PRACTICES
7. Introduction and control of food hazards
8. primary production
9. Establishment – design of facilities and equipment
10. Training and competence
11. Establishment maintenance, cleaning and disinfection, and pest control
12. Personal hygiene
13. Control of operation
14. Product information and consumer awareness
15. Transportation

Option 2 – Main Headings and Sub-headings

1. Introduction
2. Objectives
3. Scope
4. Use
 - 4.1 Roles of competent authorities, food business operators, and consumers
5. GENERAL PRINCIPLES
 - 5.1 Management commitment to food safety
6. Definitions
- Part One GOOD HYGIENE PRACTICES
7. Introduction and control of food hazards
8. primary production
 - 8.1 Environmental control
 - 8.2 Hygienic production
 - 8.3 Handling, storage and transport
 - 8.4 Cleaning, maintenance and personnel hygiene
9. Establishment – design of facilities and equipment
 - 9.1 Location and structure
 - 9.1.1 Location of establishment
 - 9.1.2 Design and layout of food establishment

- 9.1.3 Internal structures and fittings
- 9.1.4 Temporary/Mobile food establishments and vending machines
- 9.2 Facilities
 - 9.2.1 Drainage and waste disposal facilities
 - 9.2.2 Cleaning facilities
 - 9.2.3 Personnel hygiene facilities and toilets
 - 9.2.4 Temperature
 - 9.2.5 Air quality and ventilation
 - 9.2.6 Lighting
 - 9.2.7 Storage
- 9.3 Equipment
 - 9.3.1 General
 - 9.3.2 Food control and monitoring equipment
- 10. Training and competence
 - 10.1 Awareness and responsibilities
 - 10.2 Training programmes
 - 10.3 Instruction and supervision
 - 10.4 Refresher training
- 11. Establishment maintenance, cleaning and disinfection, and pest control
 - 11.1 Maintenance and cleaning
 - 11.1.1 General
 - 11.1.2 Cleaning and disinfection methods and procedures
 - 11.1.3 Monitoring of effectiveness
 - 11.2 Pest control systems
 - 11.2.1 General
 - 11.2.2 Prevention
 - 11.2.3 Harbourage and infestation
 - 11.2.4 Monitoring and detection
 - 11.2.5 Control of pest infestation
 - 11.3 Waste management
 - 11.3.1 General
- 12. Personal hygiene
 - 12.1 Health status
 - 12.2 Illness and injuries
 - 12.3 Personal cleanliness
 - 12.4 Personal behaviour
 - 12.5 Visitors and other persons from outside the establishment
- 13. Control of operation

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- 13.1 Description of products and processes
 - 13.1.1 Product description
 - 13.1.2 Process description
 - 13.1.3 Consideration of the effectiveness of GHPs
 - 13.1.4 Monitoring and corrective action
 - 13.1.5 Verification
 - 13.2 Key aspects of GHPs
 - 13.2.1 Time and temperature control
 - 13.2.2 Specific process steps
 - 13.2.3 Microbiological¹ physical, chemical and allergen specifications
 - 13.2.4 Microbiological contamination
 - 13.2.5 Physical contamination
 - 13.2.6 Chemical contamination
 - 13.2.7 Allergen management
 - 13.2.8 Incoming materials
 - 13.2.9 Packaging
 - 13.3 Water
 - 13.4 Documentation and records
 - 13.5 Recall procedures – removal from the market of unsafe food
14. Product information and consumer awareness
- 14.1 Lot identification and traceability
 - 14.2 Product information
 - 14.3 Product labelling
 - 14.4 Consumer education
15. Transportation
- 15.1 General
 - 15.2 Requirements
 - 15.3 Use and maintenance

Appendix C – Example of Full Structural Alignment (Annexes to CXG 73-2010 are not included in this example)

Guidelines on the Application of General Principles of Food Hygiene to the Control of Pathogenic Vibrio Species in Seafood (CXG 73-2010, Adopted 2010, Revised (20XX))

1. Introduction

1. During the last few years, there has been an increase in reported outbreaks and cases of foodborne disease attributed to pathogenic *Vibrio* species. As a result, there have been several instances where the presence of pathogenic *Vibrio* spp. in seafood has led to a disruption in international trade. This has been particularly evident with *Vibrio parahaemolyticus* where there has been a series of pandemic outbreaks due to the consumption of seafood, and its emergence has been observed in regions of the world where it was previously unreported. A number of *Vibrio* species are increasingly being recognized as potential human pathogens. The food safety concerns associated with these microorganisms have led to the need for specific guidance on potential risk management strategies for their control.

General Characteristics of Pathogenic *Vibrio* spp.

