PART I: RECENT FAO/WHO EXPERT MEETINGS AND OTHER RELEVANT INFORMATION

1. The delivery of scientific advice continues at an accelerated level. FAO and WHO have continued to develop the requested scientific advice. This strong activity has been made possible through the contributions of Australia, Canada, the European Union, France, Japan, and the United States of America (USA), which have been greatly appreciated. In addition, these activities are the result of the high priority FAO and WHO assigns to the scientific advice programme, realizing the importance of a strong scientific foundation for all Codex standards. The CAC remains the primary beneficiary of the joint FAO/WHO scientific advice programme, as the results are used extensively in the development of Codex texts and standards. However, also other UN agencies (for example, the World Food Programme) are requesting scientific advice from FAO/WHO. Furthermore, the outputs of this joint programme are also used by member countries of FAO and WHO, to strengthen the science-based decision making on food safety and nutrition issues at national and regional levels. The following summarises the scientific advice provided in the September 2022- August 2023 period since FAO and WHO’s previous report to the Commission (CAC45 INF/2).

Joint FAO/WHO Expert Committee on Food Additives (JECFA)

2. Since the last session of CAC, one JECFA meeting (i.e., JECFA96) has been convened in-person. The meeting addressed food additives.

3. Joint FAO/WHO Expert Committee on Food Additives (JECFA). The 96th Meeting of food additives, 27 June – 6 July 2023, Geneva, Switzerland. This meeting was held in the framework of the on-going programme on the risk assessment of food additives and contaminants in foods. The Committee undertook the toxicological evaluations and dietary exposure assessments and developed specifications for aspartame. The Committee also assessed the dietary exposure for two groups of flavouring agents (esters of aliphatic acyclic primary alcohols with branched-chain aliphatic acyclic acids and hydroxy- and alkoxy-substituted benzyl derivatives), and revised the specifications for eight flavouring agents. Specifications for the three food additives were also revised.

Joint FAO/WHO Meeting on Pesticide Residues (JMPR)

4. Joint FAO/WHO Meeting on Pesticide Residues (JMPR) 13–22 September 2022. Rome, Italy. Joint FAO/WHO Meeting on Pesticide Residues (JMPR) was held at FAO headquarter in Rome, Italy, 13–22 September 2022. The first physical meeting after the relaxation of COVID-19 restrictions, evaluated 34 pesticides, including seven new compounds and four compounds that were re-evaluated within the periodic review programme of the CCPR, for toxicity or residues, or both. The Meeting established ADIs and ARIDs, estimated MRLs and recommended them for use by CCPR. The meeting also estimated supervised trials median residue (STMR) and highest residue (HR) levels as a basis for estimating dietary exposures. The Meeting also estimated the dietary exposures (both short-term and long-term) of the pesticides reviewed and, on this basis, performed a dietary risk assessment in relation to the relevant ADI and where necessary ARID. Cases in which ADIs or ARIDs may be exceeded were clearly indicated in order to facilitate the decision-
making process by CCPR. In addition, the meeting responded to 2 concern forms raised at the CCPR, considered a number of current issues related to the risk assessment of chemicals, the evaluation of pesticide residues and the procedures used to recommend maximum residue levels. These considerations and further details of the individual evaluations can be found in the report.1

Joint FAO/WHO Expert Meeting on Microbiological Risk Assessment (JEMRA)

5. Joint FAO/WHO Expert Meeting on the pre- and post-harvest control of non-typhoidal Salmonella spp. in poultry meat, 12 - 16 September 2022, Geneva, Switzerland: The purpose of the meetings was to review recent data and evidence on the topic and to provide scientific advice on control measures for non-typhoidal Salmonella spp. in the broiler production chain. The meeting report is in development and the executive summary is available at FAO/WHO websites.2

6. Joint FAO/WHO Expert meeting on microbiological risk assessment of Listeria monocytogenes in foods - Part 1: Formal models, 24 - 28 October 2022, Rome, Italy: The purpose of this meeting was to undertake a production-to-consumption risk assessment on Listeria monocytogenes in food in order to inform a possible future revision of the Guidelines on the Application of General Principles of Food Hygiene to the Control of Listeria monocytogenes in Foods. The meeting report is in development and the executive summary is available at FAO/WHO websites.3

