



**JOINT FAO/WHO FOOD STANDARDS PROGRAMME  
CODEX COMMITTEE ON FOOD HYGIENE  
Fifty- third Session**

**San Diego, United States of America**

**29 November – 2 December 2022 and 8 December 2022**

**MATTERS ARISING FROM THE WORK OF FAO AND WHO (INCLUDING JEMRA)**

(Prepared by FAO and WHO)

## INTRODUCTION

1. This paper describes the scientific advice as well as related information and resources that the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) have developed relevant to the specific agenda items of the 53rd Session of the Codex Committee on Food Hygiene (CCFH).

### **A) Joint FAO/WHO Expert meetings on microbiological risk assessment (JEMRA)**

#### **A.1 Prevention and control of microbiological hazards in fresh fruits and vegetables (Relevant to Agenda Item 5)**

2. In 2019, following a request from CCFH50, the CAC approved new work at its 42nd Session on the development of guidelines for the control of Shiga toxin-producing *Escherichia coli* (STEC) in leafy greens and in sprouts. To meet the requests of the CCFH that the publication *Microbial hazards in fresh leafy vegetables and herbs* (MRA14)<sup>1</sup> be updated, and that the microbiological safety of other fresh fruits and vegetables be addressed, FAO and WHO convened a series of expert meetings on preventing and controlling microbiological hazards in these products.

3. Part 4 of the virtual JEMRA meeting on prevention and control of microbiological hazards in fresh fruits and vegetables, was convened from 16 May to 3 June 2022. The purpose of the meeting was to collect, review, and discuss relevant literature and data and provide recommendations on commodity-specific interventions from primary production to point-of-sale.

4. The experts assessed interventions for four sub-divided commodity groups: i) leafy vegetables and herbs; ii) berries and tropical fruits; iii) melons and tree fruits; and iv) seeded and root vegetables. Interventions at all stages of the value chain for the control of relevant microbiological hazards in each of these subgroups were identified and evaluated.

5. For more information, please kindly find the published **summary report**<sup>2</sup>.

#### **Follow-up action by CCFH**

6. CCFH is invited to consider the aforementioned information in determining the next steps to address foodborne STEC as well as the other microbiological hazards in fresh fruits and vegetables. This information may be useful in the review of the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003).

#### **A.2 Risk assessment of food allergens**

7. In response to the request from Codex for scientific advice on food allergens and evidence related to the consumers understanding of the issue, FAO and WHO convened a series of expert meetings on the risk assessment of food allergens. More background information can be found in the previous JEMRA paper for

<sup>1</sup> MRA14: <https://www.fao.org/3/i0452e/i0452e.pdf> and <https://www.who.int/publications/i/item/9789241563789>

<sup>2</sup> <https://www.fao.org/3/cc2007en/cc2007en.pdf> and [https://cdn.who.int/media/docs/default-source/food-safety/jemra/jemra-microbiological-hazards-in-fruits-vegetables-part4-summary-report.pdf?sfvrsn=d8813293\\_5](https://cdn.who.int/media/docs/default-source/food-safety/jemra/jemra-microbiological-hazards-in-fruits-vegetables-part4-summary-report.pdf?sfvrsn=d8813293_5).

CCFH<sup>3</sup>.

8. The second in a series of meetings of the ad hoc Joint FAO/WHO Expert Consultation on Risk Assessment of Food Allergens was held from 15 March to 2 April 2021. The main purpose of this meeting was to establish recommended threshold levels (reference dose (RfD) values) for priority allergens in foods based on available data.

9. When reviewing the datasets on milk and sesame during the second meeting in 2021, the Expert Committee identified significant datasets not yet included in the dose distribution modelling. The Expert Committee agreed that these datasets should be considered for inclusion and to reconvene to establish threshold levels [reference dose (RfD) values] for milk and sesame when updated analyses became available.

10. Following the approach established at the 2021 meeting, the Expert Committee discussed updated analyses of the data on sesame and milk, and recommended their RfD. A **summary report** was published<sup>4</sup>. The meeting report is in development.

11. As there is still a need to address the exemptions for the priority food allergen, a 4<sup>th</sup> ad hoc expert consultation is scheduled at FAO HQ, Rome, Italy from 14 to 18 November 2022.

