CODEX ALIMENTARIUS COMMISSION

Food and Agriculture Organization of the United Nations

World Health Organization

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Agenda Items 3.1, 4.1, 4.2, 5.3, 6, 7.1, 7.2 **MAS45/CRD15**

Original Language Only

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON METHODS OF ANALYSIS AND SAMPLING

Forty-fifth Session

Budapest, Hungary

9-13 March 2026

COMMENTS OF INDIA

Agenda item 3.1: Methods of analysis and sampling submitted by Codex subsidiary bodies

Technical Comments:

- **Section:** Appendix I, Part A**:** Method of analysis and preparation of fish samples for salted fish and dried salted fish of the Gadidae family of fishes

  Comment: India supports the retention of the method.

- **Section:** Appendix II, A) Spices with large particle size (Whole nutmeg, whole dried chilli and whole paprika)

  Comment: The incremental sample size is uniformly fixed for whole nutmeg, whole dried chilli and whole paprika as 100 g, which will end up in 1-10 kg of the sample which will be a huge volume of sample for dry chilli considering its unit weight compared to nutmeg.

  Rationale: India suggests that the unit weight of nutmeg will be around 7-8 g and it will be around 0.5 to 1.5 g for dry chilli, hence the volume occupied by 100 g of chilli will be around 5 to 6 times more than nutmeg or any other commodities of similar nature (Eg. Peanut). This will end up with a 10 kg of chilli sample which will be having a huge volume (approx.. equivalent to 50 kg peanut or nutmeg) which will be difficult to process by any laboratory for analysis. It is suggested to reduce the incremental sample size to 50 g for dry chilli.

- **Section:** Appendix II Part B and Part C, Related to the numeric performance criteria tables for total aflatoxins and ochratoxins in certain spices and food matrices

  Comment: In both Part B (spices) and Part C (food matrices) tables, the recovery range prescribed for analytesAFB1, AFB2, AFG1 and AFG2 is indicated as 40–120%. The minimum recovery value of 40% is not acceptable and should be revised to a minimum recovery of at least 60%. Accordingly, the method should be re-validated and the recovery limits should be revised based on valid data.

  Rationale: Acceptance criteria for methods of validation depends on analytical range. Since the LOQ and MRLs of aflatoxins lies in 1-30 ppb range, the acceptable recovery is 70-120 % (AOAC, EuroChem). Considering the complexity of spices, India suggests that the recovery (%) may be fixed at 60-120 % for the analytesAFB1, AFB2, AFG1 and AFG2

- **Section:** Appendix II, Part B and Part C, Related to the numeric performance criteria tables for total aflatoxins and ochratoxins in certain spices and food matrices

  Comment: Precision (RSDR): The precision criteria should be revised to RSDR – 30%

Agenda item 4.1: Review of methods of analysis in commodity standards (fish and fishery products, fats and oils, cereals, pulses and legumes and derived products)

Technical Comments:

- **Section:** Appendix I, Part 2: recommended Amendments To commodity Standards Amendments to cereal commodity standards (e.g. maize, rice, wheat)-Method of analysis.

  Comment: For some cereal quality parameters (such as broken kernels in maize, quality factors of rice, and parameters of wheat), the methods of analysis have been struck out and replaced with a reference to Section 8. Section 8 directs users to CXS 234-1999 (Recommended methods of analysis and sampling);

however, CXS 234-1999 does not clearly list these defects/ parameters by name, which may make it difficult for users to readily identify the applicable method of analysis.

Rationale: While the intention to centralize methods of analysis in CXS 234-1999 is understood, clearer links or cross references to commonly used cereal quality or defect parameters would improve usability and support correct interpretation.

- **Section:** Appendix I, Part 1: recommended Amendments and Revocations to CXS 234- 1999 Fat Spreads and Blended Spreads – Salt content (ISO 15648 | IDF 179)

  Comments: ISO 15648 | IDF 179 has been developed primarily for the determination of salt content in butter. For its application to other fat spreads and blended spreads, it is suggested that the method be validated or verified for these product categories and that appropriate clarification be provided to support its use.

  Rationale: The ISO 15648 | IDF 179 specifies a method for the determination of salt content in all types of butter containing more than 0.1% (mass fraction) salt. In this context, India suggests that the applicability of this method to fat spreads and blended spreads be explicitly clarified to avoid ambiguity.

- **Section:** Appendix I, Part 1: recommended Amendments And Revocations To CXS 234- 1999 Fat Spreads and Blended Spreads – Vitamins A, D and E (EN 12823; EN 12821 / NMKL 167; EN 12822).