7. Joint FAO/WHO Expert Meeting on the pre- and post-harvest control of Campylobacter spp. in poultry meat, 6 – 10 February 2023, Rome, Italy: The purpose of this meeting was to review recent data and evidence on the topic and to provide scientific advice on control measures for thermotolerant Campylobacter species C. jejuni and C. coli in the broiler production chain. The meeting report is in development and the executive summary is available at FAO/WHO websites.4

8. Joint FAO/WHO Expert meeting on microbiological risk assessment of Listeria monocytogenes in foods - Part 2: Risk assessment models, 29 May - 2 June 2023, Geneva, Switzerland: Following the Part 1 meeting in October 2022, several risk assessment models were developed and evaluated to characterize the risk of listeriosis due to the consumption of selected commodities. The purposes of this meeting include to test and evaluate the full production-to-consumption models for the selected commodities and to use the models with different scenarios to provide examples and recommendations to risk managers to control L. monocytogenes. The meeting report is in development and the executive summary is available at FAO/WHO websites.5


Ad hoc Joint FAO/WHO Expert Consultation on Risk Assessment of Food Allergens

10. Ad hoc Joint FAO/WHO Expert Consultation on Risk Assessment of Food Allergens - Part 4: Review and establish exemption for the food allergens, 14 - 18 November 2022, Rome, Italy: Following the three meetings that were held during 2022-2023, this forth meeting was held to develop a process for the consideration of future exemptions of highly refined foods and ingredients derived from or containing a priority allergen food. The executive summary is available at FAO/WHO website.6

11. Ad hoc Joint FAO/WHO Expert Consultation on Risk Assessment of Food Allergens - Part 5: Review and establish threshold levels for specific tree nuts (Brazil nut, macadamia nut or Queensland nut, pine nut), soy, celery, lupin, mustard, buckwheat, and oats, virtual meeting, March 2023: The purpose of this fifth meeting was to work on the food allergens which are not in the priority list to respond to the request from the codex committee of food labelling for reviewing and establishing threshold levels. The outcome will be published soon.

1 https://www.who.int/publications/i/item/9789240069602
Other activities

**Ad hoc FAO/WHO work on food safety aspects of cell-based food**

12. FAO and WHO launched a publication entitled “Food safety aspects of cell-based food” in April 2023. The publication includes the results of an FAO expert consultation in collaboration with WHO that was held in Singapore in November 2022, where a comprehensive food safety hazard identification was conducted. A 4-page factsheet “Nine things to know about food safety aspects of cell-based food” captured the terminology issues, current development status, the importance of food safety assurance, relevant considerations for sustainability, available resources and activities at the global level, as well as tips for the competent authorities to consider for regulatory preparedness and communication strategies. In August 2023, the final report of the stakeholder roundtable meeting that FAO and Ministry of Health of Israel hosted was published. Developers and producers of cell-based foods presented various cell-based production processes. The report provides an overview of the 2022 status of the topic of cell-based food development and paved a way for conducting food safety hazard identifications for cell-based food. To update the state of the art in 2023, another stakeholder meeting is held by FAO in collaboration with the Government of China in November 2023, and the report will be available in the first quarter of 2024.

**Ad hoc FAO work on gene editing and food safety**

13. Gene (or genome) editing is an umbrella term for various techniques based in molecular biology used for introducing targeted changes in the genome of living organisms. In 2023, FAO published a technical report entitled “Gene editing and food safety: Technical considerations and potential relevance to the work of Codex Alimentarius”. This report is a follow-up report of the FAO issue paper entitled “Gene editing and agrifood systems” published in 2022. The food safety report provides a review on the applications of gene editing for food production, including the applicability of existing Codex Alimentarius principles and guidelines for relevant food safety assessments and it offers some key considerations for developing and implementing policies and regulatory criteria for products derived from gene editing. It also highlights areas where there are opportunities for national competent authorities to benefit from the existing and ongoing work of FAO and Codex Alimentarius and for scientific advice, capacity development, knowledge transfers and information exchanges.