#### **Follow-up action by CCFH**

12. CCFH is invited to consider the aforementioned information in determining the next steps to address the control of food allergens.

#### **A.3 Control of *Salmonella* and *Campylobacter* in chicken meat (Relevant to Agenda Item 9)**

13. CCFH52 requested that JEMRA collate the relevant scientific information on *Salmonella* and *Campylobacter* in chicken meat in preparation for an update of the existing *Guidelines for the Control of Campylobacter and Salmonella in Chicken Meat* (CXG 78-2011). As a result, a JEMRA meeting on pre- and post-harvest control of non-typhoidal *Salmonella* spp. in poultry meat was convened at WHO HQ, Geneva, Switzerland from 12 to 16 September 2022.

14. The group of subject matter experts reviewed the available data on NT *Salmonella* spp. control in the broiler production chain, from the primary, processing to the post-processing, including scientific literature published since 2008 and data submitted in response to a call for data for this meeting.

15. The meeting 1) determined the extent to which various control measures, good hygienic practice (GHP) or hazard-based control measures (targeted to reduce NT-*Salmonella* spp.), had adequate evidence to assess their efficacy; 2) evaluated the impact or efficacy of control measures relevant to NT-*Salmonella* spp. in the broiler production chain, noting the variability of the impact reviewed and recommended revisions to the *Guidelines for the Control of Campylobacter and Salmonella in Chicken Meat* (CXG 78-2011), Paragraphs 1 to 114 based on the currently available evidence. A **summary report** was published<sup>5</sup>. The meeting report is in development.

16. A similar meeting on control of *Campylobacter* will be convened in 2023. Following the two meetings on *Campylobacter* and *Salmonella* control measures in chicken meat, JEMRA will update and combine the risk assessment models for these two pathogens by convening a meeting in the third quarter of 2023.

#### **Follow-up action by CCFH**

17. CCFH is invited to consider the aforementioned information in determining the next steps to address the control of NT-*Salmonella* spp. in chicken meat.

#### **A.4 Workshop of Joint FAO/WHO work on safety and quality of water used with fresh fruits and vegetable (Relevant to Agenda Item 6)**

18. CCFH52 requested that JEMRA work with EWG co-chairs to facilitate the use of the JEMRA outputs and identify other relevant issues where expert advice might be needed. As a result, a JEMRA workshop on safety and quality of water used with fresh fruits and vegetable was convened at Comayagua, Honduras from 11 to 14 October 2022.

19. More than 60 participants from about 10 countries in Latin American region who participated in the workshop. The JEMRA reports on water and the principle of microbiological risk assessment were introduced

<sup>3</sup> [https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?Ink=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FMeetings%252FCX-712-52%252Ffh52\\_03e.pdf](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?Ink=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FMeetings%252FCX-712-52%252Ffh52_03e.pdf)

<sup>4</sup> <https://www.fao.org/3/cb9312en/cb9312en.pdf> and [https://cdn.who.int/media/docs/default-source/food-safety/jemra/2nd-allergen-summary-report-milk-and-sesame-apr2022.pdf?sfvrsn=35130ec2\\_7](https://cdn.who.int/media/docs/default-source/food-safety/jemra/2nd-allergen-summary-report-milk-and-sesame-apr2022.pdf?sfvrsn=35130ec2_7)

<sup>5</sup> <https://www.fao.org/3/cc2579en/cc2579en.pdf> and [https://cdn.who.int/media/docs/default-source/food-safety/jemra/jemra-meeting-salmonella-poultry-meat-summary-and-conclusions-oct2022.pdf?sfvrsn=85adc558\\_3](https://cdn.who.int/media/docs/default-source/food-safety/jemra/jemra-meeting-salmonella-poultry-meat-summary-and-conclusions-oct2022.pdf?sfvrsn=85adc558_3)

and discussed; the knowledge and technique from the JEMRA work were explained and appreciated by the participants.

20. The participants assessed the “fresh produce decision tree” from the JEMRA report in the field. By using different information about the source of the water in the same farm, the participants in different groups concluded different levels of risk for the water, as well as different strategies should be considered to mitigate the risk. The JEMRA decision tree showed a very sensitive function and also comprehensive approaches to analyse and address the risk issues associated with the water.

