codex alimentarius commission

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

WORLD HEALTH ORGANIZATION

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JOINT FAO/WHO FOOD STANDARDS PROGRAMME

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DISCUSSION PAPER ON THE GUIDELINE LEVELS FOR METHYLMERCURY IN FISH

COMMENTS

The following comments have been received from: Australia, Brazil, Chile, Cuba, European Community, Japan, New Zealand and Consumers International

Australia:

At the 36th session of CCFAC the Committee agreed to establish a drafting group led by European Community (with assistance from Australia and others) to prepare a discussion paper on the possible need to revise the Codex Guideline Levels for methyl mercury in fish and on examination of other possible management options for consideration at the next Session.

Mercury (in the form of methyl mercury) is a contaminant commonly found in fish, particularly in long-living or predatory fish. Mercury occurs naturally in ocean sediment and is transformed by bacteria into methyl mercury, which accumulates in aquatic organisms. The concentration in particular fish species is determined by the lifespan of the species and by its feeding habits. While mercury contamination can occur as a result of human activities, in most parts of the world the mercury in ocean sediment is of natural origin.

Public health concerns in relation to methyl mercury in food are related to its potential to affect the nervous system, particularly in the developing foetus. Some epidemiological studies have suggested an association between increased maternal dietary exposure to methyl mercury and delayed neurodevelopment in children.

In June 2003, the World Health Organisation (WHO) revised its recommendation for the amount of methyl mercury which can be safety consumed. A recent meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA) in 2003 established a new stricter health standard for methyl mercury – a Provisional Tolerable Weekly Intake (PTWI) of 1.6 microgram per kilogram bodyweight per week.

Codex established the following *guideline levels* for methyl mercury:

- 1 mg/kg for large predatory fish; and
- 0.5 mg/kg for all other species of fish.

However, it is unclear which fish species precisely should be included in the category of large predatory fish.

Australia would like to submit the following comments:

Australia welcomes the current paper and considers it a useful and well-balanced document, which will facilitate discussion at this years CCFAC meeting. As a member of the drafting group, Australia supports the work done so far and facilitated advancement of the discussion paper by submitting to the EC the current advisory statements for Australian consumers as part of Australia's risk management policy on mercury in fish.

The *Australia New Zealand Food Standards Code* (the Code) prescribes maximum levels (MLs) for mercury in some foods, including fish. Two separate maximum levels are imposed for fish — a level of 1.0 mg mercury/kg for the fish that are known to contain high levels of mercury (such as swordfish, southern blue fin tuna, barramundi, ling, orange roughy, rays and shark) and a level of 0.5 mg/kg for all other species of fish. A limit of 0.5 mg/kg is also imposed for crustacea and molluscs. These limits apply to all seafood offered for commercial sale.

In response to the WHO revised PTWI for mercury, Australia has re-examined the risks associated with consumption of fish for the general population as well as for women of childbearing age and young children by reviewing the current data on the safety of methyl mercury and performing dietary modelling using new survey data to assess dietary exposure to mercury for all sectors of the Australian and New Zealand population.

The revised advice (below and detailed further in **Attachment 1**) recommends that pregnant women, women planning pregnancy and young children continue to consume a variety of fish as part of a healthy diet, but limit their consumption of certain types of fish.

- *FSANZ[1] recommends that pregnant women, women planning pregnancy and young children limit their intake of shark (flake), broadbill, marlin and swordfish to no more than one serve per fortnight (with no other fish to be consumed during that fortnight) and their intake of orange roughy and catfish to no more than one serve per week (with no other fish being consumed during that week). Importantly, FSANZ has found it is safe for all population groups to eat 2-3 serves per week of any other type of fish.*

This work was done in consultation with representatives from Commonwealth and State governments, health professional and consumer groups and representatives from the fishing industry. A communication strategy was also developed to convey the complex message that fish is an important part of the diet but women intending to become pregnant and children may need to limit their intake of certain species. A video news release was distributed containing various interviews. An evaluation of coverage shows the message reached an audience of almost 16 million people.

The revised advice is still not as strict as that issued by some other countries but this reflects differences between Australia and other countries in the mercury content of fish, the types of fish commonly caught and eaten, and patterns of fish consumption.

Australia is expecting to undertake a review of these MLs in 2005, in light of the difficulties experienced by Australian enforcement agencies in actually enforcing the current MLs.

Australia agrees with the recommendations proposed in the discussion paper.

