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ANALYSIS OF AGENDA ITEMS IN PREPARATION FOR THE 53rd SESSION OF THE CODEX COMMITTEE ON PESTICIDE RESIDUES

4th – 8th and 13th JULY 2022 - Virtual Meeting

AGENDA ITEM 14

Discussion paper on the review of mass spectrometry provisions in the “Guidelines on the use of mass spectrometry for the identification, confirmation and quantitative determination of pesticide residues (CXG 56-2005)” and “the Guidelines on performance criteria of pesticide residues in food and feed (CXG 90-2017)”

Objectives

This document offers a review and analysis of the agenda items planned for discussion at the 53rd session of the **Codex Committee on Pesticide Residues (CCPR)**, scheduled to take place virtually July 4th – 8th and 13th, 2022. This document is intended for possible use by the Codex communities of practice, promoted by [GFoRSS](#) and [PARERA](#), as part of their contribution to enhancing awareness and supporting effective participation in international food standard setting meetings (Codex meetings) by representatives from members and observers.

The analysis provided in this document offers a factual review of agenda items, their background and a discussion of some considerations. This analysis is indicative in nature and does not represent an official position of the organizations mentioned above ([PARERA](#) and [GFoRSS](#)), their membership or their management. It provides a synthesis and analysis of the work currently under discussion by the CCPR, which may be useful for delegations from Arab countries to prepare their positions taking into account the needs and specificity of the region and the potential impact of the proposed food standards.

This analysis is prepared as part of the **Codex Initiative for the Arab Region: Arab Codex Initiative**, implemented by [PARERA](#) and [GFoRSS](#), hosted and coordinated by the [Arab Industrial Development, Standardization and Mining Organization \(AIDSMO\)](#) and funded by the US Codex Office, US Department of Agriculture.

The focus of the analysis of agenda item 14 of CCPR53, relates to the **use of mass spectrometry for the identification, confirmation and quantitative determination of pesticide residues in food and its corresponding performance criteria**.

**It is important to note that experts – members of the Arab Expert Working Group – do not represent the organizations and / or jurisdictions to which they are affiliated. The selection and participation in the Arab Expert Working Group proceedings is based on each expert’s own credentials and experience, which should not be misconstrued as the country’s / delegation’s / organization’s position to which they belong.*

Agenda Item 14

Document

CX/PR 22/53/16 (not published yet at the time of the conduct of this analysis)

CCPR53 is invited to determine if CXG 90-2017 adequately covers mass spectrometry as an analytical tool applied for the determination of pesticide residues and if so, to propose revocation of CXG 56-2005; otherwise, to consider merging both documents, in case there are any provisions from CXG 56-2005 that could be relevant but not included in CXG 90-2017.

Background

Nowadays, national and international regulatory frameworks related to pesticide residues are becoming more and more demanding, in terms of pesticide authorization and monitoring in food of animal and plant origins. These tight requirements had to be accompanied by an appropriate development of analytical methods capable of ensuring valid determination of these analytes.

Mass spectrometry can be considered as the technique of detection and quantification of choice, being able to meet all requirements for an irrevocable qualitative identification of pesticide residues as well as their accurate, precise and sensitive quantification.

A first set of guidelines were adopted by the Codex Commission in 2005, on the use of mass spectrometry (MS) for identification, confirmation and quantitative determination of pesticide residues (CXG 56-2005). This document focused on the importance of confirmatory testing before reporting any results for monitoring or enforcement purposes, avoiding thus any matrix interference being misidentified as a pesticide. It depicts a 2 steps process starting by a screening phase followed by confirmation. The latter can be achieved by either further interpretation of chromatographic and mass spectrometric data, alternative methods using different physico-chemical properties of the compound, or a combination of various separation and detection methods (different chromatographic columns, different detectors, etc.). Additional details are given individually for gas chromatography / Mass spectrometry (GC-MS), liquid-chromatography / Mass-spectrometry (LC-MS), thin-layer chromatography (TLC) as well as other alternatives based on the chemical derivatisation in pesticide analysis.

