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 - E-mail: codex@fao.org - www.codexalimentarius.org

Agenda Item 13 **CX/CF 20/14/11-Add.1**

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JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON CONTAMINANTS IN FOODS

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Utrecht, The Netherlands, 20 – 24 April 2020

METHYLMERCURY IN ADDITIONAL FISH SPECIES

Comments in reply to CL 2020/52/OCS-CF:
Request for comments on Maximum levels for methylmercury in additional fish species, including sampling plans and other risk management recommendations

Australia, Brazil, Canada, Colombia, Costa Rica, Cuba, Ecuador, European Union (EU), Iraq, Japan, Morocco, Norway, Syria, Thailand, Uganda, United States of America (USA) and the International Union of Food Science and Technology (IUFoST)

GENERAL AND SPECIFIC COMMENTS

Member / Observer	Comments
Australia	Responses to request for comments **6a. Maximum levels** The proposal for new work on maximum levels for methylmercury in Cusk eels will apply to all Cusk-eels. This is despite the GEMS Food Contaminant database including only methylmercury data for Pink Cusk-eels, and not for other Cusk-eel species. It is noted that the FAO capture statistics for 2017 reported that four species of cusk-eel (pink, red, black and kingklip) were caught, with pink cusk-eel accounting for 80% of the tonnage and kingklip (16%). Whilst we are aware that a precedent was set in CX/CF 18/12/7 for the grouping of species (for tunas, sharks and marlin), this was based on data which indicated all major species within the respective groupings have average methylmercury concentrations above the selection criteria. There is currently no available data on the concentration of methylmercury in Kingklip. Setting an ML for methylmercury for all Cusk-eels could be setting a precedent for future ML setting, where an ML can instead be set for a group even when there is a lack of data. The Australian Fisheries Management Authority (AFMA) releases catch data from the Commonwealth managed fisheries. In 2018, 874.1 tonnes of Pink Cusk-eel (Genypterus blacodes), 35.1 tonnes of Ling (mixed) (Genypterus spp.) and <1 tonne of Rock Ling (Genypterus tigerinus) were retained. **6b. Sampling plans** We support a potential call for data to help develop sampling plans that are practical and feasible while maintaining food safety using a risk-based approach. Any call for data should also consider other factors that may correlate with methylmercury concentration (such as geographical location and fish age). In addition, consideration should be given to maintaining the consistency of sampling used to establish MLs and any future sampling for compliance with these or any new or amended MLs. **6c. Other Risk Management Recommendations** Australia supports a review of available literature to determine if additional guidance for methylmercury could be made available at the catch, sorting, and processing level. **Other comments** *Paragraph 22-23 (pg 3) of the discussion paper* Australia notes that a review of the 0.3 mg/kg selection criteria was outside the scope of the eWG and we continue to be of the strong view that MLs should not automatically be considered simply because occurrence data exists. Justification for an ML also needs to consider that a fish species is a major contributor to dietary exposure to methylmercury. Such an approach is consistent with text in the General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193-1995 – Section 1.3.2) and Section IV of the Procedural Manual where MLs shall only be set for food in which the contaminant may be found in amounts that are significant for the total exposure of the consumer. Further, the eWG needs to be mindful of compliance costs associated with monitoring methylmercury in foods that are not a major contributor to total dietary exposure. *Para 33 and 41 (pg 15 and 17, respectively) of Appendix III* The linear regression of the paired dataset should be forced through the origin (i.e. y-intercept = 0). We also note that in the case presented this would have minimal impact on the outcome. The reason for this suggestion is that the methylmercury concentration should be proportional to the total mercury concentration. A positive y-intercept is unrealistic.
Brazil	**Brazil** Brazil has analysed mercury distribution along fish muscle as detailed bellow and considers that this information may help on the development of sampling plans for methylmercury in fish.