**Ad hoc FAO work on microplastics in food**

14. FAO developed a background document that compiles information on the occurrence of microplastics in all commodities, microplastics 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. This process set up the basis for future risk assessment exercise and provides information that can be used for the provision of risk management options. The report, published in late-2022 consolidated during an expert meeting and can be found online.

**Ad Hoc WHO work on WHO work on dioxin and dioxin-like compounds**

15. Since the early 1990’s, WHO has organized expert consultations with the objective to harmonize the TEFs for dioxins and dioxin-like compounds on the international level, thereby giving recommendations to national regulatory authorities. TEF expresses the toxicity of dioxins, dibenzofurans and dioxin-like PCBs relative to the most toxic form of dioxin, 2,3,7,8-TCDD. The latest WHO TEFs for dioxin and dioxin-like compounds were established by WHO through a similar expert consultation in 2005.

16. Since the previous 2005 consultation, a large amount of congener-specific data has been published on estimates of relative potency (REPs) and potential TEF selections. These relative potency data from individual studies have been added to an updated REP database, and these data have been used in a Bayesian meta-regression approach to determine whether or not changes in TEFs would be warranted. The methods applied for this TEF re-evaluation directly follow recommendations made by the 2005 WHO expert consultation. Preceding the 2022 expert consultation, WHO has worked for more than two years with a group of international recognized dioxin experts to prepare for this meeting. Based on the recommendations of this group, and with the support and collaboration of the European Food Safety Agency (EFSA) - two contractors, ToxStrategies and KeyToxicology, were engaged. These contractors prepared a refined database of relative potency estimates, to develop a consensus-based REP weighting and conducted a peer review of the new data added to the REP database. To further validate the data and models used to refine the TEF values, WHO engaged with experts from the U.S. National Institute of Environmental Health Sciences (NIEHS) to conduct a

---

7 https://doi.org/10.4060/cc4855en
9 https://doi.org/10.4060/cc6967en
10 https://doi.org/10.4060/cc5136en
11 https://doi.org/10.4060/cc3579en
comprehensive assessment of the Bayesian methods and its application to the REP database. This methodology and level of peer review is unprecedented in the evolution of the REP database. It provides additional confidence in the data that 2022 WHO experts used upon making changes to any of the TEF values. The background data and models used to derive these updated 2022 TEF values will be published in the peer-reviewed literature in 2023.

**Ad hoc Joint IAEA–FAO Technical Meeting on the Way Forward for the Assessment of Protein Requirements and Protein Quality and for the Development of a Protein Digestibility and Quality Database**

17. Defining accurately the amount and quality required to meet human nutritional needs and describing appropriately the protein supplied by foods and diets is critical in meeting global nutrition targets. Scientific advice on protein quality evaluation is also relevant for the development of Codex Alimentarius food standards and guidelines. More specifically, the Codex Committee on Nutrition and Foods for Special Dietary Uses (CCNFSDU) has considered the issue of protein quality in foods and diets on several occasions. Standardized protein quality of foods data in humans has a potential to inform dialogue on recommendations for protein requirements for all age groups, especially in first 3 years of life. FAO in collaboration with IAEA held a 4-day technical meeting in Vienna, from 10 to 13 October 2022. The meeting reviewed evidence and related methods on protein requirements and protein quality assessment and produced a framework for development of a Protein Digestibility Database to aid dialogue on the evaluation of protein quality and protein sufficiency in different populations.

**Ad hoc FAO work on the Nutritional Composition of Foods and Beverages made from Plant-based and other Alternative Protein Sources**

18. Following a request submitted at the 43rd Session of the Codex Committee of Nutrition and Foods for Special Dietary Uses, FAO is currently working on producing a literature review to guide the future development of “Guidelines including General Principles for the Nutritional Composition of Foods and Beverages made from Plant-based and other Alternative Protein Sources”. The review will identify literature with data on the nutrient profiles of foods and beverages made from plant-based and other alternative protein sources, which are intended to replace animal-based products, currently in the marketplace and comparison with their animal-based counterparts.