ATTACHMENT 1

The FSANZ 'Advice on Fish Consumption' has been specifically developed for the Australian population and reflects local knowledge of our diets, the fish we eat and their mercury content.

[1] Food Standards Australia New Zealand

Number of serves of different types of fish that be can safely consumed

Pregnant women and women planning pregnancy **1 serve equals 150 grams#**	**Children (up to 6 years)** **1 serve equals 75 grams #**	**Rest of the population** **1 serve equals 150 grams #**
2 – 3 serves per week of any fish and seafood not listed below		2 – 3 serves per week of any fish and seafood not listed in the column below
OR		OR
1 serve per week of Orange Roughy (Sea Perch) or Catfish and **no** other fish that week		1 serve per week of Shark (Flake) or Billfish (Swordfish / Broadbill and Marlin) and **no** other fish that week
OR		
1 serve per fortnight of Shark (Flake) or Billfish (Swordfish / Broadbill and Marlin) and **no** other fish that fortnight		

A 150 gram serve for adults and older children is equivalent to approximately 2 frozen crumbed fish portions.
A 75 gram serve for children is approximately 3 fish fingers (Hake or Hoki is used in fish fingers).
Canned fish is sold in various sizes; for example, the snack size cans of tuna are approximately 95 grams.

Brazil:

Brazil supports the recommendations and will assemble available data for total mercury in fish.

Chile

Chile está de acuerdo con los limites propuestos en el documento, ya que en general se ajustan a los que se utilizan en la actualidad y no contituyen problemas para los recursos producidos en nuestro país, considerando que se he hecho una lista especial para aquellos pescados y productos pesqueros de maypr acumulación biológica.

Cuba

De acuerdo con el documento y con los NM de Mercurio total recomendados.

ENGLISH TRANSLATION

We agree to the document and to the recommended total mercury MLs.

European Community:

The European Community welcomes this discussion paper on guideline levels and other risk management options for methylmercury in fish. We support the need to develop alternative approaches for risk management, particularly in view of the difficulty to lower the guideline levels and the real possibility to exceed recommended safety thresholds. In addition, we have the following comments:

1. In the Annex, fish groups are listed which go beyond findings of EU data, although we accept that the list needs to take account of other regional information, particularly as different fish species may predominate in different regions of the world. In view of different common fish names used around the world, we would like to emphasize the importance to use scientific/ latin names in any lists of fish that might be developed from this activity.

2. Average level consumers of fish generally appear to be within safe exposure limits, but sub-populations and vulnerable groups can exceed these. Data show that consumers can easily exceed the PTWIs if they eat too much of certain species of fish, such as swordfish and shark, which are often found to contain mercury close to or above the maximum level of 1 mg/kg. Regarding methylmercury in tuna, it would be most helpful if a clear international view on canned vs fresh tuna and different tuna species could be established, in particular to help in risk communication.

3. We note in the paper that the lack of quantitative risk assessment is mentioned as a limiting factor. However, without extensive further data this approach is difficult to utilise with any reasonable accuracy. In view of the high levels of methylmercury that are often found in certain fish, it is easy to see that the recommended safe levels of intake can be exceeded and that measures are necessary to protect the vulnerable population groups.

4. The European Community fully supports the recommendations in the paper and wishes to highlight the following points:

   a) There is clearly a need for more information on levels of methylmercury compared with total mercury in fish and other foods that contain mercury.

   b) The proposed workshop would be most useful, to bring together information on different experiences, ideas and approaches to manage risks, including the increasing use of targeted risk communication. This could also take into account risk benefits, such as nutritional factors. It could be useful for CCFAC to develop an approach on risk communication e.g. to assist many countries around the world where general international guidance could help them develop more specific national or regional advice.

   c) Regarding the most recent JECFA PTWI of 1.6 µg/kg.bw, we believe that until further elaboration is given by JECFA, this threshold should apply to both maternal intake to protect the foetus and the breast-fed infant and also to young children, as these are the main life stages where neurodevelopment occurs. Clarification by JECFA on the age at which neurodevelopmental risks significantly decrease and also on the extent to which the old PTWI of 3.3 µg/kg.bw could still be applied to other groups of the population would be most useful.

   d) We believe it is important to actively encourage worldwide measures to reduce mercury emissions to the environment, such as via the United Nations Environmental Programme (UNEP) (http://www.chem.unep.ch/mercury/). The European Commission has developed a strategy to reduce mercury emissions (http://www.europa.eu.int/comm/environment/chemicals/mercury/index.htm) from all sources and this is feeding into the UNEP programme.