21. The participants used the “water reuse decision tree” from the JEMRA report in the field as well. They found the decision tree precisely predicted the problem with the rotten products by reusing the water without monitoring and verification. The producers would avoid this issue if they were aware of the JEMRA water reuse decision tree before, as the participants concluded.

22. An infographic of the JEMRA decision trees on fresh produce, fishery and water reuse will be developed and translated, to support the implementation of the coming Codex guidance on water.

### **Follow-up action by CCFH**

23. CCFH is invited to consider the aforementioned information in determining the next steps to facilitate the water safety and quality use and reused in food production and processing.

### **A.5 Microbiological risk assessment of *Listeria monocytogenes* in foods (Relevant to Agenda Item 9)**

24. CCFH52 requested that JEMRA develop a full farm to table risk assessment for *Listeria monocytogenes* in foods that would inform any update of the *Guidelines on the Application of General Principles of Food Hygiene to the Control of Listeria monocytogenes in Foods* (CXG 61-2007). As a result, a JEMRA meeting on microbiological risk assessment of *Listeria monocytogenes* in foods will be convened at FAO HQ, Rome, Italy from 24 to 28 October 2022.

## **B) OTHER RELATED ISSUES**

### **B.1 WHO-FERG: Burden of foodborne diseases**

25. The work to estimate and publish by 2025 the national, regional and global burden of foodborne diseases is in progress through the support provided by WHO’s technical advisory group, the Foodborne Disease Burden Epidemiology Reference Group (FERG). The third meeting of the FERG was held virtually in April 2022<sup>6</sup> and the fourth meeting is planned on 15-18 November 2022 in Geneva, Switzerland.

26. Several important decisions were made at the third meeting as outlined in the executive summary<sup>7</sup>. From the next update, the methodology built with FERG will take the time-trend approach, and will include, as a minimum, the 31 hazards previously reported in 2015<sup>8</sup> for the next update as well as four metals (lead, arsenic, methyl mercury and cadmium). Other hazards are being considered for inclusions in future estimates.

27. Following the need to newly collect data and gather evidence, a call for expressions of interest was published online in September 2022 with the general concept note, and two first terms of references including one for conducting systematic reviews on diarrhoeal diseases and deaths, and for global expert elicitation to attribute the burden to foodborne transmission and to specific foods<sup>9</sup>. More terms of references are planned to be published on the same website accordingly.

28. Based on the new data principle established in WHO<sup>10</sup>, a country consultation will be organized to engage WHO Member States on this matter, and details will be shared appropriately with Member States in due course. The WHO Country Portal<sup>11</sup> will be used to establish communications with countries and engage them throughout the data process for data exchanges and knowledge transfer in both directions.

29. WHO intends to roll out the national guidance, “Estimating the burden of foodborne diseases: A practical handbook for countries” published in June 2021 and translated to multiple languages<sup>12</sup> globally and support countries to strengthen national capacity to estimate the burden of foodborne diseases through the coordination and communication of respective regional offices. Several countries started their work and

<sup>6</sup> [https://www.who.int/news-room/events/detail/2022/04/26/default-calendar/third-meeting-of-the-foodborne-disease-epidemiology-reference-group-\(ferg2\)-2021-2024](https://www.who.int/news-room/events/detail/2022/04/26/default-calendar/third-meeting-of-the-foodborne-disease-epidemiology-reference-group-(ferg2)-2021-2024)

<sup>7</sup> <https://cdn.who.int/media/docs/default-source/foodborne-diseases/ferg/ferg2-3rd-meeting-executive-summary.pdf>

<sup>8</sup> [https://apps.who.int/iris/bitstream/handle/10665/199350/9789241565165\\_eng.pdf](https://apps.who.int/iris/bitstream/handle/10665/199350/9789241565165_eng.pdf)

<sup>9</sup> <https://www.who.int/news-room/articles-detail/call-for-expressions-of-interest-to-conduct-systematic-reviews-and-other-studies-for-estimating-the-burden-of-foodborne-diseases>

<sup>10</sup> <https://www.who.int/data/principles>

<sup>11</sup> <https://data.who.int/products/country-portal>

<sup>12</sup> <https://www.who.int/publications/i/item/9789240012264>

expressed interest, and the FERG's sub-working group, "Country Support Task Force" is tasked to advise and support WHO for this purpose.