2. The genus *Vibrio* contains at least twelve species pathogenic to humans, ten of which can cause food-borne illness. The majority of food-borne illness is caused by *V. parahaemolyticus*, choleraogenic *Vibrio cholerae*, or *Vibrio vulnificus*. *V. parahaemolyticus* and *V. cholerae* are solely or mainly isolated from gastroenteritis cases that are attributable to consumption of contaminated food (both species) or intake of contaminated water (*V. cholerae*). In contrast, *V. vulnificus* is primarily reported from extraintestinal infections (septicaemia, wounds, etc.) and primary septicaemia due to *V. vulnificus* infection is often associated with consumption of seafood.
3. In tropical and temperate regions, these species of *Vibrio* occur naturally in marine, coastal and estuarine (brackish) environments and are most abundant in estuaries. Pathogenic *Vibrio* spp., in particular *V. cholerae*, can also be recovered from freshwater reaches of estuaries, where it can also be introduced by faecal contamination. *V. cholerae*, unlike most other *Vibrio* species, can survive in freshwater environments.
4. It is now possible to differentiate environmental strains of *V. cholerae* and *V. parahaemolyticus* between virulent and avirulent strains based on their ability or inability to produce their major virulence factors. The pathogenic mechanisms of *V. vulnificus* have not been clearly elucidated, and its virulence appears to be multifaceted and is not well understood, and therefore all strains are considered virulent.
5. The following are important characteristics common to all *Vibrio* spp. *Vibrio* spp. are sensitive to low pH but grow well at high pH, and thus infections caused by *Vibrio* spp. are frequently associated with low-acid foods. In addition, the ingestion of a large number of viable cells is needed for pathogenic *Vibrio* spp. to survive the acidic environment of the stomach and establish an infection. Cooking of food products readily inactivates *Vibrio* spp. even in highly contaminated products. Hygienic practices used with all food-borne pathogens will in general control the growth of pathogenic *Vibrio* spp.
6. There are, however, characteristics specific to each of the three major pathogenic species of *Vibrio* that require attention as described below.

Vibrio parahaemolyticus

7. *V. parahaemolyticus* is considered to be part of the autochthonous microflora in the estuarine and coastal environments in tropical to temperate zones. While *V. parahaemolyticus* typically is undetectable in seawater at 10°C or lower, it can be cultured from sediments throughout the year at temperatures as low as 1°C. In temperate zones, the life cycle consists of a phase of survival in winter in sediments and a phase of release with the zooplankton when the temperature of the water increases up to 14 - 19 °C. *V. parahaemolyticus* is characterized by its rapid growth under favourable conditions.
8. The vast majority of strains isolated from patients with diarrhoea produce a thermostable direct hemolysin (TDH). It has therefore been considered that pathogenic strains possess a *tdh* gene and produce TDH, and non-pathogenic strains lack the gene and the trait. Additionally, strains that produce a TDH-related hemolysin (TRH) encoded by the *trh* gene should also be regarded as pathogenic. Symptoms of *V. parahaemolyticus* infections include explosive watery diarrhoea, nausea, vomiting, abdominal cramps and, less frequently, headache, fever and chills. Most cases are self-limiting, however, severe cases of gastroenteritis requiring hospitalization have been reported. Virulent strains are seldom detected in the environment or in foods, including seafoods, while they are detected as major strains from faeces of patients.
9. *V. parahaemolyticus* was first identified as a foodborne pathogen in Japan in the 1950s. By the late 1960s and early 1970s *V. parahaemolyticus* was recognized as a cause of diarrhoeal disease worldwide. A new *V. parahaemolyticus* clone of O3:K6 serotype emerged in Calcutta in 1996. This clone, including its serovariants, has spread throughout Asia and to the USA, elevating the status of the spread of *V. parahaemolyticus* infection to pandemic. In Asia, *V. parahaemolyticus* is a common cause of foodborne disease. In general, the outbreaks are small in scale, involving fewer than 10 cases, but occur frequently. This pandemic *V. parahaemolyticus* has now spread to at least 5 continents. There is a suggestion that ballast discharge may be a major mechanism for global spread of pandemic *V. parahaemolyticus*, but a possibility of export/import seafood-mediated international spread cannot be ruled out.
10. From the point of controlling seafood-borne *V. parahaemolyticus* illnesses, harvest is probably the most critical stage, since it is from this point onwards that individuals can actually implement measures to control *V. parahaemolyticus*.

11. Foods associated with illnesses due to consumption of *V. parahaemolyticus* include for example crayfish, lobster, shrimp, fish-balls, boiled surf clams, jack-knife clams, fried mackerel, mussel, tuna, seafood salad, raw oysters, clams, steamed/boiled crabmeat, scallops, squid, sea urchin, mysids, and sardines. These products include both raw and partially treated⁴ and thoroughly treated seafood products that have been substantially recontaminated through contaminated utensils, hands, etc.