Japan:

1. Identification of vulnerable groups and Assumption of methylmercury intake

1.1. Identification of vulnerable groups

The 61st JECFA indicated in its Evaluation in the monograph on methylmecury that the Committee evaluated new information since the 53rd JECFA that included epidemiological studies of the possible effects of prenatal exposure to methylmercury on child neurodevelopment and that neurodevelopment was considered to be the most sensitive health outcome, and life in utero the most sensitive period of exposure.

Japan is convinced that CCFAC should consider international dietary guidance for pregnant women to reduce the exposure of foetus, the most vulnerable group, to methylmercury in fish.

The Discussion Paper on the Guideline Levels for Methylmercury in Fish recommended that the CCFAC should ask JECFA to clarify the risk to vulnerable groups other than the feotus, in particular the risk to infants and children at different ages during postnatal development.

Japan would like to support this recommendation in order to consider appropriate risk management measures on methylmercury in fish in the CCFAC.

1.2. Estimation of methylmercury intake

The 61st JECFA indicated in its Comments of estimated dietary intake in the monograph on methylmecury that the Committee updated its evaluation of national intakes form some member countries and also evaluated information published between 1997 and 2003 on concentrations of mercury and methylmercury in various fish species, as well as analyses of methylmercury intake by populations consuming large amounts of fish. Consequently, the Committee noted that overall methylmercury concentrations in fish species were similar to those considered at the 53rd JECFA and therefore concluded that the analyses of exposure conducted at the 53rd JECFA remained current.

The 53rd JECFA estimated intake of methylmercury by fish consumers at the 95th percentile using distributions of consumption and mercury residues in fish and a Monte Carlo simulation as a probability analysis that had been conducted in the USA. The results of the estimation of intake in case of no limit on mercury in fish indicated that: 1) intake of children 2-5 years from all seafood was 1.5 μ(micro)g/kg bw per week and; 2) intake of woman was 0.8 μ(micro)g/kg bw per week. Consequently, the Committee concluded that the results could be expected to be similar as long as the concentrations in fish and the fish consumption were similar to those seen in the USA although data were not available to permit equivalent analyses for other countries.

Japan believes that expanding the 53rd JECFA's approach on the estimation of methylmercury intake will provide useful information to CCFAC to consider Maximum Levels on methylmercury in fish and other risk management measures. The Discussion Paper on the Guideline Levels for Methylmercury in Fish reviewed data and information regarding occurrence in food and exposure. Its review suggested that a lot of data and information were not used in the 61st JECFA's estimation of methylmercury intake and several significant data seemed to be available to JECFA to conduct intake assessment using probabilistic methods.

Therefore, CCFAC should request JECFA to assess methylmercury intake derived from fish using probabilistic methods with some feasible risk management options.

2. Draft listings for Codex guideline levels on total mercury in fish and fishery products

The discussion paper recommends the Committee to update the guideline levels for methylmercury and add a list of fish species for which 0.5 mg/kg is not reasonably achievable. We believe the list should only include those fish species that are traded in bulk internationally and the guideline levels should be established only for these fish species. Annex 1 indicates those fish species moving international trade in the period from 1998 through 2002 (FAO statistics; http://www.fao.org/fi/statist/FISOFT/FISHPLUS.asp) and their methylmercury concentration analyzed in Japan, if available, in order to facilitate discussion at the CCFAC. After the list is agreed by the Committee, it should request JECFA to evaluate methylmercury intakes from those fish species, which should be taken into consideration when elaborating guideline levels.

3. Substance for which guideline levels should be set

While the guideline levels adopted in 1991 were established for methylmercury, those proposed in the discussion paper are for total mercury. Since methylmercury poses more severe adverse health effects than total mercury, the guideline levels should be established for methylmercury from the point of view of protecting consumers' health.

Annex 2 shows the results of survey conducted in Japan on methylmercury and total mercury levels in several fish species. In most of the fish species, methylmercury and total mercury levels are highly correlated and ratio of methylmercury to total mercury is between 60 and 70%. For example, levels of methylmercury and total mercury in bluefin tuna have a strong correlation ($R^2 = 0.9088$). For most of its samples, ratio of methylmercury to total mercury is less than 80% and the average ratio is approximately 65%. On the contrary, the methylmercury/total mercury ratio of striped blue marlin is very low (28%).

