



# COMMITTEE ON FISHERIES

## SUB-COMMITTEE ON FISH TRADE

### Nineteenth Session

11-15 September 2023

## FOOD SAFETY AND QUALITY FOR AQUATIC PRODUCTS

### Executive Summary

This document reviews the latest developments in food safety related to market access for aquatic products. It presents recent FAO activities on food quality and safety in the fisheries and aquaculture sector. It includes FAO's work concerning scientific advice to the Codex Alimentarius Commission and support provided to Members to implement the Codex standards.

### Suggested action by the Sub-Committee

- Recommend future areas of work for ensuring food safety in the fisheries and aquaculture sector in a changing environment in the context of food security.
- Comment and provide guidance on FAO's overall work in the area of quality and safety for aquatic products, particularly involving scientific advice to Codex Alimentarius processes and capacity building for implementing Codex Standards, guidelines and Codes of Practice.
- Suggest additional areas for data collection and dissemination in the area of food safety and quality.
- Share national experiences of market access issues related to food safety for aquatic products.

Queries on the substantive content of this document may be addressed to:

Ms Esther Garrido Gamarro, Fishery Officer  
E-mail: [esther.garridogamarro@fao.org](mailto:esther.garridogamarro@fao.org)

## RECENT DEVELOPMENTS IN THE STANDARD-SETTING PROCESS WITHIN CODEX ALIMENTARIUS

1. The Codex Alimentarius guides and promotes the elaboration and establishment of definitions and requirements for foods to support harmonisation and facilitate international trade. Codex standards and related texts are periodically revised to ensure consistency and reflect current scientific knowledge and other relevant information. The last Session of the Codex Alimentarius Commission (CAC45) thanked FAO and the World Health Organization (WHO) for their ongoing work on mitigating foodborne antimicrobial resistance, as well as the work on risk assessment related to foods, including edible seaweed and the potential risks posed by microplastics. The Session also welcomed the ongoing work for the evaluation of the risks and benefits of aquatic food consumption.
2. CAC45 adopted the following Codex aquatic products-related texts:
  - Guidelines on the management of biological foodborne outbreaks;<sup>1</sup>
  - Revision to the general principles of food hygiene;<sup>2</sup>
  - Maximum levels (MLs) for methylmercury in orange roughy and pink cusk eel;<sup>3</sup> and
  - 476 maximum residue limits (MRLs) for different combinations of pesticides/commodity(ies) in food commodities.<sup>4</sup>
3. Furthermore, CAC45 agreed on developing work for the following aquatic product-related Codex texts:
  - The standard for fish oils to include Calanus oil (revision);
  - Principles and guidelines on the use of remote audit and verification in regulatory frameworks (new); and
  - The alignment of the texts that refer to food hygiene with the revised general principles on food hygiene.
4. The Codex Committee on Fish and Fishery Products is evaluating if the standard for canned sardines and sardine-type products could be amended to include *S. lemuru* (Bali Sardinella) in the list of Sardinella species.<sup>5</sup> In addition, the Codex Committee on Contaminants in Foods is developing a background document to serve as the basis for a future code of practice to prevent or avoid ciguatera poisoning.<sup>6</sup>
5. Further information can be found in the Commission and Codex Committees reports.<sup>7</sup>

---

<sup>1</sup> [https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXG%2B96-2022%252FCXG\\_096e.pdf](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXG%2B96-2022%252FCXG_096e.pdf)

<sup>2</sup> [https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXC%2B1-1969%252FCXC\\_001e.pdf](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXC%2B1-1969%252FCXC_001e.pdf)

<sup>3</sup> [https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXS%2B193-1995%252FCXS\\_193e.pdf](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXS%2B193-1995%252FCXS_193e.pdf)

<sup>4</sup> <https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/>

<sup>5</sup> [https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXS%2B94-1981%252FCXS\\_094e.pdf](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXS%2B94-1981%252FCXS_094e.pdf)

<sup>6</sup> <https://www.fao.org/fao-who-codexalimentarius/meetings/detail/jp/?meeting=CCCF&session=16>