	Soares et al. (2018) investigated the spatial distribution of total mercury along the fish muscle tissue. The fish species studied were pacu (Mylossoma duriventre), jaraqui (Semaprochilodus insignis), curimatã (Prochilodus nigricans), and sardine (Triportheus angulatus) from Amazonas, Brazil. Six pieces of muscle were taken along the fish muscle (three from the dorsal and three from the upper belly area). The levels of total mercury along the fish muscle varied depending on the fish species. For pacu and jaraqui, higher levels of total mercury were also found in the dorsal part of the fish and also at the belly part at the extremities (near tail and head). Curimatã had higher mercury levels in the dorsal area, near the head and lower levels in the middle of the belly area. Based on these results, there was a tendency for higher levels in the dorsal compared to the belly/bottom area of the fish, with lower levels especially in the middle of the bottom part. However, different from these results, a relatively uniform distribution of mercury within fish muscle was observed by Cizdziel et al. (2002) for six fish species from a lake in the United States, including trout, stripped and largemouth bass, tilapia, catfish and bluegill. They investigated total mercury levels at 27 different locations of the skeletal muscle and found no significant difference ($p > 0.05$) on mercury levels among sites. Andrade et al. (2015) investigated the spatial distribution of total mercury along the fish muscle tissue of four catfish species (Pimelodus maculatus, Rhinelepis aspera, Pterygoplichthys pardalis and Hypostomus sp.). Only in Pimelodus maculatus muscle tissue total mercury level varied along dorsal and lateral area. Higher values were observed in dorsal part near tail and in lateral area in the middle and near the head. Andrade, A. M. G. F.; Custódio, F. B.; Leal, C. A. G.; Gloria, M. B. A. Estudo da distribuição de mercúrio em diferentes regiões do tecido muscular de peixes. In: I Simpósio de Engenharia de Alimentos da Universidade Federal de Minas Gerais SIMEALI/UFMG, 2015, Montes ClarosMG. Anais do I SIMEALI/UFMG. Montes Claros: Instituto de Ciências Agrárias da UFMG, 2015. p. 92-95. Cizdziel, J.; Hinners, T.; Heithmar, E. Determination of total mercury in fish tissues using combustion atomic absorption spectrometry with gold amalgamation. Water, Air, and Soil Pollution, v. 135(1), p. 355-370, 2002. J.M. Soares, J.M. Gomes, M.R. Anjos, J.N. Silveira, F.B. Custódio, M.B.A. Gloria. Mercury in fish from the Madeira River and health risk to Amazonian and riverine populations. Food Res. Int., 109 (2018), pp. 537-543, 10.1016/j.foodres.2018.04.069
Canada	**6. a)** Canada supports the proposal for new work to develop maximum levels (MLs) for methylmercury for orange roughy and cusk-eel, as there are sufficient data to proceed with this work. **6. b)** Canada supports species-specific sampling plan development, provided that sufficient data and information is available to develop such material. Canada does not have any information to share that would aid in the development of species-specific sampling plans. If limited information is provided by eWG, Canada would support a call for data to assist with further development of species-specific sampling plans. **6. c)** Canada supports that consolidation of such information would be useful. Canada does not have, nor are we aware of, any information or guidance on mercury management in fish as it relates to catch, sorting and processing.
Colombia	With regard to the project to establish maximum levels (Mls) for methylmercury in cusk-eel and orange roughy, Colombia does not currently implement methylmercury sampling plans for these varieties and therefore has no comments to make on this circular letter, given the lack of accurate data on these varieties and their methylmercury versus total mercury levels
Costa Rica	**Specific comments** a) Maximum levels: Costa Rica supports the proposal for new work to determine MLs for the species orange roughy and cusk-eel. b) Sampling plans: With regard to the items discussed in paragraphs 27 to 37 of report CX/CF/20/14/11 of February 2020, Costa Rica acknowledges that a range of positions must exist, as demonstrated by some members of the CCCF that indicated a preference for sampling with a focus on the ***worst-case scenario*** (animals likely to contain higher levels of methylmercury and total mercury), or the consideration of size variations to arrive at a ***median*** level of methylmercury and total mercury for animals in the lot. In line with the statements made in paragraph 28 of this report, however, Costa Rica **agrees and stresses that it is vital to develop a single general sampling**

plan to determine the maximum levels for various species, noting that these sampling activities are those used by many of the countries in their monitoring and surveillance systems for contaminants in fish species, and that the development of varying sampling plans in relation to the specific annexes for each species could hinder the actual implementation of these plans in the field and, consequently, limit the provision of data to the GEMS/Food database, particularly in the case of developing countries.

c) Costa Rica agrees with the need expressed in paragraph 3 of report CX/CF/20/14/11 of February 2020. We also wish to share that, as part of our country's efforts to establish risk management measures for methylmercury exposure within vulnerable population groups, we have used the following technical and regulatory documents and publications:

- *Asamblea Legislativa de la República de Costa Rica* (Legislative Assembly of the Republic of Costa Rica) (2006). *Ley General del Servicio Nacional de Salud Animal* (General National Health Service Act), Number 8595. *Diario Oficial La Gaceta* (Official Gazette) No. 93.
- Bloom, N.S. (1992). On the methylmercury content of fish tissue. Canadian Journal of Fisheries and Aquatic Sciences. 49, 92-113.
- Commission of the European Communities (2006). Commission Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs. Official Journal of the European Union, 19 December 2006, 364/5-364/24. Retrieved on 10 March 2014, available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:364:0005:0024:ES:PDF
- Commission of the European Communities (2007). Commission Regulation (EC) No 333/2007 of 28 March 2007 laying down the methods of sampling and analysis for the official control of the levels of lead, cadmium, mercury, inorganic tin, 3-MCPD and benzo(a)pyrene in foodstuffs. Official Journal of the European Union, 29 March 2007, 88/29-88/38. Retrieved on 10 March 2014, available at http://www.boe.es/doue/2007/088/L00029-00038.pdf
- Codex Alimentarius Commission (1995). Codex Standard 193-1995: CODEX General Standard for Contaminants and Toxins in Food and Feed. *FAO, 1-48*, Retrieved on 10 March 2014, available at http://www.fao.org/fileadmin/user_upload/livestockgov/documents/CXS_193s.pdf
- EFSA Journal 2012; 10(12):2985. Scientific Opinion on the risk for public health related to the presence of mercury and methylmercury in food. EFSA Panel on Contaminants in the Food Chain (CONTAM). Updated on 10 April 2018.
- Earth Trends (2003). Coastal and Marine Ecosystems, Costa Rica. Retrieved on 5 April 2013, available at http://earthtrends.wri.org/pdf_library/country_profiles/coa_cou_188.pdf
- FAO (2003). Country Profiles of the Food and Agriculture Organization of the United Nations Fishery Sector. Retrieved on 5 April 2013, available at http://www.fao.org/fi/fcp/en/CRI/profile.htm
- FAO (2010). Report of the Joint FAO/WHO Expert Consultation on the Risks and Benefits of Fish Consumption, Rome, 25-29 January 2010. Fisheries and Aquaculture Report No. 978 FIPM/R978(Es).
- FAO (2013). FAOSTAT. Retrieved on 31 December 2018, available at http://www.fao.org/faostat/es/#data/CL
- Farré, R., Cameán, A. M., Vidal, M. C., Santacruz, A. L., Teruel, V. J., Canales, E.T (2010). *Informe del Comité Científico de la Agencia Española de Seguridad Alimentaria y Nutrición (AESAN) en relación a los niveles de mercurio establecidos para los productos de la pesca* (Report of the Scientific Committee of the Spanish Agency for Food Safety and Nutrition (AESAN) on established mercury levels for fish products). *Revista del Comité Científico* (Journal of the Scientific Committee), *13,* 29-36. Retrieved on 10 March 2014, available at http://aesan.msssi.gob.es/AESAN/docs/docs/evaluacion_riesgos/comite_cientifico/MERCURIO_P.PESCA.pdf
- Incopesca (2012). *Resumen Pesquero 1998-2004* (Fishing Summary 1998-2004), retrieved on 16 January 2012, available at http://www.incopesca.go.cr/Est._Pesq._resumen_sect_pesq_y_acui_98_04.htm
- Report of the 61st meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA), Rome, 10-19 June 2003 (ftp://ftp.fao.org/es/esn/jecfa/jecfa61sc.pdf).
- Joint FAO/WHO Expert Committee on Food Additives (2003). Contaminants: Methylmercury. In WHO Technical Report Series, 922 (Ed). *Evaluation of Certain Food Additives and Contaminants: Sixty-first report of the Joint FAO/WHO Expert Committee on Food Additives* (pp. 132-141). Rome, Italy. Retrieved on 15 February 2014, available at http://whqlibdoc.who.int/trs/WHO_TRS_922.pdf