Vibrio cholerae

12. *V. cholerae* is indigenous to fresh and brackish water environments in tropical, subtropical and temperate areas worldwide. Over 200 O serogroups have been established for *V. cholerae*. Strains belonging to O1 and O139 serotypes generally possess the *ctx* gene and produce cholera toxin (CT) and are responsible for epidemic cholera. Epidemic cholera is confined mainly to developing countries with warm climates. Cholera is exclusively a human disease and human faeces from infected individuals are the primary source of infection in cholera epidemics. Contamination of food production environments (including aquaculture ponds) by faeces can indirectly introduce cholerae *V. cholerae* into foods. The concentration of free-living cholerae *V. cholerae* in the natural aquatic environment is low, but *V. cholerae* is known to attach and multiply on zooplankton such as copepods.
13. Seven pandemics of cholera have been recorded since 1823. The first six pandemics were caused by the classical biotype strains, whereas the seventh pandemic that started in 1961 and has lasted until now, is due to *V. cholerae* O1 biotype El Tor strains. Epidemic cholera can be introduced from abroad by infected travellers, imported foods and through the ballast water of cargo ships. Detection frequencies of cholerae strains of *V. cholerae* from legally imported foods were very low and they have seldom been implicated in cholera outbreaks. *V. cholerae* O139 has been responsible for the outbreaks of cholera in the Bengal area since 1992, and this bacterium has spread to other parts of the world through travellers. The cholerae strains of *V. cholerae* that spread to different parts of the world may persist, and some factors may trigger an epidemic in the newly established environment.
14. Some strains belonging to the O serogroups other than O1 and O139 (referred as non-O1/non-O139) can cause food-borne diarrhoea that is milder than cholera.
15. Outbreaks of food-borne cholera have been noted quite often in the past 30 years; seafood, including bivalve molluscs, crustaceans, and finfish, are most often incriminated in food-borne cholera cases in many countries. While shrimp has historically been a concern for transmission of cholerae *V. cholerae* in international trade, it has not been linked to outbreaks and it is rarely found in shrimp in international trade.

Vibrio vulnificus

16. *V. vulnificus* can occasionally cause mild gastroenteritis in healthy individuals, but it can cause primary septicaemia in individuals with chronic pre-existing conditions, especially liver disease or alcoholism, diabetes, haemochromatosis and HIV/AIDS, following consumption of raw bivalve molluscs. This is a serious, often fatal, disease with one of the highest fatality rates of any known foodborne bacterial pathogen. The ability to acquire iron is considered essential for virulence expression of *V. vulnificus*, but a virulence determinant has not been established and, therefore, it is not clear whether only a particular group of the strains are virulent. The host factor (underlying chronic diseases) appears to be the primary determinant for *V. vulnificus* infection. Incubation period ranges from 7 hours to several days, with the average being 26 hours. The dose response for humans is not known.
17. Of the three biotypes of *V. vulnificus*, biotype 1 is generally considered to be responsible for most seafood-associated human infection and thus the term *V. vulnificus* refers to biotype 1 in this Code.
18. Foodborne illness from *V. vulnificus* is characterized by sporadic cases and an outbreak has never been reported. *V. vulnificus* has been isolated from oysters, other bivalve molluscs, and other seafood worldwide.
19. The densities of *V. vulnificus* are high in oysters at harvest when water temperatures exceed 20°C in areas where *V. vulnificus* is endemic; *V. vulnificus* multiplies in oysters at a temperature higher than 13°C. The salinity optimum for *V. vulnificus* appears to vary considerably from area to area, but highest numbers are usually found at intermediate salinities of 5 to 25 g/l (ppt: parts per thousand). Relaying oysters to high salinity waters (>32 g/l (ppt: parts per thousand) was shown to reduce *V. vulnificus* numbers by 3–4 logs (<10 per g) within 2 weeks.

FAO/WHO Risk Assessments

20. FAO/WHO risk assessments on *Vibrio vulnificus* in raw oysters and cholerae *Vibrio cholerae* O1 and O139 in warm water shrimp in international trade have been published (2005)^{5,6}. Additional risk assessments on *Vibrio parahaemolyticus* in raw oysters, in raw and undercooked finfish and in *Anadara granosa* (bloody clams) have been completed⁷. These risk assessments constitute the basis of this Code.

⁴ “treated” means any vibriocidal treatment (e.g. heat treatment, high pressure.). Refer to Section 2.3 (definition for “partially treated”.

⁵ FAO and WHO, 2005. Risk assessment of *Vibrio vulnificus* in raw oysters. Microbiological Risk Assessment Series, No.8.

⁶ FAO and WHO, 2005. Risk assessment of cholerae *Vibrio cholerae* O1 and O139 in warm-water shrimp in international trade. Microbiological Risk Assessment Series, No.9.

⁷ FAO and WHO, 20XX. Risk assessment of *Vibrio parahaemolyticus* in seafood. Microbiological Risk Assessment Series, No.XX (In press).

21.

2. Objectives

22. These Guidelines provide guidance on control of pathogenic *Vibrio* spp. in seafood, with a view towards protecting the health of consumers and ensuring fair practices in food trade. The primary purpose of these Guidelines is to highlight the key control measures that can be used to minimise the likelihood of illness arising from the presence of pathogenic *Vibrio* spp. in seafood. These Guidelines also provide information that will be of interest to the food industry, consumers, and other interested parties.