**International Symposium Dietary Protein for Human Health, 13-16 September 2023**

19. The International Symposium: Dietary Protein for Human Health is co-organised by FAO, two leading Universities and in collaboration with IAEA and will bring together international leaders in protein nutrition and related areas and will provide an authoritative update on recent scientific developments of critical importance to human welfare and food security. The three-day Symposium will include presentations and discussions on protein nutrition and health; amino acid requirements; amino acid digestibility and availability; dietary protein quality, including PDCAAS and DIAAS; influence of protein quality; influence of protein quality on growth and development and on whole-body protein metabolism; protein and future food sustainability. More information can be found at: https://web.cvent.com/event/1783d29e-b98f-4342-b4a1-30dbaf3fc357/summary

**Ad hoc Joint FAO/WHO work on risks and benefits of fish consumption**

20. New evidence has become available regarding the risks and benefits of fish consumption. For this reason, FAO and WHO are currently working to update the Report of the Joint FAO/WHO Expert Consultation on the Risks and Benefits of Fish Consumption published in 2010. This will be done through an expert consultation that will set a framework for assessing the net health benefits or risks of fish consumption and that will also provide guidance to the Codex Alimentarius Commission in their work on managing risks, considering the existing data on the risk and benefits of eating fish. The Expert consultation will be held from 9-13 October in Rome, Italy.

**Ad hoc Joint FAO/WHO work on seaweed safety**

21. Increased cultivation and utilization of seaweed are expected to be important pillars of sustainable food security and a robust aquatic economy in the near future. Many factors can affect the presence of hazards in seaweed. However, legislation and guidance documents on seaweed production and utilization are generally still lacking. In this regard, FAO and WHO developed a background document that identifies food safety hazards linked to the consumption of seaweed and aquatic plants. FAO and WHO considered that there was value in developing relevant Codex guidance on this subject presented this topic to the 35th Session of the Codex Committee on Fish and Fishery Products that agreed on considering further work in the area based on the background document. The joint FAO/WHO Report of the Expert Meeting on Food Safety for Seaweed13 was subsequently consolidated during an expert meeting and published in late 2022.

---


22. Various Healthy Diets guidelines and Food environment policy guidelines were released recently. The activities are explained in the CX/CAC 23/46/22.

FAO/WHO updating of nutrient requirements for infants and young children aged from birth through 3 years of age

23. FAO and WHO last updated vitamin and mineral requirements for all age groups in 2004. Since then, new data have emerged suggesting that requirements for some micronutrients may need to be updated, particularly for infants and young children. Therefore, in part to inform the planned updating of WHO guidance on complementary feeding and also to contribute to the ongoing work of CCNFSDU in establishing nutrient reference values (NRVs-R) for children aged 6-36 months. FAO and WHO established an expert group to initiate the updating of nutrient intake values for infants and young children from birth through 3 years of age. Nutrient intake values include requirements (e.g. average nutrient requirement [ANR], adequate intake [AI], individual nutrient level [INLx]) and safe upper levels of intake. The expert group is aiming to derive average nutrient requirements where possible, along with INL98 (daily intake reference value that is estimated to meet the nutrient requirement of 98 percent of the apparently healthy individuals in a specified population), and ULs. Prior to initiating the process for updating the requirements, WHO conducted an initial review of the recent scientific literature on nutrient requirements, and compilation of national dietary guidelines from all regions, containing detailed information about nutrient requirements in the age group of interest. Using the data obtained from this preparatory work done by WHO, FAO and WHO were able to prioritize the nutrients to be updated (i.e. calcium, vitamin D and zinc as the first three nutrients to be updated). A series of systematic reviews have been completed and discussed by the expert group over a series of meetings beginning in January 2021. The last expert meeting was held in April 2023 and the work on updating the intake values for calcium, vitamin D and zinc is now complete. Scoping reviews have been completed for iron, vitamin A, folate, and magnesium and are currently being reviewed by FAO and WHO for next steps.

