

CODEX ALIMENTARIUS COMMISSION

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Food and Agriculture
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JOINT FAO/WHO FOOD STANDARDS PROGRAMME CODEX COMMITTEE ON CONTAMINANTS IN FOODS

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Comments submitted by Japan

Discussion Paper on Maximum Levels for Methylmercury in Fish (CX/CF 17/11/12)

Japan appreciates the work done by the electronic working group, chaired by the Netherlands, co-chaired by New Zealand and Canada. It was unfortunate that due to some electronic communication problem, we did not have opportunities to provide comments during the EWG work.

- **Main text, para. 12**

Comment

Whether it is possible and practicable to distinguish some tuna species from others, especially in a form of fillets, should be considered.

- **Main text, para. 14**

Comment

In countries, including Japan, where imported fish is a significant source of fish consumption, if there is(are) ML(s) for methylmercury in fish, it is necessary to test methylmercury in both the domestically harvested and imported fish. Therefore, fish species with the significant import/export* should also be considered if ML(s) is(are) to be established.

* According to the State of World's Fisheries and Aquaculture 2016 published by FAO, "Salmon, trouts, smelts", "Tunas, bonitos, billfishes" and "Cods, hakes, haddocks" are groups of species important in international trades in terms of both quantity and value, as attached below (Table 16, pp. 67, "<http://www.fao.org/3/a-i5555e.pdf>"). For more detailed data, please find the attached excel file, which shows export quantities by HS commodity groups, ranked in descending order of quantities in 2013. The data were simply extracted from FAO's database without any deletions/additions or processing.

TABLE 16

SHARES OF MAIN GROUPS OF SPECIES IN WORLD TRADE, 2013

	SHARE BY VALUE	SHARE BY QUANTITY (LIVE WEIGHT)
	(Percentage)	
Fish	67.7	80.6
Salmons, trouts, smelts	16.6	7.2
Tunas, bonitos, billfishes	10.2	8.3
Cods, hakes, haddocks	9.6	14.4
Other pelagic fish	7.5	12.7
Freshwater fish	4.0	4.8
Flounders, halibuts, soles	1.6	2.1
Other fish	18.1	31.2
Crustaceans	21.7	8.2
Shrimps, prawns	15.3	6.0
Other crustaceans	6.4	2.1
Molluscs	9.8	10.4
Squids, cuttlefishes, octopuses	5.6	4.0
Bivalves	3.0	5.6
Other molluscs	1.1	0.7
Other aquatic invertebrates/animals	0.8	0.9
TOTAL	100.0	100.0

- **Main text, para. 15**

Comment

The analysis should be further conducted based on a statistically sufficient number of samples. Please also refer to the comment on Appendix I, para 49, below.

- **Main text, para. 16**

Comment

The MLs should be established on the basis of concentrations of contaminants and the ALARA principle applied to the concentrations. However, an appropriate violation rate should be determined taking into consideration the distribution of methylmercury in fish species, effect of an ML(s) on the reduction of dietary exposure to methylmercury, feasibility of enforcing the ML(s), and economic implications of the ML(s).

- **Appendix I, para. 1**

Proposed text

The current guideline levels for methylmercury in the General Standard for Contaminants and Toxins in Food and Feed (GSCTFF) are 0,5 mg/kg for ~~non-predatory~~ fish (**except predatory fish**) and 1 mg/kg for predatory ~~or piscivorous~~ fish species.”

Rational

The text should be amended as follows to make it consistent with the provision contained in the GSCTFF.

- **Appendix I, para. 9**

Comment

Please refer to the comment on Main text, para 14, above.

- **Appendix I, para 10**

Comments

For establishing an ML, the GSCTFF specified the use of the ALARA Principle. However, there are no specific values indicated as appropriate violation rates in the GSCTF or the Procedural

contaminants, the CCCF discussed specific violation rates in association with certain contaminants: for example, for the MLs for lead, there was some discussion that the violation rate of 5% seemed high; and for the MLs for inorganic arsenic in rice, the violation rate of about 2% was used. Considering the past discussions on MLs for contaminants, violation rates in a range of 2-3% seem appropriate.

At a higher violation rate, such as 5%, the minimum number of samples necessary to detect at least one violation is smaller than when the violation rate is smaller at 2%. However, with the higher violation rate, the amount of fish rejected (not allowed for sale) will be much larger than when the violation rate is smaller. As some species of tuna is very expensive and therefore the consequential economic loss* will be unnecessarily large.

Therefore, it is necessary for the CCCF to consider an appropriate violation rate taking into consideration the distribution of methylmercury in fish species, effect of an ML(s) on the reduction of dietary exposure to methylmercury, feasibility of enforcing the ML(s), and economic implications of the ML(s).