30. Translating the estimates into the policy and national actions is seen crucial. Given the importance to illustrate the societal impact of foodborne diseases and as advised by the FERG, WHO also started the preparatory work to measure economic burden of foodborne disease through a partnership with external organizations.

## **B.2 FAO/WHO Early warning/alert, preparedness and response to food safety incidents**

31. The Secretariat of the joint FAO/WHO International Food Safety Authorities Network (INFOSAN)<sup>13</sup>, continues to develop and strengthen the Network and develop capacity for preparedness and response to food safety incidents. In 2021, INFOSAN facilitated the exchange of information during 247 international food safety incidents. During 2022, the INFOSAN Secretariat has been involved in 144 international food safety incidents so far.

32. For example, an INFOSAN Global Alert was issued in April 2022 concerning a multi-country outbreak of *Salmonella* Typhimurium monophasic linked to chocolate products, distributed internationally to over 113 WHO Member States and territories. The alert sent to all INFOSAN members allowed Members of FAO and WHO to initiate investigations to identify and recall implicated products, as well as identify possible cases of illness related to the consumption of implicated products.

33. In 2021 and 2022, activities to strengthen the Network and food safety emergency response capacity were carried out in several sub-regions. Especially in 2022, the INFOSAN Secretariat participated in a two-day workshop convened by the WHO Health Emergencies Western Balkan Hub in Belgrade, Serbia. During the workshop, a simulation exercise was also facilitated, covering topics such as risk communication and to examine the processes and procedures of INFOSAN. The INFOSAN Secretariat has also participated and supported the development of two editions of the European Commission's Better Training for Safer Food on food safety crisis preparedness, where trainees got an understanding of the role of INFOSAN and IHR during international food safety emergencies and participated in various simulation exercises on food safety emergency response.

34. In 2021, national workshops to strengthen national capacity to respond to food safety emergencies were held with food safety competent authorities of Senegal, Cameroon and Morocco. Over 2022, national workshops have been held with Guatemala, Mexico, Nicaragua, Sierra Leone, Cambodia, Cote d'Ivoire, Benin, Ireland, United Kingdom, Guinea and Cambodia. During the workshop, national authorities with a stake in food safety emergency response had the opportunity to learn more about the Network and understand their roles and responsibilities as INFOSAN members during food safety emergencies. The workshops also allowed national authorities to deepen their understanding on the link between INFOSAN and IHR in the context of food safety emergency response. The INFOSAN Secretariat also supported a US CDC training co-organized with the WHO Eastern Mediterranean Regional Office on foodborne diseases surveillance and response with Sudan, Syria, Saudi Arabia and Qatar.

35. In the context of the celebration of the World Food Safety Day 2022, the World Health Organization organized the "Health talks on food safety", from June 7 to 9. A special Health Talk was organized to discuss how to improve emergency response in global food safety, with the participation of a number of INFOSAN members, a member of the INFOSAN Advisory Group and the INFOSAN Secretariat. The panel discussion focused on national perspectives about global efforts that are in place to assist countries to respond to international food safety emergencies, to strengthen their food safety systems and to contribute to improved coordination and information exchange on food safety events. Common challenges and ideas on how to address them were discussed by the panellists, using recent real-life food safety emergencies as a starting point for the analysis.

## **C) PUBLICATIONS**

36. All the publications in Microbiological Risk Assessment (MRA) Series are available on the FAO (<https://www.fao.org/food-safety/resources/publications/en/>) and WHO ([https://www.who.int/groups/joint-fao-who-expert-meetings-on-microbiological-risk-assessment-\(jemra\)](https://www.who.int/groups/joint-fao-who-expert-meetings-on-microbiological-risk-assessment-(jemra))) websites.

37. Recent publications:

- Ranking of low moisture foods in support of microbiological risk management: meeting report and systematic review. Microbiological Risk Assessment Series No. 26. Available at: <https://www.fao.org/3/cc0763en/cc0763en.pdf> and <https://www.who.int/publications/i/item/9789240044036>.