	• Mar Viva, Incopesca, MEIC (2012). *Guía de identificación de filetes de pescado y mariscos* (Identification guide - fish fillets and seafood). Retrieved on 22 February 2014, available at http://marviva.net/images/Consumo_Responsable/guia_de_identificacion_de_filetes_de_pescado_y_mariscos.pdf • Ministry of Agriculture and Livestock (2008). Decree 34687-MAG, RTCR 409:2008: *Reglamento de límites máximos microbiológicos y de residuos de medicamentos y contaminantes para los productos y subproductos de la pesca y de la acuicultura destinados al consumo humano* (Regulations on maximum microbiological limits and maximum limits for medicinal product residues and contaminants in fishery and aquaculture products and subproducts destined for human consumption). *Diario Oficial La Gaceta* (Official Gazette) No. 160. Retrieved on 12 March 2014, available at http://www.pgr.go.cr/Scij/ • PROCOMER (2012). *Estadísticas de Comercio Exterior de Costa Rica 2011* (Foreign Trade Statistics for Costa Rica 2011). Costa Rica. Retrieved on 5 April 2013, available at http://www.procomer.com/contenido/descargables/estadisticas/web_libro_estadistica2011_v2-web.pdf • USDA/FSIS/OPHS (1991). Determination of mercury by Atomic Absorption Spectrophotometry. *Chemistry Laboratory Guidebook, I05a*, 1-14. Retrieved on 10 March 2014, available at http://www.fsis.usda.gov/wps/wcm/connect/7f248e71-0510-43c2-96ab-bf263f23658a/CLG_TM_5_00.pdf?MOD=AJPERES • CX/CF 16/10/15 February 2016 Joint FAO/WHO Food Standards Programme Codex Committee on Contaminants in Foods, Tenth Session, Rotterdam, The Netherlands, 4-8 April 2016 Discussion paper on maximum levels for methylmercury in fish.
Cuba	With regard to the document in question on maximum levels of methylmercury in new species of fish, we can say that the document is of an excellent technical standard and proposes methylmercury limits for species that have been extensively studied as well as providing sampling plans that involve a large number of samples and the analysis of those portions of the fish containing the highest concentrations of this metal, the species in question being tuna, alfonsino, marlin and shark, to which our country agrees, with the proposed limits, although these are not all species found in large numbers in our seas, with the exception of tuna (skipjack tuna in our case, *Katsuwonus pelamis*) and shark. The proposed limits, which are higher than the limits of 0.5 and 1.0 mg/kg proposed in Cuban Standard NC 493:2015 for Metal Contaminants, are sensible for these species due to their pelagic and predatory characteristics, and large-scale movement in the sea. The document explains that it has not been possible to establish limits within a group of species due to the need for more data on both methylmercury and total mercury, as it was shown that for certain fish species the ratio of methylmercury to total mercury was very low and for the data analysis it could not always be assumed that total mercury would be mostly present as methylmercury. With regard to MLs for additional fish species, Cuba does not have methylmercury figures for the majority of the species addressed in this document, however it is able to comment on the criteria for establishing new ML for these species of significant commercial value that will need to be implemented in the regulations to control their consumption in the interest of protecting public health. We agree, as stated in the document, that: A statistically reliable ML should be established for fish species of significant commercial value that exceed the selection criterion for methylmercury (0.3 mg/kg) and for species with total mercury levels that exceed the same selection criterion. Species of commercial value for which there is a sufficiently reliable number of results showing total mercury below this value do not require a new ML. In order to establish an ML for any fish species, a number of results of known provenance whose veracity is beyond doubt is needed. The species addressed that do not meet this criterion should therefore continue to be studied and results should continue to be compiled. In order to define the ratio of total mercury to methylmercury, it is important to take into account variation between species and habitat, and within a species between size, weight etc., which can determine variations in this ratio. Each species should therefore be analysed on the basis of its characteristics. We agree that new MLs should be established for the species orange roughy (a species belonging to the slimehead family, *Trachichthyidae*) and cusk-eels (*Ophidiidae*), for which there is sufficiently reliable data and in which mean concentrations of methylmercury would exceed the selection criterion of 0.3 mg/kg. In the table in Appendix I, we agree to the proposals with regard to whether or not to establish new MLs for the species listed. **APPENDIX II** **PROJECT DOCUMENT FOR NEW WORK ON MAXIMUM LEVELS FOR METHYLMERCURY IN CUSK-EEL AND ORANGE ROUGHY**