* According to the State of World's Fisheries and Aquaculture 2016, the total export value of world trade in fish and fishery products was US\$148 billion in 2014 (Table 15, pp. 53). The share by value of "Tunas, bonitos, billfishes" in world trade in 2013 was 16.6% (Table 16, pp. 67), and assuming it had the same share in 2014, the export value of "Tunas, bonitos, billfishes" in 2014 can be calculated to be US\$25 billion.

TABLE 15
TOP TEN EXPORTERS AND IMPORTERS OF FISH AND FISHERY PRODUCTS

	2004	2014	APR	
	(US\$ millions)		(Percentage)	
EXPORTERS	China	6 637	20 980	12.2
	Norway	4 132	10 803	10.1
	Viet Nam	2 444	8 029	12.6
	Thailand	4 060	6 565	4.9
	United States of America	3 851	6 144	4.8
	Chile	2 501	5 854	8.9
	India	1 409	5 604	14.8
	Denmark	3 566	4 765	2.9
	Netherlands	2 452	4 555	6.4
	Canada	3 487	4 503	2.6
	Top ten subtotal	34 539	77 801	8.5
	Rest of world total	37 330	70 346	6.5
	WORLD TOTAL	71 869	148 147	7.5
	IMPORTERS	United States of America	11 964	20 317	5.4
Japan		14 560	14 844	0.2
China		3 126	8 501	10.5
Spain		5 222	7 051	3.0
France		4 176	6 670	4.8
Germany		2 805	6 205	8.3
Italy		3 904	6 166	4.7
Sweden		1 301	4 783	13.9
United Kingdom		2 812	4 638	5.1
Republic of Korea		2 250	4 271	6.6
Top ten subtotal		52 119	83 447	4.8
Rest of world total		23 583	57 169	9.3
WORLD TOTAL		75 702	140 616	6.4

Note: APR refers to the average annual percentage growth rate for 2004–2014.

- **Appendix I, para 32**

Comments

About the little effect of cooking, while it seems logical from the chemical characteristics of methylmercury, we would appreciate it if the reference is identified.

- **Appendix I, para 38**

Proposed text

Generally, the species of tuna that are most commonly used for canning are skipjack, albacore, and yellowfin, and bigeye tuna. Skipjack, yellowfin and, to a lesser degree, tongol are commonly marketed as 'light' tuna, and may be canned interchangeably, however, the species is also often denoted on the label."

Rational

Bigeye tuna is also used for production of canned tuna.

- **Appendix I, para 44**

Comment

As the "dogfish" is biologically classified in the family of sharks, it is not necessary to consider "shark" and "dogfish independently from each other.

- **Appendix I, para 49**

Comment

Table 22 indicates the preliminary analysis of the sum of mercury and methylmercury in other fish species in the GEMS/Food database. Para. 53 of CX/CF 16/10/7 as well as the descriptions in the CAC/GL 22-1999^{*1} and CAC/GL 71/2009^{*2}, the number of samples at 20 or less is too few for estimating an appropriate ML with 95% of confidence. The relationship between the minimum required number of samples, violation rates and confidence levels are explained in the above-mentioned Codex guidelines.

^{*1} Recommended Methods of Sampling for the Determination of Pesticide Residues for Compliance with MRLs (CAC/GL 22-1999)

^{*2} Guidelines for the Design and Implementation of National Regulatory Food Safety Assurance Programme Associated with the Use of Veterinary Drugs in Food Producing Animals (CAC/GL 71-2009)

- **Appendix I, para 53**

Comment

The 67th JECFA reported that the most susceptible time of neurodevelopmental toxicity of methylmercury is the developmental stage in uterus, and the high risk group is limited. On the basis of this information, MLs set for widely distributed foods should be considered for all exposed populations other than the high risk groups.

Export quantity by HS commodity group

(source: FAO's "Fisheries Commodities Production and Trade 1976-2013")