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<sup>13</sup> <https://www.who.int/groups/fao-who-international-food-safety-authorities-network-infosan/about>

- Microbiological hazards in spices and dried aromatic herbs: meeting report. Microbiological Risk Assessment Series No. 27. Available at: <https://www.fao.org/3/cb8686en/cb8686en.pdf> and <https://www.who.int/publications/i/item/9789240045187>.
  - Risk assessment of food allergens, part 1: review and validation of Codex Alimentarius priority allergen list through risk assessment: meeting report. Food Safety and Quality Series No 14. Available at: <https://www.fao.org/3/cb9070en/cb9070en.pdf> and <https://www.who.int/publications/i/item/9789240042391>.
  - The summary report of ad hoc joint FAO/WHO expert consultation on risk assessment of food allergens, part 2: review and establish threshold levels in foods for the priority allergens. A follow-up meeting on milk and sesame. Available at: <https://www.fao.org/3/cb9312en/cb9312en.pdf> and [https://cdn.who.int/media/docs/default-source/food-safety/jemra/2nd-allergen-summary-report-milk-and-sesame-apr2022.pdf?sfvrsn=35130ec2\\_7](https://cdn.who.int/media/docs/default-source/food-safety/jemra/2nd-allergen-summary-report-milk-and-sesame-apr2022.pdf?sfvrsn=35130ec2_7).
  - The summary report of JEMRA meeting on the prevention and control of microbiological hazards in fresh fruits and vegetables (part 4, commodity-specific). Available at: <https://www.fao.org/3/cc2007en/cc2007en.pdf> and [https://cdn.who.int/media/docs/default-source/food-safety/jemra/jemra-microbiological-hazards-in-fruits-vegetables-part4-summary-report.pdf?sfvrsn=d8813293\\_5](https://cdn.who.int/media/docs/default-source/food-safety/jemra/jemra-microbiological-hazards-in-fruits-vegetables-part4-summary-report.pdf?sfvrsn=d8813293_5).
  - The summary report of JEMRA meeting on the pre- and post-harvest control of non-typhoidal *Salmonella* spp. in poultry meat. Available at: <https://www.fao.org/3/cc2579en/cc2579en.pdf> and [https://cdn.who.int/media/docs/default-source/food-safety/jemra/jemra-meeting-salmonella-poultry-meat-summary-and-conclusions-oct2022.pdf?sfvrsn=85adc558\\_3](https://cdn.who.int/media/docs/default-source/food-safety/jemra/jemra-meeting-salmonella-poultry-meat-summary-and-conclusions-oct2022.pdf?sfvrsn=85adc558_3).
  - *Listeria monocytogenes* in ready-to-eat (RTE) foods: attribution, characterization and monitoring. Microbiological Risk Assessment Series No. 38. Available at: <https://www.fao.org/3/cc2400en/cc2400en.pdf>.
  - Control measures for Shiga toxin-producing *Escherichia coli* (STEC) associated with meat and dairy products. Microbiological Risk Assessment Series No. 39. Available at: <https://www.fao.org/3/cc2402en/cc2402en.pdf>.
38. Forthcoming publications include:
- Safety and quality of water used and reused in the production and processing of fish and fishery products: meeting report. Microbiological Risk Assessment Series No. 40. In press to be released in 2022.
  - Safety and quality of water use and reuse in the production and processing of dairy products: meeting report. Microbiological Risk Assessment Series No. 41. In press to be released in 2022.
  - Prevention and control of microbiological hazards in fresh fruits and vegetables (Part 1 and Part 2, general principle and fresh fruits and vegetables): meeting Report. Microbiological Risk Assessment Series No 42.
  - Prevention and control of microbiological hazards in fresh fruits and vegetables (Part 3, sprouts): meeting Report. Microbiological Risk Assessment Series No 43.
  - Prevention and control of microbiological hazards in fresh fruits and vegetables (part 4, commodity-specific): meeting report. Microbiological Risk Assessment Series No 44.
  - Pre- and post-harvest control of nontyphoidal *Salmonella* spp. in poultry meat: meeting report. Microbiological Risk Assessment Series No 45.
  - Risk assessment of food allergens, part 2: review and establish threshold levels in foods for the priority allergens: meeting report. Food Safety and Quality Series No 15. In press to be released in 2022.
  - Risk assessment of food allergens, part 3: review and establish precautionary labelling in foods of the priority allergens. Food Safety and Quality Series No 16. In press to be released in 2022.