The above results show that there is strong correlation between methylmercury and total mercury levels with a very high correlation coefficient. In most of fish species studied, the ratio of methylmercury to total mercury is less than 90% with varying ratio among fish species.

Consequently, it is concluded that it is more desirable to set guideline levels for methylmercury than total mercury. However, determining total mercury is more economical and convenient than determining methylmercury. Therefore, we suggest that the Committee collect data on methylmercury and total mercury levels in fish species in Annex 1 and consider the possibility of determining conversion factors to estimate methylmercury levels from total mercury levels for each of the fish species.

4. Listing species of fish known to contain lower levels of methylmercury

The discussion paper recommends the Committee to develop a list of fish species with lower levels of methylmercury to help consumers make informed choices. As data in Table 1 show, methylmercury levels in fish do not necessarily correspond to dietary intake of methylmercury; that is, the degree of risk. For example, some fish species with low methylmercury levels, such as yellowfin tuna or blue marlin, are consumed in a large amount resulting in high dietary intake of methylmercury. On the contrary, some fish species with high methylmercury levels, such as bluefin tuna or southern bluefin tuna, do not greatly contribute to risk because they are consumed only in a small amount. Risk resulted from such fish species is highly dependent on not only methylmercury concentration but also consumption of fish species.

Therefore, developing a list of fish species with lower levels of methylmercury may give a false message that such fish species are safe at any consumption level and may mislead consumers. We do not think it useful to create such a list at the international level. Such a list should rather be created by each country where the information about actual methylmercury concentration and consumption is known. If necessary, the Committee should establish a database on methylmercury levels in fish. The database should be accessible to all Codex members so that they can use such information in establishing maximum levels for methylmercury or providing advice to consumers.

Table 1 Japanese dietary intake of methylmercury from tuna and marlin

Fish species	Methylmercury * (μg/g)	Amount of consumption by women of 20 years old and avobe ** (g/day)	Dietary intake of methylmercury	
			(μg/person/day)	(μg/person/week)
Yellowfin tuna	0.18	13.0	2.34	16.4
Bluefin tuna	0.55	1.9	1.05	7.3
Albacore	0.17	4.3	0.73	5.1
Southern bluefin tuna	0.38	1.1	0.42	2.9
Bigeye tuna	0.55	14.8	8.14	56.9
Blue marlin	0.19	21.5	4.09	28.6
Striped marlin	0.34	15.6	5.30	37.1
Sword fish	0.67	32.7	21.9	153.4

* Based on the Results of Methylmercury Analysis in Fishes from 2000 to 2004, Document No.4-5 of Subcommittee on Animal Origin Foods under the Food Sanitation Committee under the Pharmaceutical Affairs and Food Sanitation Council, the Ministry of Health, Labor and Welfare of Japan (17 August 2004).

** The reason why dietary intakes were calculated only for women of 20 years old and above is that the most vulnerable group to the toxicity of methylmercury is assumed to be the developing foetus.

Dietary intakes of Japanese women of 20 years old and above were calculated using data from the following studies.

(a)Ministry of Health, Labor and Welfare of Japan; the special calculation data used the National Nutrition Survey in JAPAN, 2001 and 2002.

(b)Ministry of Agriculture, Forestry and Fisheries of Japan, Annual Statistics of Fishery and Aquaculture Production in Japan in 2001

(c)Ministry of Finance, Japan Trade Statistics, 2001

ANNEX

PROVISIONAL LIST OF MAIN INTERNATIONAL TRADED FISH SPECIES

Fish species	The name used by FAO statistics	The description of HS code	The sum total of the weight of import in 1998 to 2002 (MT)	ratio of total weight	methylmercury concentration			
TOTAL (live,fresh,chilled and frozen)			64,094,606	100.00%	n	min	max	ave
Cod			11,520,137	17.97%				
Cod	Atlantic cod, Pacific cod, Cod, Cod nei	Cod (*Gadus morhua,Gadus ogac,Gadus macrocephalus*)	5,336,470	8.33%				
Haddock	Haddock	Haddock (*Melanogrammus aeglefinus*)	568,656	0.89%				
Hake	Argentinian hake, Cape hake, Hake, Hake nei	Hake (*Merluccius spp., Urophycis spp.*)	1,988,075	3.10%				
Saith(=Pollock)	Alaska pollack,saithe(=Pollock)	Coalfish (*Pollachius virens*)	3,626,936	5.66%				
Tuna		Tunas(*of the genus Thunnus*), skipjackor stripe-bellied bonito (*Euthynnus(Katsuwonus) pelamis*)	7,718,909	12.04%				
Albacore	Albacore(=Longfin tuna)	Albacore or longfinned tunas (*Thunus alalunga*)	634,122	0.99%	15	0.12	0.25	0.16
BluefinTuna	Atlantic (Thunnus thynnus) and Pacific (Thunnus orientalis) bluefin	Bluefin tunas (*Thunnus thynnus*)	95,396	0.15%	119	0.05	4.20	0.55