Publications

JECFA publications

24. JECFA publications are available on the following websites:

- WHO [https://www.who.int/groups/joint-fao-who-expert-committee-on-food-additives-(jecfa)](https://www.who.int/groups/joint-fao-who-expert-committee-on-food-additives-(jecfa))

25. Recent publications include:

- Toxicological evaluation of certain veterinary drug residues in food: prepared by the ninety-fourth meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA) [https://www.who.int/publications/i/item/9789240068414](https://www.who.int/publications/i/item/9789240068414)
- Evaluation of certain veterinary drug residues in food: ninety-fourth report of the Joint FAO/WHO Expert Committee on Food Additives [https://www.who.int/publications/i/item/9789240057586](https://www.who.int/publications/i/item/9789240057586)
- Evaluation of certain contaminants in food: ninety-third report of the Joint FAO/WHO Expert Committee on Food Additives. [https://www.who.int/publications/i/item/9789240068452](https://www.who.int/publications/i/item/9789240068452)
JMPR Publications

26. JMPR publications are available on the following websites:

   on-Pesticide-Residues-JMPR/en/
   WHO: https://www.who.int/groups/joint-fao-who-meeting-on-pesticide-residues-(jmpr)

27. Recent publications include:

   • Pesticide residues in food 2021. Joint FAO/WHO meeting on pesticide residues. Evaluation Part II – 
     Toxicological - https://www.who.int/publications/i/item/9789240054622

JEMRA Publications


Other publications

     brief. Available at: https://www.fao.org/3/cc6419en/cc6419en.pdf and https://www.who.int/publications/i/item/WHO-HEP-NFS-SSA-23.06.1.1
   • FAO and WHO. 2023. Food safety aspects of cell-based food. Rome. Available at: https://doi.org/10.4060/cc4855en
   • FAO. 2023. Review of derivation methods for dietary intake reference values for older infants and young children (in publication)
• FAO. 2023. Computing PDCAAS for Protein Quality Assessment in Follow-up Formula for Young Children (in publication)
• FAO and IAEA. 2023. Report of a Technical Meeting on the Assessment of Protein Requirements and Protein Quality and for the Development of a Protein Digestibility and Quality Database (in publication)

Upcoming meetings

29. Ad hoc Joint FAO/WHO Expert Consultation on Risks and Benefits of Fish Consumption, 9–13 October 2023: The meeting will focus on assessing the net health benefits or risks of fish consumption and that will also provide guidance to the Codex Alimentarius Commission in their work on managing risks, taking into account the existing data on the benefits of eating fish.

30. Joint FAO/WHO Expert Committee on Food Additives (JECFA), the 97th Meeting on Food Additives, Rome, Italy. 31 October to 9 November 2023. A second meeting on food additives is envisaged in fall 2023 for the evaluation of the food additive titanium dioxide (INS 171). This meeting will be held in the framework of the on-going programme on the risk assessment of food additives and contaminants in foods. In view of this evaluation, FAO and WHO are working on a Guidance document that can be used by JECFA and other FAO/WHO expert committees for the evaluation of chemical substances whose risk assessment requires looking into nanomaterial aspect.

31. Joint FAO/WHO Expert Committee of Food Additives (JECFA), the 98th Meeting on Veterinary Drugs, Rome, Italy. 20 to 28 February 2024: This meeting will be held in the framework of the on-going programme on the risk assessment of veterinary drugs in foods. The list of substances scheduled for evaluation includes four new evaluations/ re-evaluations.

32. Joint FAO/WHO Expert Committee on Food Additives (JECFA), the 99th Meeting on Food Additives, Geneva, Switzerland. 4 to 13 June 2024. This meeting will be held in the framework of the on-going programme on the risk assessment of food additives and contaminants in foods. The list of substances scheduled for evaluation includes eight food additives for full evaluation and ten flavouring agents for revision of specifications only.