3. Scope

23. These Guidelines cover seafood that is marketed and may be consumed in a live, raw, chilled/frozen, partially treated, or thoroughly treated state. It is applicable to the whole food chain from primary production to final consumption. Bivalve molluscs are covered more thoroughly in the Annex, which is supplemental to these Guidelines.
24. As major causative agents of foodborne bacterial illnesses associated with seafood, the target microbiological hazards of these Guidelines are pathogenic *V. parahaemolyticus*, *V. vulnificus* and cholerae *V. cholerae*. The control measures described in these Guidelines may be applicable to other pathogenic *Vibrio* spp.

4. Use

25. These Guidelines are supplemental to, and should be used in conjunction with, the *General Principles of Food Hygiene* (CXC 1-1969) and the *Code of Practice for Fish and Fishery Products* (CXC 52-2003). The application of these Guidelines by countries may require modifications and amendments, taking into account regional differences such as the prevalence of pathogenic *Vibrio* spp., water temperatures and salinity.

QUESTION 1

Currently, texts have a specific cross reference to the relevant section of the *General Principles of Food Hygiene* (CXC 1-1969). Due to new sections being added (for example, section 5 General Principles and Management Commitment to Food Safety in the last revision, where there is no existing text in the document being aligned, is option a) or option b) more appropriate:

- a) a simple cross reference to the *General Principles of Food Hygiene* (CXC 1-1969) is included to maintain alignment of headings.
- b) New wording specific to the text being aligned is created.

An example of what option a)

4.1 Roles of competent authorities, food business operators, and consumers

26. Refer to *General Principles of Food Hygiene* (CXC 1-1969)

5. GENERAL PRINCIPLES

27. Refer to *General Principles of Food Hygiene* (CXC 1-1969)

5.1 Management commitment to food safety

28. Refer to *General Principles of Food Hygiene* (CXC 1-1969)

4.1 Roles of competent authorities, food business operators, and consumers

26.

5. GENERAL PRINCIPLES

27.

5.1 Management commitment to food safety

28.

6. Definitions

29. For the purpose of these Guidelines, the following definitions apply:

Definitions of the *General Principles of Food Hygiene* (CXC 1-1969) and the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

Refrigeration: The lowering of product temperature to limit microbial activity.

Seafood: Fish, shellfish and other aquatic invertebrates from marine and fresh water sources and their products which are intended for human consumption.

Partially treated: Any treatment intended to significantly reduce or limit but not completely eliminate *Vibrio* spp. in seafood. As a result of partial treatment, the sensory characteristics of the raw product are lost.

Clean water: means water from any source where harmful microbiological contamination, substances and/or toxic plankton are not present in such quantities that may affect the safety of fish, shellfish and their products intended for human consumption.

Part one GOOD HYGIENE PRACTICES

7. Introduction and control of food hazards

QUESTION 2

Section 7 – Introduction and control of food hazards, of CXC 1-1969 provides additional information on when it may be determined that GHPs alone may be sufficient to manage the hazards, however it may also be determined that it is necessary to place greater attention on some GHPs that are particularly important for food safety. Is it appropriate to include a simple cross reference to Section 7 of CXC 1-1969 given the importance of this section?

8. Primary production

QUESTION 3

It is necessary to elaborate “Objectives” and “Rationale” for each section similar to CXC 1-1969 or would a simple cross-reference be sufficient?

28.

8.1 Environmental control

29. Refer to Section 8.1 of the *General Principles of Food Hygiene* (CXC 1-1969). In addition:
30. Generally, pre-harvest controls are more applicable to bivalve molluscs than to other seafood (e.g. open-sea harvested fish). Where relevant to other seafood, pre-harvest controls should be considered for areas where the likelihood of introduction of pathogenic *Vibrio* spp. is significant and can be controlled.
31. Temperature and salinity should be considered for controlling pathogenic *Vibrio* spp. in seafood. Where applicable, specific temperature or salinity levels that can be used as control measures should be identified based on epidemiological and exposure studies as well as monitoring of pre-harvest pathogenic *Vibrio* levels.
32. For monitoring bivalve molluscs, at harvest, refer to the Annex to this Guideline.
33. For seafood grown in coastal localities, especially in cholera-endemic areas, care should be taken to avoid contamination of seafood with faecal cholerae *V. cholerae*.

8.2 Hygienic production

34. Refer to Section 8.2 of the *General Principles of Food Hygiene* (CXC 1-1969).

8.3 Handling, storage and transport

35. For the storage and handling of seafood aboard fish vessels, clean water should be used for seafood intended to be eaten raw, and for preparing ice for such use. The use of sea water taken from near the seashore or from a drainage outlet or river contaminated with sewage should be avoided. Seafood should be held at temperatures that minimise and/or prevent the growth of pathogenic *Vibrio* spp. after harvest, for example, in an ice-water slurry, ice or refrigeration on vessels and at harvest sites. The delay between harvest and refrigeration should be as short as possible.
36. For on-boat cooked (boiled, blanched) seafood products, ice and/or refrigeration should be used to facilitate the rapid cooling. Ice made from clean water should be used to minimize cross-contamination.
37. For the storage of live seafood products, clean water should be used to minimise initial cross-contamination from the water.
38. When the product is required to be washed, whether onboard the boat or at port, clean water should be used.