  Comment: For the determination of Vitamins A, D and E in fat spreads and blended spreads, the methods EN 12823, EN 12821 / NMKL 167 and EN 12822 are listed, with comments indicating that these methods have been validated in margarine. Since margarine represents only one category within fat spreads and blended spreads, it is suggested that validation of these methods of analysis be undertaken for other fat spreads and blended spreads to support their broader application.

  Rationale: Providing guidance on the scope of application of these methods of analysis would help ensure consistent interpretation and correct implementation across all fat spreads and blended spreads covered under the standard.

- **Section: Appendix III –** Provisions for which the EWG was unable to recommend methods, principles and typing Oats – Hull-less and broken kernels; edible grains other than oats; damaged kernels; insect bored kernels.

  Comment: IS:4333 (Part I):2018 (Methods of analysis for food grains) has been suggested as a possible method for the above quality parameters in oats. While IS:4333 (Part I):2018 provides procedures for the assessment of similar quality defects in food grains at the national level, the procedures contained therein may be used as a technical reference for these parameters in oats.

  Rationale: CXS 234-1999 includes only internationally validated methods (e.g. ISO, AOAC, ICC). However, the procedures described therein may be useful as Technical background or reference for future development or validation of internationally accepted methods for these oat quality parameters.

- **Section:** Appendix I, Part I, Fats and Oils Section table, Peroxide Value of Edible Fats and Oils not Covered by Individual Standards

  Comment: Addition of AOAC 965.33 method along with other AOCS/ISO/NMLK methods specified in the table for determining Peroxide value in the oils and fats. It is an equivalent method that use a similar iodometric titration procedure, involving a peroxide-induced release of iodine from potassium iodide, followed by titration with sodium thiosulfate.

  Rationale: In India, for purpose of testing of Peroxide Value in Fats and Oils, these methods are being used and India supports inclusion of these method.

- **Section:** Appendix I, Part I, Fats and Oils Section table, Method of Fatty acid composition of Named Animal Fats

  Comment: It is proposed to add the AOAC method no AOAC 969.33 & AOAC 969.22 to determine fatty acid composition of named animal fats. AOAC 969.33 is a method for preparing methyl esters from the fatty acids in oils and fats, which is a crucial step before gas chromatographic analysis. AOAC 969.22 is the subsequent method that uses these prepared methyl esters for the gas chromatographic analysis to determine the fatty acid composition of oils and fats.

  Rationale: In India, for purpose of testing Fatty Acid Profile in Fats and Oils, these methods are being used and India supports inclusion of these method.

- **Section:** Appendix I, Part I, Fats and Oils Section table, Fatty acid profile of named vegetable oils

  Comment: It is proposed to add the AOAC method no AOAC 969.33 & AOAC 969.22 to determine fatty acid

composition of named vegetable oils. AOAC 969.33 is a method for preparing methyl esters from the fatty acids in oils and fats, which is a crucial step before gas chromatographic analysis. AOAC 969.22 is the subsequent method that uses these prepared methyl esters for the gas chromatographic analysis to determine the fatty acid composition of oils and fats.

Rationale: In India, for purpose of testing Fatty Acid Profile in Fats and Oils, these methods are being used and India supports inclusion of these method.

- **Section:** Appendix I, Part I, Fats and Oils Section table, Milk Fat Content in Fats Spreads and blended spreads

  Comment: CXS 256 states that "any milk fat content must be no more than 3 percent of the total fat content in Fat spread". Therefore, Yes, the method is required to analyze the milk fat content. Also it will help regulating authority to verify the label claim made by manufacturer for milk fat content.

  Rationale: India supports the proposal, as it would also assist the regulatory authorities in verifying the label claim made by manufacturers regarding milk fat content.

Agenda item 4.2: Retyping of ISO 1871 for determining protein in quinoa

General Comment:

- **Section:** Appendix: Information on ISO 1871 (Determination of Protein in Quinoa)

  Comment: India supports the Retyping of ISO 1871 for determining protein in quinoa

Agenda item 5.3: Sugars and honey workable package

Technical Comments:

- **Section:** Method AOAC 962.19 for Acidity of Honey

  Comment: India supports the Inclusion of Method AOAC 962.19 .

- **Section:** *Method TS 13360 for Acidity of Honey.

  Comment: New Method – Inter laboratory validation data may be required for adoption

  Rationale: Validation required for wider acceptance

- **Section:** Invert sugar (as reducing sugars)- Sugars (plantation or mill white sugar) adoption of Titrimetric method – Luff Schoorl as Type I.

