CODEX ALIMENTARIUS COMMISSION

Food and Agriculture Organization of the United Nations

World Health Organization

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Agenda Item 9 **CF12/CRD09**

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON CONTAMINANTS IN FOODS

12TH SESSION
UTRECHT, THE NETHERLANDS, 12 - 16 MARCH 2018

PROPOSED DRAFT CODE OF PRACTICE FOR THE REDUCTION OF 3-MONOCHLOROPROPANE-1,2-DIOL ESTERS (3-MCPDE) AND GLYCIDYL ESTERS (GE) IN REFINED OILS AND PRODUCTS MADE WITH REFINED OILS, ESPECIALLY INFANT FORMULA (AT STEP 4)

Comment submitted by EU and AU

EUROPEAN UNION (EU)

The European Union and its Member States (EUMS) welcome and appreciate the work on the Code of practice for the reduction of 3-monochloropropane-1,2-diol esters (3-MCPDE) and glycidyl esters (GE) in refined oils and products made with refined oils, especially infant formula by the electronic Working Group chaired by the United States of America and co-chaired by the European Union and Malaysia.

The EUMS agree that only those methods that have proven their effectiveness in reduction of 3-MCPDE and GE and are used in industrial application are shown in the diagram in the Annex to the Code (Appendix II to of CX/CF 18/12/9).

The EUMS also agree to mention the methods which have only shown experimentally or in laboratory experiments to reduce the presence of 3-MCPDE and GE and have not yet proven to be effective on industrial scale at the end of each subheading after the methods which are effective at industrial scale.

The EUMS propose to add a paragraph (preferably after paragraph 25) indicating that where the mitigation measures in this Code include the use of additives or other substances, the additives and other substances shall be used in accordance with the legal provisions applicable as regards the use of these additives and other substances.

The EUMS have the following specific comments on the proposed draft Code of practice for the reduction of 3-monochloropropane-1,2-diol esters (3-MCPDE) and glycidyl esters (GE) in refined oils and products made with refined oils, especially infant formula

As regards §2: it is proposed to add the following sentence after the first sentence: "The toxicity of 3-MCPDE and GE relates to the fact that 3-MCPDE and GE result in the release of respectively 3-MCPD and glycidol after consumption." It is furthermore proposed to replace the last sentence "Glycidol is a genotoxic carcinogen" by "GE and glycidol are genotoxic carcinogens".

As regards §6: it is proposed to add at the end as example that frying of fish products result in higher formation of 3-MCPDE.

It is also proposed to add: "Furthermore, it cannot be excluded that additional routes of exposure of 3-MCPDE and GE could be expected from the use of the authorised food additives in foods such as glycerol, or mono- and diglycerides of fatty acids, which are considered as potential precursors for the formation of 3-MCPDE and GE, and therefore may also contribute to the formation and total intake of those contaminants during food processing"

As regards paragraph §8: as 3-MCPDE can also be fed from the reaction between chorine containing compounds and monoacylglycerols it is proposed to add at the end of the first sentence "and monoacylglycerols (MAGs)".

As regards §9: the chloride ions are absorbed from the soil (including from fertilizers and pesticides) and water as hydrophilic compounds and are metabolized/converted into **lipophilic** chlorinated compounds**.**

As regards §10: The paragraph as written gives the impression that lipase activity is as relevant in seeds as in fruits. While fruits are affected by lipase activity directly after harvest with the only chance to avoid triacylglycerol degradation by sterilisation, seeds are more or less stable after harvest and during appropriate storage with only small release of free fatty acids. Lipase activity in seeds increase during germination, but the aim of appropriate storage should be to avoid germination of seeds. Therefore, lipase activity is a problem for fruits but not to that extent for seeds. Therefore, it is proposed to reword the §10 as follows: "Oils seeds and fruits contain the enzyme lipase; lipase activity increases with fruit maturation while the activity in mature seeds is limited. Lipase interacts with oil from mature fruits to rapidly degrade triacylglycerols into free fatty acids (FFAs) and DAGs and MAGs while the effect of lipase in appropriately stored seeds is negligible.

As regards §25: it is proposed to delete "combined with deacidification" as this might give the impression of an additional step in the refining process while the deacidification is achieved by the high temperature during deodorization.

As regards §38: the main reason allowing to use lower deodorization temperatures in vegetable oils is the lower levels of free fatty acids through neutralisation. Therefore it is proposed to reword the first sentence of § 38 as follows: Using chemical refining (i.e. neutralization) instead of physical refining can help remove precursors (e.g. chloride) and results in lower levels of free fatty acids which may allow for lower deodorization temperatures in vegetable oils.

As regards §44: as mentioned before the levels of 3-MCPDE are not that much influenced by the temperature higher than 180° C. Therefore it is to replace "and reduced formation of 3-MCPDE and GE in vegetable oils" by "and reduced formation of GE and to a lesser extend 3-MCPDE in vegetable oils."

§50: "triglycerides" should be replaced by "triacylglycerols".

AFRICAN UNION (AU)

Position 1: African Union congratulates the eWG led by the United States of America, the European Union and Malaysia for preparing the CoP. African Union supports the development of a CoP for reduction of 3-monochloropropane-1,2-diol esters (3-MCPDE) and glycidyl esters (GE) in refined oils and products made from refined oils, especially infant formula

Issue and rational: Both 3-MCPDE and GE are contaminants produced during oil refining and have toxic effects on kidney and male reproductive organs, whereas their non-esterified forms are carcinogenic. They are formed during the heating process, although by different mechanisms, so that there is no general relationship between the levels of the two contaminants. GE forms at temperatures above 200ºC and its formation increases as the temperature rises, whereas 3-MCPDE is formed at lower temperatures (160-200ºC) in the presence of chlorinated compounds, but formation does not increase at higher temperatures. Previously Codex established a CoP (CAC/RCP 64-2008) which addresses mitigation measures for 3-MCPD (the non-esterified moiety) formation in acid-hydrolysed vegetable proteins. The proposed draft Code of Practice provide science-based GAP, GMP recommendations as well as other practices critical for reducing the levels of 3-MCPDE and GE in refined oils and products made from refined oils, especially infant formula.