CODEX ALIMENTARIUS COMMISSION

Food and Agriculture Organization of the United Nations

World Health Organization

Viale delle Terme di Caracalla, 00153 Rome, Italy - Tel: (+39) 06 57051 - Fax: (+39) 06 5705 4593 - E-mail: codex@fao.org - www.codexalimentarius.org

Agenda Item 9 **MAS/36 CRD/4**

Original Language Only

JOINT FAO/WHO FOOD STANDARDS PROGRAMME
CODEX COMMITTEE ON METHODS OF ANALYSIS AND SAMPLING

36th Session
Budapest, Hungary, 23 – 27 February 2015

Method for non-dioxin like PCBs in food

(Prepared by Iceland)

1. Non-dioxinlike PCBs are analysed in food by various methods by Members of Codex Alimentarius. Some Members still use technical mixtures as calibrating standards, *e.g.* Japan uses the industrial formulations of Kanechlors for this purpose, *i.e.* equal volumes of Kanechlor 300, Kanechlor 400, Kanechlor 500, and Kanechlor 600 (Kanechlor was produced in Japan and is not for export to the best of our knowledge). The complexity of the different technical PCB mixtures, and especially their change of composition in the environment, rendered quantitative analysis of PCBs very difficult in the beginning of PCB analyses, *i.e.* late sixties and early seventies. Methods, which derive from that time period, analyse what used to be called total PCBs. The technical mixtures used as calibrating standards do not resemble the pattern of PCB-congeners in environmental samples since approximately 40% of the PCB congeners present in technical mixtures of PCBs are disintegrated or removed from the technical mixture in Nature by various processes. Attempts by scientists to apply relationships between various congeners or combinations thereof in the technical mixtures to represent true total PCBs in the food chain have therefore failed since different congeners in the technical mixture degrade and change differently in Nature, *i.e.* the technical mixture is far from being representative of the PCBs in the food chain and therefore not suitable as a standard. Usually such procedures result in overestimation of the true total PCBs in environmental samples (true total PCBs: sum of all or most of the congeners present in a sample, each analysed accurately). It may therefore be concluded that using technical mixtures to standardise the PCB-analysis of environmental samples, including food, is not valid and will result in inaccurate outcome and not reflecting the true total PCBs in food matrices.

2. Additionally, it is often difficult to find a relationship between accurately analysed congeners in samples, *e.g.* the often accurately analysed marker or indicator PCBs (PCB6 or PCB7), and this so called total PCBs by way of technical mixtures even if the same technical mixture is used as a calibrating standard.

3. Methods from the late sixties and early seventies also applied chromatography of limited resolution power giving broad peaks consisting of a number of non-resolved PCB-congeners and interfering compounds. This methodology does not take account of the fact that the detector response of ECD (electron capture detector) for individual PCB congeners is dependent on both the number and position of chlorine atoms in the biphenyl ring system. Thus, a slight variation in chromatographic conditions may result in large variation in the results obtained and the probability that two independent laboratories will obtain the same result for the same food sample is often slim.

4. The common quality criteria for methods as for example regular participation in proficiency schemes is not possible, there are no certified reference materials available for these methods nor can their results be verified with validated methods.

5. We therefore suggest that CCMAS puts forward a method or methods for the analysis of a selection of non-dioxin like PCBs in foods and/or establishes specific quality criteria for methods for non-dioxin like PCBs in foods.