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The country agrees that work should be undertaken on those species of fish identified as having average levels of methylmercury sufficient to exceed the selection criterion of 0.3 mg/kg.
APPENDIX III
DISCUSSION PAPER ON ESTABLISHING FURTHER MAXIMUM LEVELS FOR METHYLMERCURY IN FISH (for information)
Species for possible ML elaboration: We concur with the agreements regarding the ML for orange roughy and cusk-eels.
Species recommended for continued data collection: We agree with the proposals put forward in the document.
Newly reviewed species: We agree with the proposals put forward in the document.
APPENDIX IV
DISCUSSION PAPER ON ESTABLISHING A SAMPLING PLAN FOR METHYLMERCURY IN FISH (for information)
Question 1. Can methylmercury vary widely between individual fish sampled at the same time?
Total mercury and methylmercury concentrations in fish from the same region are known to vary depending on the length and weight of the specimens and sampling plans are known to be complex, and we therefore agree that species-specific information would be better captured in an annex of the sampling plan as a supplement and that each annex could also be tailored for the quantities and the type of fishery products in trade for each species/grouping.
Question 2. Should the whole fish be analysed or only specific fractions of edible portions?
We agree with the proposals put forward in the document.
Proposed sampling plan
We agree with the proposals put forward in the document.
Proposed sampling plan format for methylmercury contamination in fish: general considerations
We agree with the proposals put forward in the document.
Annexes I, II, III and IV
We agree with the proposals put forward in the document.
On the whole, this document is a serious work that is of crucial importance given the toxicity of this element and the damage to human health caused by its consumption. It is clear which elements and fish species, by virtue of high production levels and extensive commercialisation, require changes to existing MLs or the establishment of new MLs to be incorporated into the quality standards of all countries, and which others require further work and data collection to establish a new ML or maintain the current ML.
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<tr><td>Ecuador</td><td>
Prior to establishing the MLs, the ratio of total mercury to methylmercury should be determined for the new species, as this can vary widely between species.
Although selection criteria have been agreed for selecting fish species for setting MLs for methylmercury, we suggest that size is taken into account, particularly for tuna, in order to obtain real data on total mercury content.
With regard to sampling, we are of the opinion that the edible portions of the fish should be analysed (muscle).
The information provided below will contribute towards the data on total mercury shown in the summary table of recommendations for consideration by CCCF in Appendix I.
<table>
<tr><td>Species</td><td>Total mercury mg/kg</td></tr>
<tr><td>• Mahi-mahi/dolphinfish/dorado (Coryphaena hippurus)</td><td>< 0.30 mg/kg</td></tr>
<tr><td>• Patagonian toothfish (Dissostichus eleginoides), toothfish (Dissostichus sp.)</td><td>Maximum 0.82 mg/kg, minimum 0.39 mg/kg</td></tr>
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	• Escolar (*Lepidocybium flavobrunneum*)	Maximum 0.43 mg/kg, minimum 0.11 mg/kg
	• Anguila	Maximum 0.33 mg/kg, < 0.09 mg/kg. * 0.09 mg/kg limit of quantification for mercury
European Union	European Union Competence European Union Vote The European Union (EU) welcomes and appreciates the work done on the setting of maximum levels (MLs) for methylmercury in additional fish species by the electronic Working Group chaired by New Zealand and co-chaired by Canada. The EU would like to make following comments: **a) Maximum levels** The EU agrees to start work on the establishment of MLs for orange roughy and cusk-eel. Based on data in Appendix II, the EU could support an ML of 0.80 mg/kg methylmercury of orange roughy, which would result in a 3% rejection rate for the global data set. For cusk-eel, the EU could support an ML of 1.0 mg/kg, which corresponds to a 4% rejection rate for the global data set. The EU would like to confirm its position on the selection criteria of 0.3 mg/kg as the minimum average methylmercury content in fish species for the setting of ML. Also fish species containing lower methylmercury content could contribute to overall dietary exposure. **b) Sampling plans** <u>General observation</u> The EU would like to emphasize that established MLs should be applied to fish throughout the whole chain regardless the stage of food chain where the samples were taken (i.e. MLs should be applied also to fish and fish products placed on the market for final consumer). The sampling provisions relate to the sampling of whole fishes. The EU is of the opinion that it might be appropriate to provide specific sampling provisions for fish products. The EU can support, for specific fish species, a further collection of information on the correlation between methylmercury content and fish length for the fish species for which an ML is established or in discussion to develop a sampling plan. The EU is in favour of a general sampling plan for all fish species with the possibility of specific provisions for specific fish species taking into account lot variability, average size and economic impact related to the sampling procedure. This sampling plan should be designed for lots of fishes of comparable weight/length and for lots of fishes of different weight/length. In case data for specific species would show that the distribution of methylmercury within the fish significantly differs, exemptions from the general sampling plan could be made for specific fish species. Clear guidance should be added on division into lots/sublots, taking incremental samples and preparing an aggregate sample in case of large fishes. <u>*As regards the request for data as referred to in point i)*</u> • the EU can provide the data on the presence of (methyl)mercury in tuna, shark, alfonsino, marlin, orange roughy and cusk-eel with information on the sampling procedure, • the EU has no data available on the correlation of fish length or weight with methylmercury concentration for shark, alfonsino, marlin, tuna species aside from bluefin, orange roughy and cusk-eel, and • the EU has no data available on tissue distribution of methylmercury for shark, alfonsino marlin, orange roughy and cusk-eel.	