	(Unit: ton)				
Commodity (Harmonized (HS 2012) group)	2009	2010	2011	2012	2013
Meals of fish or crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption	3.641.953	2.878.601	3.061.172	3.309.237	2.810.481
Other freshwater and saltwater fish, frozen	2.443.914	2.766.554	2.975.127	2.755.824	2.605.691
Other shrimps and prawns, whether in shell or not, frozen	1.554.165	1.714.666	1.841.247	1.612.739	1.619.025
Atlantic and Danube salmon, fresh or chilled	698.376	745.033	827.902	1.593.259	1.564.614
Cuttlefish and squid, other than live, fresh or chilled	1.168.643	1.305.010	1.393.687	1.398.034	1.488.192
Tunas, skipjack and Atlantic bonito, prepared or preserved	1.186.130	1.249.785	1.320.955	1.389.948	1.473.113
Mackerel, frozen	1.133.562	1.232.043	1.345.601	1.375.561	1.447.398
Herrings (<i>Clupea</i> spp.), frozen	889.296	890.303	843.353	947.536	1.063.639
Alaska Pollack (<i>Theragra chalcogramma</i>), frozen	740.922	930.912	936.718	978.701	969.691
Skipjack or stripe-bellied bonito, frozen	752.922	759.037	808.388	758.651	795.317
Fish oils, other than liver oils	959.731	886.667	907.265	978.227	763.878
Sardines, sardinella, brisling or sprats, frozen	554.663	622.548	796.051	889.121	744.412
Other freshwater or saltwater fish, fresh or chilled	617.858	777.395	758.312	571.264	600.512
Jack and horse mackerel (<i>Trachurus</i> spp.), frozen	506.378	562.533	487.941	578.374	597.534
Prepared or preserved fish, excl. whole or in pieces	538.832	586.089	593.328	548.135	586.828
Fish waste	579.444	601.150	497.770	548.470	579.863
Catfish, fillets, frozen	256.596	411.175	462.105	470.138	553.000
Fish meat, whether or not minced, frozen	640.215	614.658	590.947	642.088	551.180
Alaska Pollack (<i>Theragra chalcogramma</i>), fillets, frozen	151.107	151.895	194.167	476.311	544.224
Other fish, whole or in pieces, prepared or preserved	484.329	439.043	483.991	489.766	509.153
Sardines, sardinella and brisling or sprats, prepared or preserved	426.770	440.521	402.214	487.007	488.402
Cod (<i>Gadus</i> spp.), frozen	259.382	324.829	388.996	381.661	452.253
Yellowfin tunas (<i>Thunnus albacares</i>), frozen	357.894	453.246	382.163	449.616	410.889

Other Pacific salmon, frozen	374.365	334.114	398.850	298.867	402.124
Seaweeds and other algae, unfit for human consumption	260.796	324.152	374.122	296.124	352.845
Shrimps and prawns, prepared or preserved, not in airtight containers	441.852	495.861	538.717	356.648	321.217
Cod, fillets, frozen	124.046	145.133	165.029	257.246	310.421
Fish fillets, frozen, nei	1.181.763	1.245.660	1.369.434	367.864	308.687
Herrings (<i>Clupea harengus</i> , <i>Clupea pallasii</i>), fresh or chilled	293.681	270.646	224.248	256.787	289.020
Other fish, dried, whether or not salted but not smoked	199.727	217.677	224.389	270.958	283.393
Pacific, Atlantic and Danube salmon, fillets, frozen	117.679	112.271	116.532	226.462	266.410
Hake (<i>Merluccius</i> spp., <i>Urophycis</i> spp.), frozen	218.104	224.731	235.745	210.105	254.627
Octopus, other than live, fresh or chilled	217.558	226.809	242.880	235.548	249.386
Blue whiting (<i>Micromesistius poutassou</i> , <i>Micromesistius australis</i>), frozen	197.752	213.994	72.458	203.600	246.561
Pacific, Atlantic and Danube salmon, fillets, fresh or chilled	158.195	159.438	174.173	235.346	246.524
Other flatfish, frozen	183.103	181.326	173.762	192.498	239.231
Cold-water shrimps and prawns (<i>Pandalus</i> spp., <i>Crangon crangon</i>), whether in shell or not, frozen	146.052	154.569	141.502	231.587	236.797
Tilapias (<i>Oreochromis</i> spp.), fillets, frozen	150.200	204.735	179.309	217.568	218.864
Cuttle fish and squid, prepared or preserved	8.585	9.492	14.122	220.503	215.159
Mackerel, fresh or chilled	175.558	164.265	217.770	201.775	214.405
Tilapias (<i>Oreochromis</i> spp.), frozen	72.757	123.999	145.942	151.695	193.133
Crabs, whether in shell or not, frozen	176.229	167.628	175.883	186.283	188.496
Other shrimps and prawns, prepared or preserved	74.664	68.501	66.293	179.298	177.707
Alaska Pollack (<i>Theragra chalcogramma</i>), meat, frozen	75.810	100.315	139.277	165.775	176.942
Hake (<i>Merluccius</i> spp., <i>Urophycis</i> spp.), fillets, frozen	136.476	135.964	118.707	162.102	175.876
Mackerel, prepared or preserved	119.421	133.172	184.691	173.463	169.319
Herrings, prepared or preserved	167.681	162.076	177.626	166.600	166.417
Atlantic and Danube salmon, frozen	115.265	87.397	102.164	124.603	154.039
Cod (<i>Gadus morhua</i> , <i>Gadus ogac</i> , <i>Gadus macrocephalus</i>), fresh or chilled	129.710	137.532	138.123	128.365	152.366
Mussels, live, fresh or chilled	151.687	151.857	156.592	153.135	150.528
Sardines, sardinellas, brisling or sprats, fresh or chilled	246.169	259.974	179.604	189.642	140.080