39. During on-land transportation from the landing port to the on-shore market and/or processing establishments, in order to minimise and/or prevent the growth of pathogenic *Vibrio* spp. in seafood, the time elapsed between harvest and refrigeration or freezing is critical and should be minimised. Ice can be used efficiently to keep seafood under refrigeration during transportation and sale. Live fish and shellfish should be transported at the lowest temperature tolerable for the species. Covered containers should be used for transport to prevent contamination.

8.4 Cleaning, maintenance and personnel hygiene

40. Refer to Section 8.4 of the *General Principles of Food Hygiene* (CXC 1-1969).
41. Refer to Section 12.1 of the *General Principles of Food Hygiene* (CXC 1-1969). A carrier who is excreting cholerae *V. cholerae* should not handle seafood or ice for the storage of seafood, which may result in the contamination of the seafood with cholerae *V. cholerae*.

Question 4

Section 12.1 of CXC 1-1969 states that "Personnel known or suspected to be ill or carrying a disease likely to be transmitted through food should not enter any food handling area if there is a likelihood of them contaminating food." Paragraph 41 specifically refers to "A carrier who is excreting *cholerae* *V. cholerae* should not handle seafood or ice for the storage of seafood"

Is it necessary as part of alignment work to review paragraphs of text and determine whether the information included, in addition to the reference to CXC 1-1969, is beneficial to the text?

9. Establishment – design of facilities and equipment

42. Equipment and facilities should be designed, constructed and laid out to minimise cross-contamination and recontamination with pathogenic *Vibrio* spp.

9.1 Location and structure

43. Refer to Section 9.1 of the *General Principles of Food Hygiene* (CXC 1-1969).

9.1.1 Location of establishment

44. Refer to Section 9.1.1 of *General Principles of Food Hygiene* (CXC 1-1969).

9.1.2 Design and layout of food establishment

45. Refer to Section 9.2.1 of the *General Principles of Food Hygiene* (CXC 1-1969).
46. Whenever feasible, premises and rooms should be designed to keep raw material areas separated from finished seafood product areas. This can be accomplished in a number of ways, including linear product flow (raw materials to finished products) or physical partitions.
47. Where feasible, the washing room for food equipment used in the finished product manufacturing should be physically segregated from the finished product processing area.

9.1.3 Internal structures and fittings

48. Refer to Section 9.1.3 of the *General Principles of Food Hygiene* (CXC 1-1969).

9.1.4 Temporary/Mobile food establishments and vending machines

49. Refer to Section 9.1.4 of the *General Principles of Food Hygiene* (CXC 1-1969).

9.2 Facilities

50. Refer to Section 9.2 of the *General Principles of Food Hygiene* (CXC 1-1969).
51. Adequate facilities should be provided for the handling and washing of products.
52. Suitable and adequate facilities should be provided for storage and/or production of ice.

9.2.1 Drainage and waste disposal facilities

53. All drainage and waste lines should be capable of coping with peak demands.
54. Accumulation of solid, semi-solid or liquid wastes should be minimised to prevent contamination, because pathogenic *Vibrio* spp. may grow rapidly in these wastes under certain circumstances.
55. Separate and adequate facilities should be provided to prevent contamination by offal and waste material.

9.2.2 Cleaning facilities

56. Refer to Section 4.4.3 of the *General Principles of Food Hygiene* (CXC 1-1969) and Section 3.2.1 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003)

9.2.3 Personnel hygiene facilities and toilets

57. Refer to Section 9.2.3 of the *General Principles of Food Hygiene* (CXC 1-1969) and Section 3.5.1 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

9.2.4 Temperature

58. Refer to Section 9.2.4 of the *General Principles of Food Hygiene* (CXC 1-1969) and Section 4.1 of *Code of Practice for Fish and Fishery Products* (CXC 52-2003).
59. The Code of Practice for Fish and Fishery Products indicates maintaining the product at temperature as close to 0°C as possible. For pathogenic *Vibrio* spp., a temperature of 10°C or lower is adequate. In this Code, 10°C is used as the target temperature to prevent/minimize growth of *Vibrio* spp. However, pathogenic bacteria species such as *Listeria monocytogenes*, *Clostridium botulinum* and histamine formers may also be hazards in addition to *Vibrio* spp. If this is the case, more strict temperature control, as close to 0°C as possible, should be implemented. In the case of bivalve molluscs, a different temperature control specified in the Annex would be required. The facility should be capable of controlling ambient temperature to ensure that product temperature during processing of raw seafood is maintained at a temperature of 10°C or lower.