	As regards the call for data as referred to in point ii) • The EU can support a call for data on correlation of fish length or weight with methylmercury concentration for shark, alfonsino, marlin, tuna species aside from bluefin, orange roughy and cusk-eel, and • The EU can support a call for data on tissue distribution of methylmercury for shark, alfonsino, marlin, orange roughy and cusk-eel. *As regards the information on sampling plans as referred to in point iii)* The EU refers to the following information: • Specific provisions for the sampling of large fish arriving in large lots are described in Commission Regulation (EC) No 333/2007 (1) of 28 March 2007 laying down the methods of sampling and analysis for the control of the levels of trace elements and processing contaminants in foodstuffs. • In Annex II to Commission Regulation (EU) 2017/644 (2) of 5 April 2017 laying down methods of sampling and analysis for the control of levels of dioxins, dioxin-like PCBs and non-dioxin-like PCBs in certain foodstuffs, specific provisions for the sampling of lots containing whole fishes of comparable size and weight and for sampling of lots of fish containing whole fishes of different size and/or weight are set. Although these provisions are focused on the presence of dioxins in fishes, they can be used as a basis for sampling procedure also for methylmercury in fish (this is relevant for following points too). • A guidance on sampling of whole fishes of different size and/or weight (3) (for dioxins) is available. • A report (4) from IVL Swedish Environmental Research Institute on impact of cooking methods, uncertainty of chemical analyses and differences between parts of the fish on dioxin and PCB concentrations in salmon and herring from the Baltic Sea. **c) Other risk management recommendations** The EU welcomes a guidance for such recommendations. This guidance could contain for example recommendations: • On sorting by size (weight/length) to have more representative lots • To market only small fish (usually less contaminated, to prevent the food waste) • On trimming of fish These recommendations need to be supported by data demonstrating the effectiveness of the measures to reduce the presence of methylmercury in fish. ---------- (1) https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1600864918582&uri=CELEX:02007R0333-20191214 (2) https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1600866362317&uri=CELEX:32017R0644 (3)https://ec.europa.eu/food/sites/food/files/safety/docs/cs_contaminants_catalogue_dioxins_guidance-sampling_exemples-dec2006_en.pdf (4) http://www.sisdioxin.se/uploaded/rapporter/Rapport%20Impact%20cooking.pdf
Iraq	We agree with paragraph C.
Japan	**a. Maximum levels** Additional Species In accordance with the “Principles for establishing maximum levels in food and feed (Section 1.3.2)”* of the General Standard on Contaminants and Toxins in Food and Feed (CXS 193-1995), maximum levels(MLs) shall only be set for those fish species that contain methylmercury at concentrations higher than the selection criteria (0.3 mg/kg) and are traded and consumed in large volumes. * “Maximum Levels (ML) shall only be set for food in which the contaminant may be found in amounts that are significant for the total exposure of the consumer.”