		tuna							
	Southren BluefinTuna	Southern bluefin tuna (Thunnus maccoyii)	Southern bluefin tunas (*Thunnus maccoyii*)	53,351	0.08%	89	0.09	2.00	0.38
	Bigeye tuna	Bigeye tuna	Bigeye tunas(*Thunnus obesus*)	739,386	1.15%	83	0.18	2.30	0.55
	Yellowfin tuna	Yellowfin tuna	Yellowfin tunas (*Thunnus albacares*)	2,292,184	3.58%	42	0.01	1.24	0.18
	Tuna(unclassified)	Tunas	Other	843,075	1.32%				
	skipjack tuna	Skipjack tuna	Skipjack or stripe-bellied bonito	3,061,395	4.78%	30	0.06	0.14	0.09
Mackerels		Atka mackerel, Atlantic mackerel, Chub mackerel, Jack and horse maackerel, Spanish Mackerel, Mackerel, Mackerel nei	Mackerel (*Scomber scombrus, Scomber australasicus, Scomber japonicus*)	7,144,813	11.15%	6	0.00	0.24	0.13
						9	0.10	0.32	0.21
Salmon		Atlantic Salmon,Pacific Salmon,Sockeye salmon (red salmon)(Oncorhynchus nerka),Other Pacific Salmon,Salmon,salmon nei,Salmonoids	Pacific salmon (*Oncorhynchus nerka, Oncorhynchus gorbuscha, Oncorhynchus keta, Oncorhynchus tschawytscha, Oncorhynchus kisutch, Oncorhynchus masou and Oncorhynchus rhodurus*)	5,267,869	8.22%	1	0.02	0.02	0.02
Herring		Atlantic herring, Flaps of herring, Herring, Herring nei	Herrings (*Clupea harengus, Clupea pallasii*)	4,683,923	7.31%				

Flatfish			Flat fish (*Pleuronectidae, Bothidae, Cynoglossidae, Soleidae, Scophthalmidae and Citharidae*)	3,917,013	6.11%				
	Flatfish	Flatfish, Flatfish nei		812,878	1.27%	1	0.17	0.17	0.17
	Flounder	Flounder		1,682,196	2.62%				
	Halibut	Atlantic halibut, Greenland halibut, Pacific halibut, Halibut, Halibut nei	Halibut (*Reinhardtius hippoglossoides, Hippoglossus hippoglossus, Hippoglossus stenolepis*)	508,588	0.79%				
	Plaice	European plaice, Plaice	Plaice (*Pleuronectes platessa*)	639,257	1.00%				
	Sole	Common sole, Soles	Sole (*Solea spp.*)	274,094	0.43%				
Sardine		European sardine, Pilchards(Sardinops spp.) and Sardinellas, Sardine, sardinellas	Sardines(*Sardina pilchardus, sardinops spp.*), sardinella (*Sardinella spp.*), brisling or sprats (*Sprattus sprattus*)	2,667,954	4.16%				
Trouts		Trouts and chars	Trout (*Salmo trutta, Oncorhyncus mykiss, Oncorhyncus clarki, Oncorhyncus aguabonita, Oncorhyncus gilae, Oncorhyncus apache and Oncorhyncus chrysogaster*)	678,054	1.06%				
Redfish		Atlantic redfish, Redfish		638,145	1.00%	4	0.17	0.39	0.61
						74	0.13	1.24	0.52