  Comment: For defining as Type I, inter laboratory validation data may be required. Till then it may be designated as Type IV

  Rationale: Currently Titrimetric (Lane & Eynon) is the utilized method

- **Section:** Invert sugar (as reducing sugars) - Sugars (soft white sugar and soft brown sugar) *ICUMSA GS 4-3.

  Comment: Validation required as the method is for molasses and not for soft white sugar

  Rationale: Validation may be required if it is to be applied for soft white sugar

- **Section:** US FDA Method C-004.04 for Sulphur dioxide – all sugars.

  Comment: As per the scope, the method is applicable for molasses only (LCMSMS)

  Rationale: Validation may be required if it is to be applied for all sugars

- **Section:** *ICUMSA GS 2-35- Enzymatic method for Sulphur dioxide in sugars.

  Comment: AOAC Official Method No. 990.28 is widely used.

- **Section:** AOAC 962.16 - Sulphur dioxide in sugars

  Comment: India supports the inclusion of AOAC Official Method No. 990.28 instead of AOAC 962.16

  Rationale: The Method AOAC Official Method No. 990.28 is more sensitive method than AOAC 962.16

- **Section:** Table entries for soft white and soft brown sugars (Appendix I)- ICUMSA GS 4-3 and ICUMSA GS 1-3.

  Comment: As the method is indicated that it is not validated for soft white sugar and soft brown sugar, sufficient validation data are required to confirm its suitability for these commodities. Clarification is requested on the basis on which it was previously assigned Type I status, including any supporting

collaborative study or validation evidence demonstrating that the method is fit for purpose for these products.

Rationale: A Type I method should be validated and fit for purpose for the listed commodity.

- **Section:** Appendix III (CXS 212- 1999 standard for Sugars- sulphur dioxide)

  Comment: AOAC 990.28 (Optimized Monier–Williams) is an improved version of AOAC 962.16 and is currently endorsed in CXS 234-1999 for commodities such as hominy, fruit juice, seafood, and dried or dehydrated ginger. A recent study (Bhujel et al., 2025) reports an LOQ of about 10 mg/kg and acceptable reproducibility above this level, but the study was conducted only on fruit and vegetable products and not on sugars. Therefore, clarification is requested whether validation data are available demonstrating the suitability of AOAC 990.28 for sugar commodities (plantation or mill white sugar, sugar solutions and syrups, soft white sugar, soft brown sugar, and raw cane sugar) at the relevant Codex maximum limits.

  Rationale: Method should be validated and fit for purpose for the listed commodity

- **Section:** Appendix I Sugars (plantation or mill white sugar, powdered sugar and powdered dextrose, raw cane sugar, soft white sugar and soft brown sugar, white sugar)-Sulphur dioxide ICUMSA GS 2-35 Enzymatic.

  Comment: Appendix I proposes the enzymatic method for a wider range of sugar commodities (plantation or mill white sugar, powdered sugar and powdered dextrose, raw cane sugar, soft white sugar, soft brown sugar and white sugar).

  In this regard, sufficient commodity-specific validation data are required to demonstrate that ICUMSA GS 2-35 meets Codex performance requirements (precision and sensitivity) at the relevant maximum limits for all listed sugar commodities. Clarification is therefore requested on the availability of collaborative study or validation evidence supporting its suitability across these products before confirming its classification and use for sulphur dioxide determination

  Rationale: Method should be validated and fit for purpose for the listed commodity

Agenda item 6: Methods of analysis for precautionary allergen labelling

Editorial Comment:

- **Section:** Appendix II, Table I, 1st Row (Peanut), 5th Column,

  Comment: The LOQ of Peanuts in cookies should be expressed as 2.22 mg Total Peanut Protein/kg Food instead of 2.22 mg Total Peanut Protein/mg Food.

  Rationale: The same expression was reflected in the citation provided.

Agenda item 7.1: Review of sampling plans in CXS 234-1999

Recommendations:

i) note the options, as presented in Appendix I, for the inclusion of sampling plan information, and consider

options 1 and 4 which are as follows:

- **Include all sampling plan information in CXS 234-1999 ;**
- **Develop a standard for each commodity group that prescribes sampling plans or outcomes for plans relating to that commodity group (the details of sampling plans would still be included in the CXS 234 database (or other repository) if this option is adopted);**

  Comment: India supports Option 1, i.e. inclusion of sampling plan information in CXS 234-1999, supported by an improved structured format/database. This approach keeps all method and sampling information in a single globally recognized reference document, making it easier for regulators and laboratories to use and maintain consistency across commodities.

ii. consider the way forward depending on the agreed option. This may include:

- **Agreement on what information should be included;**
- **Functionality of a tool such as a database that stores this information;**
- **Population of information into the database tool;**
- **Inclusion of standard and non-standard information, e.g. footnotes and comments into the tool'**
- **Maintenance of the database tool; and**

Comment: India agrees with establishment of Electronic Working Group (EWG). EWG should be formed to design and manage the database, including deciding its structure, what information it will contain, and how it will work. The group should make the format of sampling plans consistent across Codex standards, link sampling with analytical methods, define the minimum details needed for risk-based sampling, follow the principles of CXG-50, and coordinate with commodity committees. The work should be done step by step by first creating the database structure, then entering existing CXS 193 plans, identifying commodities that do not yet have sampling plans, and finally developing guidance for those missing areas.

iii. consider other issues such as how CCMAS could assist with the process of developing sampling plans where they do not currently exist.

Comment: CCMAS could assist by acting as a central technical platform and by facilitating expert support when commodity committees lack sufficient data or statistical capacity. CCMAS may develop a general framework describing how sampling plans should be designed and what minimum performance criteria should be met. Where committees do not have adequate studies, CCMAS could convene expert groups (statisticians, sampling specialists, and relevant scientific experts) to evaluate available evidence, propose scientifically justified default parameters, and review draft plans. Commodity committees would provide commodity-specific knowledge, while CCMAS and its experts verify that the plan meets agreed risk-management principles and is practical for implementation. The process should include consultation, testing and revision before endorsement, and the final plans should be maintained in a central repository to ensure consistency across Codex standards.

Agenda item 7.2: Sampling plans for bulk materials/heterogenous lots including mycotoxins

Recommendations:

General Comments:

Question a: the appropriateness and timeliness of developing general guidance on acceptance sampling plans for bulk materials from inhomogeneous lots, with particular emphasis on mycotoxins.

Comment: The development of general guidance on acceptance sampling plans for bulk materials from inhomogeneous lots is appropriate and timely, particularly for contaminants such as mycotoxins which occur as particulate contamination. Therefore, the guidance would be most useful if initially developed as explanatory and advisory material and supported by additional empirical validation using real data from different foods and regions before applying it widely.

Question b: where such guidance should appropriately reside

Comment: The guidance should reside as a document under CCMAS, preferably as an annexure to the existing General Guidelines on Sampling (CXG-50). At the same time, CCCF is recommended to ensure practical applicability for contaminants such as mycotoxins.

Question c: the proposed acceptance sampling plans for bulk materials from inhomogeneous lots (e.g. whether the content and structure offer a sound basis for continued development). In particular, input is sought on areas that may require further clarification, expansion, or the inclusion of additional provisions to enhance completeness and coherence (CX/MAS 26/45/11 Appendix 1)

Comment: The discussion paper provides a useful scientific basis for further work; however, several areas require clarification and strengthening before development proceeds:

1. Dependence on assumed prior parameters

The proposed approach relies on assumed inputs such as:

- proportion of contaminated increments (how many samples are contaminated)
- distribution type (NB/lognormal)
- variance parameters

Many countries may not have this data for all foods/ commodities. Therefore, the guidance should also include simple default methods when prior data/ detailed information is not available.

2. Relationship with Codex risk-based sampling design

The paper notes that current tools cannot properly calculate the risks and proposes a cost-benefit (utility) approach to determine sampling intensity. However, a utility approach mainly balances economic cost and benefit and does not directly demonstrate that the required level of protection is maintained. Therefore, before such an approach is adopted, it should be clearly shown that it achieves equivalent control of consumer's and producer's risks and comparable Operating Characteristic (OC) curve performance to the

existing CXS-193 sampling plans, ensuring that unsafe lots are not accepted and compliant lots are not rejected based on demonstrated performance rather than economic optimization alone.

3. Utility Approach

The proposed utility (cost-benefit) method may be helpful for analysis, but it depends on assumed costs and damage values that differ between countries. Therefore, it should not be used as a mandatory rule for deciding sampling intensity. This should be presented as an optional analytical tool rather than a normative requirement.

4. Practical implementation aspects

Further clarification is needed on the minimum data required to apply the method, what procedures should be followed when prior distribution information is not available, whether the approach can be used for contaminants other than mycotoxins, and how it may affect inspection practices and international trade.

5. Validation

Additional multi-commodity empirical validation is recommended before considering revision of existing Codex sampling plans.

6. Justification of Number of Increments

The number of sampling points should not be decided only by models or cost. It should be based on how reliably the sampling can detect contaminated lots and avoid rejecting good ones. The guidance should also explain how to choose the number of samples when no prior data are available. Any suitable statistical tool may also be referred for the same.