	Japan supports further collection of data on these species. However, if data submitted are not sufficient on specific fish species after the data call, CCCF should consider whether to continue the ML setting for the fish species. - *Establishment of ML for orange roughy* In accordance with the principles for establishing MLs of GSCTFF, the fish species with low trade volumes shall not be subject to ML setting. As shown in para. 24 of Appendix Ⅲ, among the fish species for which MLs have already been set, marlin has the least export volume, which is about 1/20 of that of shark. Based on the above, Japan proposes that the species with less export volume than that of marlin should not be subject to MLs setting: orange roughy has less export volume than marlin and therefore should not be subject to ML setting. According to the statistics from FAO, the import volume of orange roughy in 2017 was 832 t. **b. Sampling plans** In order to avoid trade disputes over the analytical results on methylmercury in fish in the future, it is necessary to reach an agreement in this Committee on sampling plan, not only on analytical methods. It will be more acceptable for many countries if CCCF develops a uniform sampling plan in which sample should be taken from the end portion (close to tail) in the case of large fish, such as those for which MLs for methylmercury have been established, from the points of view of economy and feasibility, as well as health protection. As described in Appendix, in Japan no parts are wasted in cutting of large and expensive fish, such as tuna, and all the parts of those kinds of fish are fully utilized. It is important to avoid producing parts not for sale and, therefore, preferable to collect a sample from the end portion. (Appendix will be submitted through the codex contact point by e-mail.)
Morocco	• **Request a**: Morocco proposes that this work can only be continued after collecting additional data for the occurrence of methylmercury relative to total mercury. • **Request b-ii**: Morocco is in favor of launching the call for data to have more actionable data.
Norway	We find it interesting that Codex is collecting data on the distribution of total mercury and methylmercury in different parts of muscles in e.g. tuna. The Institute of Marine Research in Norway have ongoing projects on this subject, and we can come back with more information at a later stage. **a. Maximum levels** Regarding the selection criteria of 0,3 mg/kg as the minimum average methylmercury level in fish species, we are of the view that also fish species containing lower methylmercury levels could contribute to overall dietary exposure. We observe that there is «lack of species-specific data» on «Ling (cusk and blue ling)». We have previously contributed with data for cusk, ling and blue ling with information about the species. To us, it is difficult to understand why this data is not broken down by species. In our view, tusk might have emerged as a species that could be a possible candidate for a new ML (total mercury average 0.34 mg/kg), while ling would not. **b. Sampling plan (Appendix IV)** It is our view that established MLs should be applied to fish throughout the whole chain regardless the stage in the food chain where the samples were taken. This implies both fish and fish products placed on the market for final consumer. The proposed sampling plan provides sampling of whole fish. This sampling plan should also apply to fish products. We prefer a general sampling plan for all fish species with the possibility for specific adaptations for specific fish species in relation to variation of batches, approximate size and economic value. The sampling plan should be designed for lots fishes of comparable weight/length and lots of fish es of different weight/length. *Appendix IV (page 29 header Sample plan question 2)*: Should the whole fish should be analyzed or only…… *Appendix IV (point 24)*: We would just like to adjust an observation regarding the Discussion paper on maximum levels for methylmercury in additional fish species. “Additionally for Atlantic halibut (Hippoglossus hippoglossus) it was reported that the b-cut (Figure 3) was taken for mercury analysis due its lower lipid content (Nilsen et al. 2016).” Additionally, for Atlantic halibut (Hippoglossus hippoglossus) it has been reported level of total mercury was slightly higher in b-cut compared to i-cut (Julshamn et al. 2008) or both b- and i-cut (Figure 3) had nearly the same level of both total mercury and methylmercury (Julshamn et al. 2011).

	References belonging to point 24: • Nilsen, B.M., Kjell Nedreaas, Måge, A., 2016. Kartlegging av fremmedstoffer i Atlantisk kveite (Hippoglossus hippoglossus). Sluttrapport for programmet «Miljøgifter i fisk og fiskevarer» 2013-2015. Nasjonalt institutt for ernærings- og sjømatforskning (NIFES), Bergen, Norway. • Julshamn, K., Valdersnes, S., Frantzen, S., 2011. Årsrapport 2010 Mattilsynet. Fremmedstoffer i villfisk med vekt på uorganisk arsen, metylkvikksølv, bromerte flammehemmere og perfluorerte alkylstoffer. NIFES, Bergen, 60 p. • Julshamn, K., Øygard, J., Måge, A. 2008. Rapport 2007 for kartleggingsprosjektene: Dioksiner, dioksinlignende PCB og andre PCBer i fiskevarer og konsumferdige fiskeoljer, bromerte flammehemmere og andre nye miljøgifter i sjømat og tungmetaller i sjømat.
Syrian Arab Republic	We apologize for the lack of sufficient information in this regard, and we support your third proposal regarding the EWG
Thailand	**Establishing Maximum Levels for additional fish species**: Regarding the proposal of EWG, with the sufficient data and reasonable analyzing and criterion, we agree with summary data for each fish species to consider the establishment of MLs for methylmercury provided in Appendix I. Therefore, we have no objection to establish MLs for methylmercury for orange roughy and cusk-ell for new work. In addition, we agree to collect more data for other 6 species/taxonomic grouping of fish i.e., anglefish, snake mackerel, toothfish, sablefish, sturgeon, and catfish for consideration of the need for establishing MLs. **Sampling plans**: According to the proposed sampling plans in the discussion paper, we have no objection to develop the sampling plan as specific species. However, we are of the view the contamination of methylmercury could vary depending on either species or sizes of fish. Therefore, it is suggested that further data collection on contamination of methylmercury in fish should be addressed both in sizes and species. This would be relevant to find out the appropriate criteria for sampling plans. **Other risk management recommendations**: Thailand supports the development of guidance paper to reduce the contamination of methylmercury in fish.
Uganda	Uganda has a reservation on the maximum limits for methyl-mercury and sampling plan for the two species (Orange roughy and cask eel). Justification: No available country data on MLs for methyl-mercury and sampling plan for the Orange roughy and cask eel fish species. In addition, these are rare specie that we currently do not trade in.
USA	**Maximum Levels** • The United States considers it premature to propose new work to establish MLs for orange roughy and pink-cusk eel because of questions regarding data and trade criteria and the lack of a sampling plan for species with established methymercury MLs. o For cusk-eels, methylmercury and total mercury data were only available for pink cusk-eels, whereas for other types of cusk eels, the methylmercury to total mercury ratio is not known. CCCF13 (REP 19/CF) noted that data "should be submitted for both methylmercury and total mercury and preferably from paired analysis." In addition, almost all "cusk-eel" samples were pink cusk-eels (234 out of 247); therefore the dataset is not sufficient to make a determination for all "cusk-eels." o There are questions as to whether there is sufficient trade in orange roughy and pink cusk-eel to warrant ML development. In CX/CF 19/13/13, the criteria used to determine signficance in trade was the lowest production tonnage among species with established MLs (9000 tonnes for alfonsino). This is different from the criteria used in CX/CF 20/14/11, which was lowest export tonnage among species with established MLs; that is, 4573 tonnes for marlin. The export