9.2.5 Air quality and ventilation

60. Refer to Section 9.2.5 of the *General Principles of Food Hygiene* (CXC 1-1969) and Section 3.2.2 of *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

9.2.6 Lighting

61. Refer to Section 9.2.6 of the *General Principles of Food Hygiene* (CXC 1-1969) and Section 3.2.3 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

9.2.7 Storage

62. Refer to Section 9.2.7 of the *General Principles of Food Hygiene* (CXC 1-1969) and Section 3.2.2 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

9.3 Equipment

9.3.1 General

63. Refer to Section 9.3.1 of the *General Principles of Food Hygiene* (CXC 1-1969).

9.3.2 Food control and monitoring equipment

64. Refer to Section 9.3.2 of the *General Principles of Food Hygiene* (CXC 1-1969).
65. The chill room should be equipped with a calibrated thermometer.

10. Training and competence

10.1 Awareness and responsibilities

66. Refer to Section 10.1 of the *General Principles of Food Hygiene* (CXC 1-1969) and Section 3.8 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).
67. Industry (fishermen, primary producers, manufacturers, distributors, retailers and food service/institutional establishments) and trade associations play an important role in providing specific instructions and/or training to employees for the control of pathogenic *Vibrio* spp. Special consideration should be given to possible differences in prevalence of pathogenic *Vibrio* spp. in the harvesting areas and various fishing techniques.

10.2 Training programmes

68. Personnel involved in the primary production, harvesting, processing and handling of seafood should have appropriate training for the tasks they are performing. This may include:
 - The nature of pathogenic *Vibrio* spp., namely *V. parahaemolyticus*, choleraenic *V. cholerae* and *V. vulnificus*, their harbourage sites, and their resistance to various environmental conditions to be able to conduct a suitable hazard analysis for their products;
 - Control measures for reducing the risk of pathogenic *Vibrio* spp. associated with seafood during harvesting, processing, distribution, marketing, use and storage, for preventing cross-contamination and minimizing the growth of pathogenic *Vibrio* spp.; and
 - The means for verifying effectiveness of control programs, including sampling and analytical techniques.

10.3 Instruction and supervision

69. Refer to Section 10.3 of the *General Principles of Food Hygiene* (CXC 1-1969).

10.4 Refresher training

70. Refer to Section 10.4 of the *General Principles of Food Hygiene* (CXC 1-1969) and Section 3.8 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

11. Establishment maintenance, cleaning and disinfection, and pest control

71. Refer to Section 11 of the *General Principles of Food Hygiene* (CXC 1-1969) and Section 3.4 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

Question 5

The current section VI of 73-2010 is titled “Establishment: Maintenance and Sanitation” and Section VII is titled “Establishment: Personal Hygiene” – in both cases there is a simple cross reference to the relevant section of CXC 1-1969.

Is necessary as part of the alignment work to list out each sub-heading in such sections and provide a specific cross reference to CXC 1-1969 in each case or whether a single cross reference to main section is sufficient?

11.1 Maintenance and cleaning

11.1.1 General

11.1.2 Cleaning and disinfection methods and procedures

11.1.3 Monitoring of effectiveness

11.2 Pest control systems

11.2.1 General

11.2.2 Prevention

11.2.3 Harbourage and infestation

11.2.4 Monitoring and detection

11.2.5 Control of pest infestation

11.3 Waste management

11.3.1 General

12. Personal hygiene

72. Refer to Section 12 of the *General Principles of Food Hygiene* (CXC 1-1969) and Section 3.5 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

12.1 Health status

12.2 Illness and injuries

12.3 Personal cleanliness

12.4 Personal behaviour

12.5 Visitors and other persons from outside the establishment

13. Control of operation

73. Refer to Section 13 of the *General Principles of Food Hygiene* (CXC 1-1969).

13.1 Description of products and processes

13.1.1 Product description

13.1.2 Process description

13.1.3 Consideration of the effectiveness of GHPs

13.1.4 Monitoring and corrective action

13.1.5 Verification

13.2 Key aspects of GHPs

13.2.1 Time and temperature control

74. Refer to Section 4.1 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003). Time and temperature are the most important factors affecting the rate of growth of pathogenic *Vibrio* spp. in seafood. At each step the temperature should be controlled and monitored.

13.2.2 Specific process steps

Washing and processing

75. Clean water at low temperature should be used for washing and processing seafood at processing establishments. However, the eviscerated cavity of fish intended for raw consumption (e.g. preparation of sashimi) should be thoroughly washed with potable running water.

Cooking

76. Time and temperature should be determined for each cooking operation to ensure the inactivation and elimination of pathogenic *Vibrio* spp.
77. After cooking and blanching, potable water should be used for cooling.

Food processing practices

78. Food processing practices (e.g. acidification to pH below 4.8, salting to a sodium chloride concentration of more than 10% for *V. parahaemolyticus*, food preservatives and/or water activity less than 0.94) can be used to minimise the growth and possibly reduce the levels of pathogenic *Vibrio* spp. in seafood.
79. Freezing could be used to reduce the level or prevent the growth of pathogenic *Vibrio* spp. in seafood.
80. Several possible technologies such as high pressure, mild heating, freezing and extended storage, have been reported to inactivate *Vibrio* spp.⁸. The use of these technologies should be done in accordance with the legislation of the country of retail sale.
81. Any practice selected to reduce/inactivate pathogenic *Vibrio* spp. in seafood or control/minimize the growth of pathogenic *Vibrio* spp. should be adequately validated to ensure that the process is effective. Such validation should be performed according to the Guidelines for the Validation of the Food Safety Control Measures (CAC/GL 69-2008).
82. The food processing practices should be closely monitored and verified to ensure that pathogenic *Vibrio* spp. are controlled and/or reduced as intended.