Dogfish and sharks	Dogfish(Squalidae), Shark	Dogfish and other sharks	335,268	0.52%	30	0.25	0.45	0.35
					4	0.04	0.08	0.05
					3	0.30	0.61	0.41
Croaker	Croaker	Crokers	292,849	0.46%				
Swordfish	Swordfish	Swordfish	276,639	0.43%	42	0.17	1.14	0.67
Capelin	Capelin	Other	269,024	0.42%				
Angler	Angler(=monk)	Other	246,165	0.38%				
Tilapia	Tilapia		236,865	0.37%				
Eel	Eel	Eels (*Anguilla spp.*)	213,841	0.33%	7	0.00	0.11	0.06
Seabream	Seabream	Seabreams	207,230	0.32%	29	0.10	0.59	0.34
					2	0.20	0.20	0.20
					36	0.03	0.38	0.13
whiting	Blue whiting, Whiting		198,262	0.31%				
Carps	Carps	Carp	193,761	0.30%				
Hairtail	Hairtail	Hairtails	187,000	0.29%	1	0.21	0.21	0.21
Sprat	Sprat		163,945	0.26%				
Anchovy	Anchovy	Anchovies(*Engraulis spp.*)	159,606	0.25%				
Seabass	Seabass	Sea bass (*Dicentrarchus labrax, Dicentrarchus punctatus*)	143,404	0.22%	121	0.02	0.55	0.07
Grenadier	Grenadier		135,903	0.21%				
Patagonian Toothfish	Patagonian Toothfish		131,167	0.20%				
Puffer	Puffer	Fugu	87,282	0.14%	30	0.02	0.38	0.10
Saury	Pacific saury		80,752	0.13%				
Sablefish	Sablefish	Sable fish	72,981	0.11%	60	0.01	0.62	0.17
Source: FAO,FISHSTAT,Fisheries commodities production and trade 1976-2002.								
Ministry of Health,Labour and Welfare of Japan, Results of Metyhlmercury analysis in fishes from 2000 to 2004, Document No.4-5 of Sub-Committee on Animal Origin Foods under the F Committee,The Pharmaceutical Affairs and Sanitation Canneil (17 August 2004)								
Note: The fish species whose ratio of total weight of import is less than 0.1% was omitted from the list.								

New Zealand

New Zealand wishes to submit the following comments on the above draft Guideline.

Comments:

New Zealand supports the view that further lowering of the Codex guideline levels may be impractical, and may result in removing a large proportion of fish for consumption, or require more complex multi-tiered listings.

We acknowledge the nutritional benefits of fish in the diet and that public health education and advice on consumption of fish is needed to protect vulnerable groups such as pregnant women. NZFSA has a fact sheet on mercury in fish which was updated in June 2004.

We support the recommendations made in the paper, including the further consideration of international guidance and targeted consumption advice for the vulnerable groups of the population.

The meaning of the first sentence in paragraph 36 *"Limiting the presence of methylmercury in fish is one possible approach to reduce dietary exposure"* is unclear needs to be clarified (or deleted). For example, *"Setting the levels of methylmercury in fish for consumption is one possible approach to reduce dietary exposure. In the case of farmed fish there are means to reduce the presence of methylmercury in the fish through management options including production, selection of fish varieties, feed materials, choice of farm sites".*

Comments concerning defining the list of fish species for which the level of 1.0 mg/kg might apply (Recommendation 1):

NZ supports the two tiered approach proposed for mercury and the extension of the list of fish that can meet the higher level of 1 mg/kg of total mercury.

The current draft revised listings appear to cover mostly "cosmopolitan" and/or northern hemisphere, fish. Consideration should be given to including fish from individual countries or groups of countries, that are likely to have levels of mercury above 0.5 mg/kg, with a mechanism developed to facilitate this process on an ongoing basis. Some examples:

- The New Zealand ling *(Genypterus blacodes),* which also occurs in the wider Australasian region and off southern South America, is a predatory fish with mercury levels often above 0.5 mg/kg. The Joint Australia New Zealand Food Standards Code recognises this by placing ling in the group of fish for which a limit of 1.0 mg/kg applies. Note that the ling listed in the Annex belongs to a different genus - Molva - which is not related to the New Zealand ling.
- The list includes only those rays that are classified as Raja species. New Zealand rays belong to the Dasyatis genus and New Zealand skates (which were formerly described as Raja species) have been reclassified as Dipturus species. By naming Raja species only, the list excludes New Zealand skates and rays which are likely to have mercury levels above 0.5 mg/kg. This highlights the need for a process for amending the list when the scientific names of fish are changed.

NZ intends to contribute New Zealand species that should appear under the 1 mg/kg list in future comments, supported by monitoring results. We note that a single species of fish may have different levels of mercury depending on the region it comes from.