	tonnages for both orange roughy (3246 tonnes) and pink cusk-eels (4,162 tonnes, 80 percent of total trade in cusk-eels) are well below that of marlin. Therefore, it is not clear that orange roughy or pink cusk-eels are traded at at sufficient levels to warrant ML development. o Work should conclude on the sampling plans for the already established MLs before new work on MLs is proposed. There is value in first developing the sampling plan to help ensure that appropriate data and considerations are used to support ML development and additional data collection. • Regarding the request to establish MLs for additional fish species, we recommend that the working group NOT identify other species as possible candidates for future ML development and data collection for the following reasons: o The current work related to methylmercury should be concluded, including the sampling plan. o The mean levels of total mercury for most of these species are close to the cutoff for review of 0.3 mg/kg. o Based on the analysis in CX/CF 17/11/12, 0.3 mg/kg mercury was taken as a selection criterion to identify species of concern; however, identification of species of concern should not be considered a definitive mandate for future work. We note that the analysis in CX/CF 17/11/12, Table 4, showed no exceedances of the PTWI in any GEMS clusters until 0.4 mg/kg mercury. In addition, most of the species identified in CX/CF 20/14/11 as possible candidates for future work have an average total mercury <= 0.5 µg/g, identified in the Joint FAO/WHO Expert Consultation on the Risks and Benefits of Fish Consumption as the level below which neurodevelopmental risks of not eating fish exceed risks of eating fish for up to at least seven 100 g servings per week. **Sampling Plans**: • In response to (b)(i), the United States has the following information available: https://www.fda.gov/food/metals-and-your-food/mercury-concentrations-fish-fda-monitoring-program-1990-2010. • In response to (b)(ii) as to whether a call for data should be issued to support species-specific annexes, the United States notes that species-specific sampling plans are not the typical approach for sampling fish and this approach would need to be confirmed with data. We suggest that the EWG consider the level of effort needed to develop species-specific annexes given the committee's overall agenda. • In response to (b)(iii) on whether the evidence or statistical basis used by national authorities in the development of national sampling plans for methylmercury in fish can be provided to the EWG, we will provide specific comments on the draft sampling plan to the EWG Chair. This link contains FDA sampling instructions for methylmercury in swordfish (page 4-99, FDA Investigations Operations Manual): https://www.fda.gov/media/75243/download. **Other Risk Management Recommendations:** • The sampling instructions link above contains information on sorting swordfish lots into size ranges for testing. We do not have additional information to share currently on fish catch, sorting, and processing for methylmercury, for example, to cover reconditioning options. It will be important for the EWG to consider not only whether such information is available, relevant, and of sufficient quality, but also whether guidelines or a code of practice for fish catch, sorting, processing, and reconditioning fall within the terms of reference of CCCF. Also, the amount of work to develop and review such guidance should be considered given the Committee's overall agenda, including ongoing work on the sampling plan and ML review. • Guidance on sorting fish for testing and guidance on testing can be incorporated into the sampling plan as part of the GSCTFF rather than in a separate risk management document.
IUFOST	IUFoST supports this concept, but also supports a single restrictive level, based on good science and proper risk analysis procedures by JECFA, for a single level for all fish. If the environment of sme species leads to higher levels, they should not be allowed to be sold or consumed.