Storage

83. Seafood intended for raw consumption should be stored in shallow layers and surrounded by sufficient quantities of finely crushed ice or with a mixture of ice and clean water. Live fish and shellfish should be stored at the lowest temperature tolerable for the species (Refer to Section 9 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003)).
84. Over-stacking and/or over-filling of containers should be avoided to allow cold air to circulate adequately.
- 85.

13.2.3 Microbiologicalⁱⁱ physical, chemical and allergen specifications

86. Refer to Section 13.2.3 of the *General Principles of Food Hygiene* (CXC 1-1969) and the Principles for the Establishment and Application of Microbiological Criteria for Foods (CAC/GL 21-1997).

13.2.4 Microbiological contamination

87. Refer to Section 13.2.4 of the *General Principles of Food Hygiene* (CXC 1-1969) and Sections 3.2.2 and 3.3.2 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

13.2.5 Physical contamination

88. Refer to Section 13.2.5 the *General Principles of Food Hygiene* (CXC 1-1969) and Section 3.2.2 and 3.3.2 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

⁸ Section 3.2 of the Risk assessment of *Vibrio vulnificus* in raw oysters (FAO/WHO Microbiological Risk Assessment Series 8); FAO and WHO, 20XX. Risk assessment of *Vibrio parahaemolyticus* in seafood. Microbiological Risk Assessment Series, No.XX (In press); FAO and WHO, 2005. Risk assessment of choleraogenic *Vibrio cholerae* O1 and O139 in warm-water shrimp in international trade. Microbiological Risk Assessment Series, No.9.

13.2.6 Chemical contamination

89. Refer to Section 13.2.6 the *General Principles of Food Hygiene* (CXC 1-1969) and Section 3.2.2 and 3.3.2 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

13.2.7 Allergen managementⁱⁱⁱ

13.2.8 Incoming materials

90. Refer to Section 13.2.8 of the *General Principles of Food Hygiene* (CXC 1-1969) and Section 8.5.1 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

13.2.9 Packaging

91. Refer to Section 13.2.9 of the *General Principles of Food Hygiene* (CXC 1-1969) and Section 8.5.2 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

13.3 Water

Question 6

In addition to aligning existing texts with CXC 1-1969, is it also necessary to ensure alignment with the *Guidelines for the Safe Use and Reuse of Water in Food Production and Processing* (CXG 100-2023) which was adopted at the 46th session of the Codex Alimentarius Commission?

92. Refer to Section 13.3 of the *General Principles of Food Hygiene* (CXC 1-1969) except cases specified within this Code where clean water could be used.
93. Coastal seawaters used at landing docks and at markets have been shown to be occasionally contaminated with high level of pathogenic *V. parahaemolyticus*. Therefore, only clean/potable waters should be used in the post-harvest stage.

13.4 Documentation and records

94. Refer to Section 13.4 of the *General Principles of Food Hygiene* (CXC 1-1969).

13.5 Recall procedures – removal from the market of unsafe food

95. Refer to Section 13.5 of the *General Principles of Food Hygiene* (CXC 1-1969).

14. Product information and consumer awareness

14.1 Lot identification and traceability

96. Refer to Section 14.1 of the *General Principles of Food Hygiene* (CXC 1-1969).

14.2 Product information

97. Refer to Section 14.2 of the *General Principles of Food Hygiene* (CXC 1-1969).

14.3 Product labelling

98. Refer to Section 14.2 of the *General Principles of Food Hygiene* (CXC 1-1969).
99. Refer to the General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985). Where appropriate, product labels should include information on safe handling practices and storage recommendations.
100. In addition, countries should give consideration to labelling of unpackaged live or raw seafood, so that consumers are adequately informed with respect to the safety and true nature (alive or not alive) of these products. In particular, seafood that is at a high risk of being contaminated with pathogenic *Vibrio* spp., should be labelled to alert at-risk consumers to avoid or cook these products, in line with the legislation in the countries where these products are retailed or sold. Any treatment (e.g. heat treatment), that is applied to the product should be mentioned in the labelling if consumers would be misled by its omission.