33. Joint FAO/WHO Expert Meeting on microbiological risk assessment of non-typhoidal Salmonella spp. and Campylobacter spp. in poultry meat, 2024: The meeting will focus on developing a production-to-consumption risk assessment for non-typhoidal Salmonella spp. and thermotolerant Campylobacter spp.

PART II: FINANCIAL AND BUDGETARY MATTERS
34. The budget requirements presented here are based on the requests for scientific advice from several Codex subsidiary bodies. This section provides a summary of cost for the provision of scientific advice to Codex in 2021-2022 by FAO and WHO based on budgeted expenditures. The final information on 2023-2024 expenditure will become available in early 2025.

WHO budget
35. In WHO, most of the funds for the activity and staff costs related to the provision of scientific advice in food safety and nutrition is provided through specified voluntary contributions from Member States and other donors while part of the staff costs is provided through assessed and unspecified voluntary contributions. Both food safety and nutrition scientific advice work is implemented by the Standard and Scientific Unit in the Department of Nutrition and Food Safety, Division of UHC/Healthier Populations.

36. For the biennium 2022-23, the activity and staff costs for the work on scientific advice in food safety and nutrition amounted to USD 6 million including USD 4.7 million in food safety.

37. Canada, the European Union, Japan, USA, Irish Aid, Swiss Agency for Development and Cooperation, Bill & Melinda Gates Foundation, Eleanor Crook Foundation and Vital Strategies have provided voluntary contributions to support the scientific advice work on food safety and nutrition. Other Members are strongly encouraged to follow this example.

38. The scientific advice activity of WHO heavily depends on specified contributions received from a small number of Member States which is gratefully acknowledged, in particular the long-standing support from the United States of America to food safety and Japan to nutrition.
FAO budget

39. In FAO, funds to support the activities and staff costs related to the provision of scientific advice to Codex are budgeted in FAOs regular Programme of Work and Budget and through extra-budgetary resources. Food Safety Scientific Advice to Codex is supported by a number of units within FAO including the Divisions of Food Systems and Food Safety, Plant Production and Protection and Fisheries and Aquaculture. Scientific advice on nutrition, when requested, is provided by the Division of Food and Nutrition.

40. For the biennium 2022-23, USD 6.8 million have been budgeted for activity and staff costs related to scientific advice to Codex, including USD 6.3 million in food safety (staff costs: USD 1 928 000 and activity costs: USD 4 329 000) and USD 500 000 in nutrition (staff costs: USD 486 000 and activity costs: USD 14 000). This includes the USD 1 million increase in the PWB 2020-21 (CL 163/3\textsuperscript{14} para 30 and CL 164/3\textsuperscript{15} para 59) for scientific advice and standard setting.

41. In the 2022-23 biennium, approximately 73 percent of the budget, amounting to USD 4.9 million, represent allocations from FAO’s Regular Programme budget. The remaining 27 percent is funded from extra-budgetary contributions from Australia, Canada, France, and USA. Additional extra-budgetary resources are anticipated in the current biennium.

42. The recognition of key scientific advice meetings and consultations that support the standard setting work of Codex (such as JECFA, JEMRA, JMPR and JEMNU) as Corporate Technical Activities in FAO’s Programme of Work and Budget has ensured budgetary security for non-staff activities in the current biennium and is gratefully acknowledged.

Conclusion

43. As indicated above, the way in which the provision of scientific advice is currently funded is different between WHO (heavily dependent on voluntary contributions) and FAO (mainly covered by assessed contributions).

44. Overall, the contribution of FAO and WHO to the provision of scientific advice equals to approximately USD 12.8 million per biennium. To ensure the ability of the joint scientific advice programme to be able to deliver at the current rate, it will be of paramount importance to ensure this level of stable and predictable funding continue to be made available to both organizations.

\textsuperscript{14} FAO Council 163rd Session: \url{http://www.fao.org/3/mz825en/mz825en.pdf}

\textsuperscript{15} FAO Council 164th Session: \url{http://www.fao.org/3/nc436en/nc436en.pdf}