A second document was adopted by Codex in 2017, on the performance criteria for methods of analysis for the determination of pesticide residues in food and feed (CXG 90-2017). Its aim is to define and describe the performance criteria, which should be met by methods to analyze pesticide residues in foods and feed, focusing on validation criteria namely, selectivity, linearity, trueness and recovery, precision, limit of detection (LOD) and limit of quantification (LOQ), robustness, etc. Moreover, these guidelines specify screening methods and quantitative methods with individual sets of criteria and more importantly, they state in a separate paragraph the performance criteria for analyte identification and confirmation, including MS based techniques, which recalls some criteria already stated in guidelines (CXG 56-2005).

In this context, Iran presented a proposal for new work at CCPR50 (2018), on the revision of CXG 56-2005 and highlighted some gaps in the guidelines that required addressing, for instance, the title being not accurately indicative of the content of the document, and the document focusing only on confirmatory tests. CCPR51 (2019) considered the possibility to merge both guidelines CXG 56-2005 and CXG 90-2017 into a single complete document and withdraw CXG 56-2005. For that, the electronic working group (EWG) chaired by Iran and co-chaired by Costa Rica was re-established to determine if CXG 90-2017 adequately covers mass spectrometry and if so, to propose revocation of CXG 56-2005, to avoid redundancy; otherwise, to look into



the feasibility to merge the two documents, in case there are provisions from CXG 56-2005 that could be relevant but not included in CXG 90-2017.

During CCPR52 (2021), the chair of the EWG explained that the members and observers discussed the opportunity to revoke CXG 56-2005 and whether there was room to transfer some provisions from this document to CXG 90-2017 for completeness purposes. However, he explained that the EWG didn't have enough time to achieve this objective. Consequently, CCPR agreed to re-establish the EWG, chaired by Iran, and co-chaired by India to pursue working on the same terms of references.

In its 53rd session, CCPR is therefore considering the progress made on the discussion paper and its possible recommendations to merge both guidelines into an updated version of CXG90-2017.

Analysis

CXG 90-2017 is a more recent document that offers quite a complete set of performance criteria for methods of analysis for the determination of pesticide residues in food and feed (CXG 90-2017), including criteria for the use of mass spectrometry in identification and confirmation of pesticide residues, in addition to an exhaustive presentation of performance criteria including numerous quantitative aspects (linearity, trueness and precision, LOQ, etc.). In this document, mass spectrometry-based methods are addressed at several instances, including in an independent paragraph dedicated to it, entitled "MS-based Identification", where confirmatory criteria recall the ones already mentioned in CXG 56-2005.

The completeness of the guidance offered by CXG 90-2017 for MS-based techniques makes CXG56-2005 redundant. This offers a good rationale for completing the work proposed by the EWG and supported by CCPR.

It will be important to advance this discussion paper and examine the recommendations stemming from it in terms of simplification of Codex guidance in relation with analytical methods for pesticides.

Comments and Considerations

In previous sessions, all members' and observers' comments focused on the fact that CXG 90-2017 constitutes a more recent document that covers, not only mass spectrometry, but also other up-to-date techniques for the determination of pesticide residues. They stressed also on the fact that the CCPR policy is to avoid redundancy in documents. Therefore, the majority of delegations supported revocation of CXG56-2005 and the transfer of relevant provisions to CXG90-2017 if appropriate to avoid duplication.

Considerations for the Arab Region

Pesticides are one of the main residues analyzed in food commodities in the Arab region, mainly in fruits and vegetables, being highly imported and exported commodities to and from the region. Any development or update of Codex guidelines related to the analytical determination of this category of analytes should be closely followed, considered and implemented in food control laboratories in the region.

Conclusion and recommendations

At the time of the development of this analysis, the latest version of discussion paper was not made available. The rationale to proceed with this simplification of guidance, through the revocation of CXG56-2005 and the update of CXG90-2017 is well supported.

Arab Codex delegations could consider being more involved in the discussion and playing a leadership role in the completion of the discussion paper, offering proposed amendments to CXG90-2017. The completeness of this task will require the additional step of consultation with CCMAS, prior to proceeding with the final amendments.