14.4 Consumer education

101. Since each country has specific food habits, communication and education programs pertaining to pathogenic *Vibrio* spp. are most effective when established by individual governments.
102. Programs should be directed at consumers:

- To educate them on household practices and behaviours as indicated in Five Keys to Safer Food (WHO) “that would specifically keep the numbers of pathogenic *Vibrio* spp. that may be present in foods, to as low a level as possible and minimise the potential of cross-contamination from seafood to hands of food handlers, and then from hands to other foods, or from seafood to utensils (e.g., cutting board), and then from utensils to other foods by:
 - keeping seafood cold to minimise and/or prevent the growth of pathogenic *Vibrio* spp.;
 - keeping refrigerator temperatures as low as practical;
 - using thermometers inside home refrigerators, ice chests or other storage containers;
 - preparing, cooking and/or consuming seafood immediately after removing them from the refrigerator;
 - promptly refrigerating leftover seafood;
 - washing and disinfecting hands, utensils and equipment whenever raw seafood is handled; and
 - separating utensils and equipment used for raw seafood, from those used for finished product, where appropriate.
- To help them make informed choices about the purchase, storage, shelf-life labelling and appropriate consumption of certain raw seafood that have been identified in relevant risk assessment and other studies, taking into consideration the specific regional conditions and consumption habits.

14.4.1 Special Attention to Susceptible Subpopulations

103. Liver disease is a prominent risk factor for human infection with pathogenic *Vibrio* spp., especially *V. vulnificus*. Additional risk factors include diabetes, haemochromatosis and HIV/AIDS⁹. Subpopulations with increased susceptibility should follow the advice below:

- Avoid the consumption of raw or partially treated seafood; and
- Cook seafood thoroughly before consumption.

15. Transportation

104. Refer to Section 15 of the *General Principles of Food Hygiene* (CXC 1-1969) and Sections 3.6 and 17 of the *Code of Practice for Fish and Fishery Products* (CXC 52-2003).

105. Transportation is an integral step in the food chain and temperature during this period should be as low as possible and should be controlled, monitored and recorded where appropriate.

15.1 General

15.2 Requirements

15.3 Use and maintenance

Annexes have been removed for brevity.

⁹ FAO and WHO, 2005. Risk assessment of *Vibrio vulnificus* in raw oysters. Microbiological Risk Assessment Series, No.8.

Appendix D -Skeleton Proposal for Option 3

- Step 1 - Existing text is moved into a blank template created from the *General Principles of Food Hygiene* (CXC 1-1969). There are two options to achieve this (See Appendix B):
 - Option 1- Main heading template

A template consisting of main headings. This will allow a quicker and more flexible approach to alignment but could lead to less consistency across texts and increase reliance on specific cross-references.
 - Option 2- Main headings and sub-headings

A template with the main headings and the detailed sub-heading could ensure consistency across documents however this approach would not be as pragmatic and could lead to instances where detailed headings don't apply causing gaps in text.

Question 7

Should the blank template (Appendix B) consist of

- Option 1 main heading template or
- Option 2 main headings and sub-headings?

- Step 2 - Update existing cross-references to the *General Principles of Food Hygiene* CXC 1-1969.
 - Due to the structural changes to CXC 1-1969, cross-references are incorrect. Texts will need to be updated with the newly agreed text based on the CXC 1-1969. Whether the text directly references the CXC 1-1969 or has out of date text, each document will have to be reviewed to ensure references to the CXC 1-1969 are accurate.
 - As a fundamental step of the alignment process, outdated text should either be updated with the relevant text from CXC 1-1969 or revised to remove outdated text and replace this with the appropriate references to CXC 1-1969, and when required include additional details relevant to the commodity in question. For example, in the CXG 73-2010 paper, the section on lighting would not require any additional text on lighting as the text in CXC 1-1969 is sufficient. If additional guidance is required, should CXC 1-1969 be referenced for the core text, with additional commodity details listed only.

Question 8

Should the alignment process replace text with updated text from the CXC 1-1969 or should it be streamlined to include only references to relevant the section of the CXC 1-1969, unless there are additional details relevant to individual guidelines? For example, in CXG 73-2010 the section on lighting would not require any additional text as the text in CXC 1-1969 is sufficient.

- Step 3 - Update Specific Details and References to key terms
 - A review of definitions used in the existing text to ensure that they are aligned with those in CXC 1-1969 as far as possible.
 - A review of the use of key terms e.g. GHP, HACCP, water and allergen management
- Step 4 - Identify any gaps in text and propose suggested additions or rational for omission.
 - Following the first three steps, any anomalies or gaps in text should be identified. Where relevant a solution to how to address these should be posed for wider consideration. If gaps are considered warranted, then rationale for this should be included.
- Step 5- Report changes to CCFH for comment and discussion.

- A report on the alignment including any issues arising should be posed to CCFH. Questions for consideration should be identified.

Question 9

Please consider the proposed options and indicate the preferred approach for text that are being revised or are included in the CCFH forward work plan:

Option 1 – Alignment work is undertaken outside of the EWG

- Technical revisions of papers are completed prior to alignment so that processes can remain distinct.
- Alignment work would not need to be completed by preexisting EWG.

Option 2- Work on alignment within existing EWG

- Alignment work would be undertaken as part of the technical revision planning within the existing EWG and any changes required as a result of alignment would be reported alongside technical revisions.

Question 10

What possible mechanisms or approaches could be used for prioritizing texts which are not part of the forward work plan?. For example, could this be based on age or length of the guidelines, etc?.
