



## ANALYSIS OF AGENDA ITEMS AND PREPARATION FOR THE 15<sup>th</sup> SESSION OF THE CODEX COMMITTEE ON CONTAMINANTS IN FOOD

*9<sup>th</sup> – 13<sup>th</sup> and 24<sup>th</sup> MAY 2022 Virtual Meeting*

### **AGENDA ITEM 5**

*Cadmium in cocoa powder (At Step 4)*

#### **Objectives**

This document offers a review and analysis of the agenda items planned for discussion at the 15<sup>th</sup> session of the Codex Committee on Contaminants in Food (CCCF), scheduled to take place virtually from May 9<sup>th</sup>– 13<sup>th</sup> and 24<sup>th</sup>, 2021. The 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 in the CCCF committee, which may be useful for delegations from Arab countries to prepare their positions taking into account the needs and specificity of the region and 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.

*\*It is important to note that experts – members of the Expert Working Group (EWG) – do not represent the organizations and / or jurisdictions to which they are affiliated. The selection and participation in the EWG 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 5: MRLs for cadmium in cocoa powder (100% total cocoa solids on a dry matter basis) (at Step 4)

### Documents

- ❖ CX/CF 22/15/5
- ❖ CX/CF 22/15/5-Add.

CCCF 15 will examine the proposed MLs ranging from **2 mg/kg to 3 mg/kg** for cocoa powder (100% total cocoa solids on a dry matter basis) ready for consumption at step 4.

### Background of work

CCCF13 (2019) agreed to re-establish the Electronic Working Group (EWG) chaired by Ecuador and co-chaired by Ghana to continue work on MLs for the categories of chocolates containing or declaring  $\geq 30\%$  to  $< 50\%$  (total cocoa solids on a dry matter basis) and cocoa powder (100% total cocoa solids on a dry matter basis) for consideration by CCCF14 using a proportional approach. Furthermore, if no consensus was reached at CCCF14 for the remaining chocolate categories, the work would be discontinued until the Code of practice for the prevention and reduction of cadmium contamination in cocoa (COP) was finalized and implemented.

At CCCF 14, the EWG Chair explained that the category had been agreed by CCCF, but when analysing the data in the GEMS/Food database it was not always clear if the cocoa powder was (i) 100% total cocoa solids, (ii) natural cocoa powder, or (iii) pure cocoa powder and no information was provided on the intended use of the product (e.g. final consumption). The EWG had therefore decided to use all data to propose an ML.

Two scenarios were presented similar to the approach for chocolates containing or declaring  $\geq 30\%$  to  $< 50\%$  total cocoa solids on a dry matter basis namely:

- ❖ Scenario (1) – GEMS/Food data: A range of 2.0 – 3.0 mg/kg, for which the ML of 2.0 mg/kg accounts for rejection rates of 5.39% (worldwide basis) and 13.42% (regional basis, Latin America and the Caribbean) and the ML of 3.0 mg/kg accounts for rejection rates of 2.49% (worldwide basis) and 6.33% (regional basis, Latin America and the Caribbean).
- ❖ Scenario (2) – Proportional approach: A range of 1.3 – 1.5 mg/kg, for which the ML of 1.3 mg/kg accounts for rejection rates of 11.48% (worldwide basis) and 27.64% (regional basis, Latin America and the Caribbean) and the ML of 1.5 mg/kg accounts for rejection rates of 8.26% (worldwide basis) and 20.37% (regional basis, Latin America and the Caribbean).

In consideration of MLs for cocoa powder, CCCF14 proceeded to consider the two scenarios and noted that a number of delegations expressed support of either Scenario 1 or Scenario 2 for the same reasons expressed for the category of chocolates containing or declaring less than 30% and  $\geq 30\%$  to  $< 50\%$  total cocoa solids on a dry matter basis. In addition, it was noted that this category was not usually consumed directly as food but as an ingredient.

CCCF14 (2021) agreed to re-establish the EWG chaired by Ecuador, and co-chaired by Ghana to continue working on the ML for cocoa powder containing or declaring 100% total cocoa solids on a dry matter basis ready for consumption and to request JECFA to issue a call for data specific to cocoa powder containing or declaring 100% total cocoa solids ready for consumption.