<sup>7</sup> <https://www.fao.org/fao-who-codexalimentarius/committees/en/>

## SCIENTIFIC ADVICE AND POLICY GUIDANCE PROVIDED BY FAO

### *Harmful algal blooms (HABs)*

6. HABs significantly impact food safety and security through contamination of foods or mass mortalities of aquatic organisms. Improving HABs forecasting allows for the development of early warning systems for HAB events. Surveillance systems have been developed to monitor HABs in many countries. However, the lead time or data type may not be adequate to take effective action for food safety management measures or other purposes, such as transferring aquaculture products to other areas. Having forecast or early warning systems will help mitigate the impact of HABs and reduce the occurrence of HAB events. In this regard, FAO, together with the United Nations Educational, Scientific and Cultural Organization (UNESCO)'s Intergovernmental Oceanographic Commission (IOC) and the International Atomic Energy Agency (IAEA), led the development of a Joint Technical Guidance for the Implementation of Early Warning Systems for HABs to guide competent authorities and relevant institutions involved in consumer protection or environmental monitoring in implementing early warning systems for HABs in their areas, precisely affecting food safety or food security.<sup>8</sup>

### *Seaweed safety*

7. Increased cultivation and utilisation of seaweed are expected to be essential pillars of sustainable food security and a robust aquatic economy. Many factors affect the presence of hazards in seaweed. However, legislation and guidance documents on the production and utilisation of seaweed are still deficient. In this regard, FAO and WHO developed a background document identifying food safety hazards linked to consuming seaweed and aquatic plants, providing the basis for further work. FAO and WHO considered creating relevant Codex guidance on this topic beneficial and presented it to the 35th Session of the Codex Committee on Fish and Fishery Products, which subsequently approved additional work in the area to be developed based on the background document. The joint FAO/WHO Report of the Expert Meeting on Food Safety for Seaweed was subsequently consolidated during an expert meeting held in October 2021.<sup>9</sup>

### *Microplastics in food commodities*

8. Noting that aquatic products are not the only contributor to the dietary exposure of microplastics, the 17th Session of COFI:FT requested FAO to conduct an exposure assessment that includes all relevant food commodities. In this regard, FAO developed a background document compiling information on the occurrence of microplastics in all commodities, microplastic contamination along food value chains, and plastic migration from food contact materials and packaging, as well as a review of the existing literature on the toxicity of the most common plastic monomers, polymers and additives. During an expert meeting in Rome in January 2022, the background document was consolidated into the FAO report *Microplastics in Food Commodities*, which provides the basis for future risk assessment exercises and information to assess risk management options.<sup>10</sup>

### *Safety and quality of water*

9. In 2020, the 43rd Session of the Codex Alimentarius Commission approved the development of guidelines for the safe use and reuse of water in food production proposed at the 51st Session of the Codex Committee on Food Hygiene (CCFH). The Joint FAO/WHO Expert Meetings on Microbiological Risk Assessment (JEMRA) were requested to provide scientific advice on sector-specific applications and case studies for determining appropriate and fit-for-purpose microbiological criteria for sourcing water and its use and reuse in aquatic products from primary production to retail. The purpose of one of the JEMRA meetings was to develop clear and practical guidance on the criteria and parameters that can be used to determine if water is fit-for-purpose for sourcing, use and reuse by applying risk-based approaches in the fisheries and aquaculture sector. The scope of the guidance

<sup>8</sup> <https://www.fao.org/documents/card/en/c/cc4794en>

<sup>9</sup> <https://www.fao.org/3/cc0846en/cc0846en.pdf>

<sup>10</sup> <https://www.fao.org/documents/card/en/c/cc2392en>

encompasses harvesting and producing aquatic products throughout the food chain, from primary production to processing, and includes fishing vessels, freshwater production sites, and processing facilities. The meeting report Safety and Quality of Water Used in the Production and Processing of Fish and Fishery Products was published in March 2023.<sup>11</sup>

#### *Risks and benefits of fish consumption*

10. New evidence has become available regarding the risks and benefits of fish consumption. For this reason, FAO and WHO will update the Report of the Joint FAO/WHO Expert Consultation on the Risks and Benefits of Fish Consumption published in 2010 through an expert consultation.<sup>12</sup> The objective is to draw some conclusions regarding the health benefits and risks associated with fish consumption and recommend measures that Members should take to evaluate and manage the associated risks and communicate them to their citizens more effectively. The output of the FAO/WHO Expert Consultation to be held in Rome in October 2023 will develop a framework for assessing the net health benefits or risks of fish consumption. It will also provide guidance to the Codex Alimentarius Commission in its work on managing such risks, taking into account the existing data on the benefits and risks of consuming fish.