General comments that apply to setting MLs in fish, eg mercury, cadmium and lead:

A tiered approach has merit if it is based on expected consumption rates for major fish species. However, with fish stocks depleting rapidly new species enter the consumption calculation on a fairly regular basis. What was a high eg mercury or lead fish of low consumption (and possibly high ML level) a few years ago may later be a major dietary component.

Agreement is needed on how fish are to be identified for the purpose of application of an ML to specific species. A problem is that many species are known by regional names which may be different for the same species. Where a species is entirely regional development of an ML may be a simpler process. Most of the work revolves around species but an ML may better be applied at the level of genus. However, for some species there can be problems in distinguishing similar fish in a commercial situation (eg Trachurus spp)

MLs provide for a conformance level for the bulk of traded fish i.e. 99% or 99.5% subject to dietary intake acceptability. Other wise the quantity of non-compliant fish may be unacceptable and be a source of dispute. Frequency concentration distribution curves are useful to demonstrate the acceptability of MLs for each category whether species or genera.

Commercially significant ocean fish are likely to be long lived top predator species with accumulative properties related to age and species. Ocean fish of no significance are likely to be juveniles of the above or fish of short life span.

Freshwater fish (feral) may be exposed to significant regional geological contamination (eg geothermal), which needs to be considered separately from contamination due to human activity (anthropogenic Pb) such as mining or industrial pollution. Farmed fish are additionally exposed to further anthropogenic contamination (eg through feed).

It is likely that different contaminant levels are tolerable in each of these categories dependent on contribution to the diet and the other required considerations.

Note that some small fish may have high levels but are not necessarily a large part of the diet although they may be fed as meal to animals and eventually to humans.

The form in which the contaminant occurs in the fish needs elaboration to determine bioavailability. (For example, lead current methods for analytical ease measure total Pb but the relationship to any bound forms of Pb are complex and require elaboration before the total Pb in fish should be taken as a measure of an imputed health effect.)

Consumers International:

Consumers International (CI) commends the European Community and members of the drafting group (which included CI) for their efforts in producing this detailed and well-reasoned background paper. Our comments address certain unresolved issues raised by the discussion paper, and examine possible actions CCFAC may consider taking in order to address health risks associated with mercury in seafood.

Comments on Issues Raised in the Background Paper

Regarding paragraph 7, which cites the conclusions of JECFA regarding the application of PTWI's to vulnerable populations and the general population, CI notes that, no matter where the line for maximum acceptable intake is drawn, individuals at risk are generally people with high-end fish consumption (probably those in the top 5 percent or less of the population, in terms of the amount of fish they eat). Within both vulnerable populations (i.e., women of childbearing age and children) and the general population, exposure to methylmercury and associated health risks are highest among individuals who consume the most fish. Risk management efforts therefore must include some focus on high-end fish-eaters.

This aspect needs to be kept in mind when considering estimates of *average* dietary exposure to methylmercury, provided by many governments. The high end of the distribution, not the average intake, is the primary public-health concern.

CI also notes that the data on mercury levels in fish, collected and reviewed in this paper, come almost exclusively from the industrialized, developed countries, i.e., Europe, North America and Japan. Exposure to methylmercury is likely to be higher among consumers in small island nations where the national diet includes greater reliance on fish than is the case in most industrialized countries (Japan may be an exception). Thus, estimates of Hg exposure based on data from the developed countries may understate likely exposure for many consumers in countries with a high-seafood diet. CI urges that the issue of whether a Codex guideline based on data from developed countries is suitable for application to small countries with high-fish diets be explicitly addressed. National guidelines should reflect national diets, and mercury levels in fish species consumed within each nation, to the extent possible. While this goal may often be difficult to achieve, CI believes there should be significant emphasis on the need for national risk assessments for exposure to methylmercury in fish, coupled with acknowledgement that this international assessment may have only limited applicability to many national situations.

CI endorses the call in the Background Paper for emphasis on fish species that are *low* in mercury, and which can be safely consumed, as well as information on species that are high in mercury, and whose consumption should be avoided or limited. Given that there are positive health benefits of fish consumption and many varieties of fish and seafood that pose relatively minimal mercury exposure risk, consumer education materials need to stress choices that can provide nutritional benefits while minimizing mercury intake. The narrower approach—warning consumers off certain high-mercury species—is likely to be unduly frightening, and could convey the mistaken impression that fish in general should be avoided. While simplistic “good fish/bad fish” dichotomies also need to be avoided (because risks and benefits differ for different populations), risk communication on this topic must clearly delineate relative degrees of risk associated with seafood choices.