## Analysis

- ❖ The major sources of dietary exposure to Cadmium remain grains and grain products, fish, seafood (and in particular mollusks).
- ❖ There are certain questions that the proportionality approach raises with respect to how the non-fat component of cocoa powder was accounted for. Had this been accounted for; the MLs proposed under this scenario would align with those under the GEMS/Food data scenario.
- ❖ The category of cocoa powders was agreed for those that contain 100% ready-to-eat cocoa solids, but when the available data was reviewed, there were composite products that incorporated sugars and other cocoa products (such as intermediate products that were suspended by CCCF11) which left the uncertainty as to whether these data fully met the content of 100% ready-to-eat cocoa solids).
- ❖ The EWG decided to consider all cocoa powder data, to propose an ML for the cocoa powder category, taking into account that all data for cocoa mixtures and sugars were discarded from the database, following the mandate of CCCF13 and the importance to propose an ML for such category.
- ❖ 5943 data points were analyzed that ranged from minimum to maximum value of 0 to 9.9 mg/kg respectively. This data set had a mean of 0.712 mg/kg and 95th percentile of 3.096 mg/kg. Calculating the standard deviation, the value of 1.16 was found; the deviation being greater than the average is indicative of the wide variability of the data. Only the data that were within the range determined by the mean  $\pm 3 \sigma$  (with “ $\sigma$ ” the standard deviation) were selected ultimately, since this covers 99.7% of the data points. In this new range (5781 data), the average was estimated at 0.566 mg/kg with minimum and maximum values of 0 and 4.2 mg/kg respectively.
- ❖ Countries from the CCAFRICA, CCEURO, CCNASWP regions uploaded additional data (407 data)

## General Comments

- ❖ It is important to characterize the difference between chocolates and 100% cocoa powder. Cadmium presence in chocolate comes from the non-fat component. If we consider that Chocolate has typically about 45% of non-fat solids in its composition, the proportional approach attempting to derive MLs for 100% Cocoa powder from other values retained for chocolate (with lower ratios of Cocoa) should account for this extra dilution between Cocoa powder and chocolate. A factor of 2 (multiplication) may need to be possibly considered to obtain the values derived proportionally for the ML destined to Cocoa powder.

The values derived previously and considered for 100% Cocoa powder with a range between 1.3 and 1.5 mg/kg would lead to 2.6 to 3 mg/kg if this dilution factor is considered. As such the scenario considered through the analysis of the GEMS/Food data and that related to the proportional approach would lead to similar outcomes.

Some positions may be taken to consider the need to adopt and apply the Code of Practice of Reduction of Cadmium in Cocoa powder, prior to the adoption of new MLs for Cocoa Powder with additional opportunities of data generation.

- ❖ There was limited data from the African region for the analysis and derivation of the proposed MLs which also support generation and submission of data to GEMS/Food in order to increase better representativeness of data at the global level.
- ❖ It is important to consider removing the statement “sold for final consumption” from the way the ML would be listed. Rather the ML would apply to the ingredient 100% Cocoa powder.



- ❖ As cocoa powder is a commodity, which is of less significance for international trade, the EU could agree not to set a Codex ML for cocoa powder. The EU does not agree with the proposed option of considering all data for powdered products for the establishment of an ML for cocoa powder, as the cadmium concentrations in mixtures of cocoa powder and sugar depend on the amount of pure cocoa powder in the product.

#### *Options for moving forward may span from:*

- ❖ Considering the adoption of **one of the proposed values from the intervals of MLs at Step 5: 2 or 3 mg/kg** for cocoa powder (100% total cocoa solids on a dry matter basis).
- ❖ Considering suspending the work on the development of this standard, until such time that the Code of Practice - COP (discussed under agenda item 7) be adopted and implemented and committing to reviewing these values for further reduction of exposure, once the COP has had time to be applied to produce effects. This option requires achieving consensus amongst Codex members at CCCF 15 and at the Commission.

#### *Overall Considerations*

The Arab region is not a producer of Cocoa beans, but of processed products derived from Cocoa. It would be important to have the input of Arab manufacturers of chocolate and other cocoa products as to the impacts of this ML (and others proposed) on their production: sourcing of raw material and quality of final products.

- ❖ After reviewing scientific literature (~300 scientific papers) the cadmium was not of interest in the Arab region for chocolate and cocoa powder.
- ❖ It would be interesting to generate occurrence data of Cd in Food and to proceed to dietary exposure assessments for the region and sub-regions (based on dietary habits and consumption data clusters).

#### *Conclusions and Proposed Recommendations*

- ❖ Codex delegations from the Arab region may consider supporting a compromise position for a ML at 2 mg/kg, which is the lower interval from the values reviewed using the GEMS Food data. This value is in line with the proportional approach, when we consider that only 45% of non-fat solids makes it into the composition of chocolate. This proposed ML would lead to global rejection rates of 4.39%.