#### *Digital solutions for food control*

11. The complexity of food supply chains and the growing importance of global trade create challenges for managing food safety. Tracing the origins of unsafe food is also complex and time-consuming. For this reason, many countries have implemented rigorous agri-food import control systems, while many others need assistance to develop them. To this end, FAO developed Technical Guidance for the Implementation of E-Notification Systems for Food Control, which provides guidance for designing and implementing such systems, including their legal basis, structure, operational parameters, infrastructure and human resource requirements.<sup>13</sup>

#### *Bivalve mollusc sanitation*

12. International trade has been the main driving factor behind the rapid growth of the bivalve mollusc production industry during the last six decades. However, a very limited number of countries have effective monitoring programmes for bivalve molluscs. FAO and WHO addressed the need to develop international guidance for implementing such programmes through the Joint FAO-WHO Technical Guidance for the Development of the Growing Area Aspects of Bivalve Mollusc Sanitation Programmes.<sup>14</sup> To ensure the utility of the guidance, FAO, the FAO Reference Centre for Bivalve Sanitation and the Centre for Environment Fisheries and Aquaculture Science (Cefas) of the United Kingdom of Great Britain and Northern Ireland updated its content, and the second edition is available in English, Spanish and French. The guidance also served as the basis for developing an e-learning course on bivalve sanitation, focusing on policymakers, development practitioners and programme managers, sectoral specialists and researchers, bivalve farmers, trainers, and extension agents.<sup>15</sup> The course is being translated into French and Spanish, and the French version's first module is already available.<sup>16</sup>

#### *Food safety of cell-based food*

13. Cell-based food production, which is the development of animal-based agricultural products directly from cell cultures, has been explored as a possible sustainable alternative to conventional production systems. As commercial cell-based food production expands, the urgency to address food safety also increases. Thus, FAO, in collaboration with WHO, has published the report Food Safety Aspects of Cell-based Food to engage with Members and relevant stakeholders by sharing the current

<sup>11</sup> <https://www.fao.org/documents/card/en/c/cc4356en>

<sup>12</sup> <https://www.fao.org/publications/card/es/c/e38f7e8d-a28f-5e91-93ee-389b006e4248/>

<sup>13</sup> <https://www.fao.org/publications/card/en/c/CC0850EN/>

<sup>14</sup> <https://www.fao.org/documents/card/en/c/cb5072en/>

<sup>15</sup> <https://elearning.fao.org/course/view.php?lang=en&id=481>

<sup>16</sup> <https://elearning.fao.org/course/view.php?id=913>

knowledge to identify concrete ways to inform consumers and other stakeholders about the food safety considerations for cell-based food products, including those originated from aquatic products.<sup>17</sup>

### *Food allergens*

14. In collaboration with WHO, FAO convened a series of ad hoc joint FAO/WHO Expert Consultations on Risk Assessment of Food Allergens to update available advice on food allergens. The deliberations and conclusions of these consultations were shared with the Codex Committee on Food Labelling (CCFL) and the CCFH to support the development of internationally agreed food safety standards and guidelines relevant to the management of food allergens, including for aquatic products, as a group. All conclusions and recommendations are publicly available to support the development of policies, best practices, and research. The reports Risk Assessment of Food Allergens - Part 1: Review and Validation of the Codex Alimentarius Priority Allergen List through Risk Assessment and Risk Assessment of Food Allergens - Part 2: Review and Establish Threshold Levels in Foods for the Priority Allergens are available.<sup>18, 19</sup>