Paragraph 12 a) cites data on mercury in canned tuna (albacore) from US retail outlets, collected by the Mercury Policy Project (MPP), a US NGO, and submitted by CI to the authors of the background paper, which indicate a higher mean mercury level in that fish product than reported by the US FDA. In CI’s judgment, the difference reflected in those two US data sets is not especially meaningful. Because of the limited geographical and temporal sampling of the MPP study, and because it reported total Hg rather than methyl mercury, CI believes the FDA data probably provide the most accurate representation of mercury levels in canned albacore tuna in the US.

Proposed Approach for CCFAC: Focus on Risk Communication

CI agrees with the conclusion of the background Paper that risk management for mercury in fish must involve substantial consumer education components. It is not feasible to ban or restrict sale of all fish species that may contain elevated mercury levels, and no amount of pollution controls will rapidly reduce levels of mercury in oceanic fish. Seafood is a healthy dietary choice and consumers should be and will be encouraged to eat more fish, for valid health reasons. Such dietary advice must be accompanied by clear and useful guidance on mercury in fish, to help consumers choose wisely, so they can both benefit from the nutritional advantages of fish consumption and minimize mercury exposure.

In that context, CI finds the paper’s proposed approach to setting Codex guidelines to be unduly limited, and perhaps unhelpful or even somewhat counterproductive.

Basing guidelines on total mercury, instead of on methylmercury, adds conservatism to the upper limits and facilitates simpler, less costly testing, although it may also raise the level of uncertainty about actual risks. In balance, CI supports this change.

However, greatly expanding the list of fish species that may be permitted to contain up to 1 ppm of mercury seems likely to confuse consumers. While it would be unreasonable for governments to prohibit sale of fish containing between 0.5 and 1 ppm of mercury, CI believes that creating a long list of species that are permitted to contain these levels of mercury, which simply recognises existing contamination, and is not a health-risk based classification, nevertheless suggests that there are no health concerns associated with consuming those species that fall within the guideline. CI believes such an implication is scientifically unwarranted, and could “send the wrong message” to consumers in terms of the need for caution about eating fish that accumulate significant mercury.

In order to support sound advice to support consumer dietary choices, CI believes Codex should classify fish by mercury-content in a multi-tiered approach, such as this one:

1) **Fish varieties with VERY HIGH mercury content (over 1.0 ppm)**

Species in this category should be eaten rarely or not at all by the general population and avoided by women of childbearing age.

2) **Fish varieties with MODERATELY HIGH mercury content (0.5 to 1.0 ppm)**

Species in this category should be eaten only occasionally (once per week or less often) by the general population, and rarely or not at all by women of childbearing age.

3) **Fish varieties with MODERATE mercury content (0.1 to 0.5 ppm)**

Species in this category should be eaten only occasionally (once per week or less often) by women of childbearing age. Others can eat them more frequently.

4) **Fish varieties with LOW mercury content (less than 0.1 ppm)**

Species in this category may be eaten frequently by all population groups.

Dietary advice aimed at minimizing consumer exposure to methylmercury should stress the importance of selecting low-mercury varieties for most fish meals. Consumers who fall into vulnerable populations (women of childbearing age, children), and those who eat well-above-average amounts of fish, should be advised to choose primarily from the low-mercury category. Other consumers who eat fish less often should be advised that they may choose fish from higher-mercury categories on occasion.

CI believes that this four-tiered classification approach would be far more useful for risk communication purposes, whereas simply retaining the current Codex guidelines of 0.5 and 1.0 ppm (especially with an expanded species list, as proposed) could result in great consumer confusion, and possibly in counterproductive lessening of concern about the possible health impacts of mercury exposure. If Codex wishes to retain the guidelines as reference points for national standards (an understandable objective), CI urges CCFAC to consider supplementing the guidelines with a multi-tiered classification scheme of fish species, by mercury content, to facilitate improved risk communication.

CI also supports the paper's recommendation that a workshop be convened on the use of risk communication as a risk management tool in food safety. CI would be pleased to participate in such a workshop.

CI again expresses its gratitude to the drafting group for producing such a thorough and thoughtful discussion paper, and thanks CCFAC for considering these comments.