### *Antimicrobial Resistance (AMR)*

15. FAO is committed to addressing AMR from a One Health perspective, including the AMR Quadripartite Alliance to strengthen the long-standing partnership with the World Organisation for Animal Health (WOAH), WHO, and the United Nations Environment Programme (UNEP); and the launch of the AMR Multi-Stakeholder Partnership Platform in 2022.<sup>20</sup> To support the implementation of the FAO Action Plan on AMR 2021-2025, there are four newly designated FAO Reference Centres (RCs) on AMR and Aquaculture Biosecurity (November 2022): (1) Pearl River Fisheries Research Institute and (2) the Yellow Sea Fisheries Research Institute, both associated with the Chinese Academy of Fishery Sciences; (3) the Nitte University in India; and (4) the Mississippi State University in the United States of America. The RCs are expected to provide technical assistance and policy advice to activities and programmes related to AMR/AMU in aquaculture, including using the Codex standards for food safety.

## **SANITARY AND PHYTOSANITARY (SPS) ISSUES IN THE FISHERIES AND AQUACULTURE SECTOR – ANALYSIS OF IMPORT NOTIFICATIONS FOR AQUATIC PRODUCTS**

16. Diverse inspection frameworks and requirements to assure consumer protection in importing countries pose one of the most significant challenges for food exporters of aquatic products. Exporters frequently struggle to comprehend import controls, resulting in food products being rejected, detained, or destroyed. Since 2016, FAO has analysed import notifications from the leading importing countries and made them publicly available to promote transparency and disseminate information. The resulting data is organised into six risk categories: chemical, microbiological, histamine, toxins, parasites, and a broad category known as “other causes”. The analysis is available on the FAO GLOBEFISH website, and raw data on import notifications is publicly available in FAO FishstatJ.<sup>21, 22</sup> The FAO GLOBEFISH website and FAO FishstatJ contain rejections, detentions, recalls, and issues reported by competent authorities in Australia from 2019 to 2022 and in the European Union, Japan, and the United States of America from 2016 to 2022.

### *Import notifications for aquatic products in 2022*

17. In 2022, Australia recorded 80 import notifications of aquatic products through the Imported Food Inspection Scheme of the Australian Government. Import notifications increased from 61 in 2021

<sup>17</sup> <https://www.fao.org/documents/card/en/c/cc4855en>

<sup>18</sup> <https://www.fao.org/publications/card/en/c/CB9070EN>

<sup>19</sup> <https://www.fao.org/documents/card/en/c/cc2946en>

<sup>20</sup> <https://www.fao.org/antimicrobial-resistance/quadripartite/the-platform/en/>

<sup>21</sup> <https://www.fao.org/in-action/globefish/import-notifications/en/>

<sup>22</sup> <https://www.fao.org/fishery/en/statistics/software/fishstatj>

to 80 in 2022. Most import notifications were due to chemical issues, with 37 cases, followed by histamine above the maximum levels with 25 instances, and microbiological issues with 18 cases. Among the chemical category, the main problem was the presence of fluoroquinolones, with 16 cases. The main microbiological issue was the presence of *Escherichia coli*.

18. In 2022, the European Union recorded 220 import notifications through the Rapid Alert System for Food and Feed. Most notifications were due to the category “other causes” (91 cases), followed by microbiological causes (52 cases), the chemical causes (45 cases), and the presence of histamine above the maximum levels, with 15 cases recorded. The fifth-largest cause of import notifications was the presence of parasites (11 cases, 10 of which were due to *Anisakis*) and toxins (six cases). Among the “other causes” category, the main issues involved poor temperature control, with 46 cases representing 50 percent of the “other causes” category and 21 percent of the total import notifications. The main microbiological issue was the presence of *Listeria monocytogenes*, with 26 cases, and the chemical one was mercury above the maximum levels, with 22 cases recorded. Among the six import notifications due to toxins, lipophilic toxins were the highest group of marine biotoxins, with four cases. In 2022, 220 notifications were recorded and 221 in 2021.

19. In Japan, in 2022, 114 import notifications of aquatic products were recorded by the Ministry of Health, Labour and Welfare. Most notifications were due to microbiological issues, with 81 cases, followed by chemicals with 32 cases and toxins with one. Coliform presence was the main microbiological issue, accounting for 45 cases, representing 56 percent of the microbiological category and 40 percent of the total notifications in 2022. The main chemical issue was related to the presence of furazolidone in ten cases. Among the 32 chemical cases, 20 were due to antibiotics, including furazolidone (10 cases), enrofloxacin (9 cases), and doxycycline (one case). The only marine biotoxin recorded in products were those causing diarrhetic shellfish poisoning (DSP), with only one case. The total number of cases of import notifications went from 121 in 2021 to 114 in 2022.

20. In the United States of America, in 2022, 787 import notifications of aquatic products were recorded through the Import Refusal Report system of the Food and Drug Administration. Most import notifications were due to the “others” category (428 cases), followed by microbiological issues (243 cases). The third most significant cause of notifications was chemicals, with 93 cases, followed by histamine above the maximum levels, with 23 cases. Among the “others” category, the main problems were associated with products found unfit for human consumption, with 378 cases representing 88 percent of this category and 48 percent of the total import notifications of aquatic products in 2022. The main microbiological issue was the presence of *Salmonella*, with 201 cases, and the main chemical issue was the presence of residues of veterinary drugs, with 43 cases. Import notifications decreased from 1 012 in 2021 to 787 in 2022.

### **IMPORT REQUIREMENTS AND FOOD SAFETY AND QUALITY REGULATIONS FOR AQUATIC PRODUCTS**

21. The 18th Session of COFI:FT emphasised the importance of having clear information on inspection frameworks and requirements, as well as import approval processes, to facilitate international trade, strongly encouraging FAO to continue to work in this area. In this regard, FAO developed summaries of food safety regulatory frameworks for the leading importing countries, dividing the information into “General requirements for imports”, “Requirements for additives, contaminants, antimicrobials and residues”, “Requirements for microbiological and organic”, “Requirements for

labelling and packaging”, and “Traceability requirements”. The GLOBEFISH website provides country-specific information for aquatic products and bivalve molluscs.<sup>23, 24</sup>

## RECENT DEVELOPMENTS IN THE SAFETY AND QUALITY OF AQUATIC PRODUCTS IN FAO

### *Formalization of the collaboration with the IOC/UNESCO*

22. Climate change is making it more challenging to predict HABs, impacting food security, food safety, and the environment. Over the past six years, FAO and IOC/UNESCO have had a very productive partnership in many areas related to HABs. Consequently, FAO’s food safety programme has advanced significantly, contributing to FAO’s Better Nutrition and Better Environment Programme Priority Areas. A joint IOC-FAO Secretariat was developed for the Intergovernmental Panel on Harmful Algal Blooms (IPHAB) to have a more robust and flexible collaborative structure.<sup>25</sup> The IOC-FAO IPHAB, first established in 1991 as the organizational framework for a global partnership, encompasses decision-makers, policymakers, managers, scientists, international organizations and non-governmental organizations (NGOs) to address the problem of harmful microalgae (COFI:FT/XIX/2023/Inf.8).

### *Capacity-building activities*

23. FAO continued its capacity-building activities in food safety and quality for aquatic products by:

- Supporting Members in implementing Codex Standards and texts and international requirements to meet market requirements involving SPS through various initiatives (Georgia, Fiji, Samoa, Senegal, Tonga, and Zambia);
- Organizing training programmes with other institutions to disseminate market access requirements for food safety and quality, traceability, and labelling, including with the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) and Cefas;<sup>26</sup>
- Supporting the organization of international courses and conferences fostering the participation of developing countries, such as the World Seafood Congress;<sup>27</sup>
- Disseminating on the FAO GLOBEFISH website and FAO FishstatJ information on regulatory requirements and import notification data.

24. Further information about specific capacity-building activities can be found in COFI:FT/XIX/2023/Inf.7.

<sup>23</sup> <https://www.fao.org/in-action/globefish/countries/food-safety-regulation-for-fishery-and-aquaculture-products/en>

<sup>24</sup> <https://www.fao.org/in-action/globefish/countries/regulatory-framework-for-bivalve-molluscs/en/>

<sup>25</sup> <https://hab.ioc-unesco.org/ioc-intergovernmental-panel-on-harmful-algal-blooms-iphab/>

<sup>26</sup> <https://www.cefas.co.uk/icoe/seafood-safety/designations/fao-reference-centre/work-programmes-and-annual-reports/>

<sup>27</sup> <https://www.wsc2023.com>