Clams, cockles and ark shells, live, fresh or chilled	69.088	90.706	115.793	140.166	139.628
Greenland, Atlantic and Pacific halibut, frozen	97.854	115.980	115.985	116.824	128.843
Albacore or longfinned tunas (<i>Thunnus alalunga</i>), frozen	116.240	119.076	111.066	115.552	127.986
Blue whittings (<i>Micromesistius poutassou</i> , <i>Micromesistius australis</i>), fresh or chilled	16.216	6.520	3.214	126.985	127.900
Scallops, including queen scallops, other than live, fresh or chilled	78.074	92.638	88.728	91.637	127.047
Other fish, live	134.657	143.641	143.124	111.205	126.693
Fish livers and roes, frozen	93.150	110.385	131.276	127.608	125.808
Bigeye tuna, frozen	121.582	227.046	126.871	124.066	118.796
Flat fish, fillets, frozen	35.551	31.836	37.301	108.589	118.270
Other Gadiformes, frozen	51.829	64.592	65.298	132.194	117.966
Trout, frozen	106.306	108.577	111.861	126.265	111.778
Crabs, whether in shell or not, not frozen	81.566	83.551	90.841	107.264	109.915
Coral and similar material, unworked or simply prepared	91.202	121.395	106.383	116.462	108.479
Cod (<i>Gadus</i> spp.), dried, whether or not salted but not smoked	91.733	110.329	109.669	107.959	108.193
Other crustaceans, whether in shell or not, not frozen	64.299	313.718	198.672	72.718	107.626
Seaweeds and other algae, fit for human consumption	27.494	34.402	45.830	119.800	107.531
Other tunas, frozen	82.130	89.081	96.795	97.184	105.171
Salmons, including fillets, smoked	60.109	69.479	83.920	97.673	103.889
Mussels, prepared or preserved	58.268	67.088	91.454	93.749	103.311
Cuttlefish and squid, live, fresh or chilled	101.619	109.047	100.289	97.934	101.235
Salmon, prepared or preserved	87.049	86.131	88.452	85.871	99.195
Seabream (<i>Sparidae</i>), fresh or chilled	81.076	78.536	72.826	87.395	97.971
Cod (<i>Gadus</i> spp.), salted or in brine	88.260	90.952	96.436	85.801	92.296
Other salmonidae, fresh or chilled	541.807	527.261	542.632	85.060	91.863
Preparations of a kind used in animal feeding, nei	85.999	83.510	71.287	103.989	86.899
Other molluscs, other than live, fresh or chilled	85.343	87.189	133.144	97.522	85.758
Sauces and preparations therefor; mixed condiments and mixed seasonings, nei	70.462	25.459	26.672	80.830	84.760
Crab, prepared or preserved	57.699	71.015	85.093	87.488	82.738

Dogfish and other sharks, frozen	88.434	85.219	83.956	86.786	82.255
Gadiformes fillets (excl. cod, haddock, coalfish/saithe, hake, Alaska pollack), frozen	42.861	41.486	44.576	81.665	81.121
Trout (<i>Salmo</i> spp.), fresh or chilled	68.929	58.731	56.618	79.867	76.816
Herrings (<i>Clupea harengus</i> , <i>Clupea pallasii</i>), fillets, frozen	107.675	104.187	87.601	83.464	76.385
Seabass (<i>Dicentrarchus</i> spp.), fresh or chilled	55.042	59.485	55.861	59.968	68.569
Meat of Gadiformes (excl. Alaska Pollack), frozen	53.025	49.080	47.299	67.619	67.379
Haddock (<i>Melanogrammus aeglefinus</i>), frozen	74.848	90.702	103.670	95.369	67.136
Tunas, skipjack or stripe-bellied bonito, fillets, frozen	9.706	10.813	13.274	66.581	67.036
Gadiformes, fillets, fresh or chilled	65.843	65.584	62.829	57.709	64.399
Clams, cockles and arkshells, prepared or preserved	33.710	37.485	38.812	61.578	64.314
Coalfish(=Saithe), fillets, frozen	79.521	76.315	54.537	60.980	62.868
Fish fillets, fresh or chilled, nei	190.501	138.110	130.877	84.929	62.742
Carp, live	12.949	14.072	16.153	54.591	60.854
Sockeye salmon(red salmon)(<i>Oncorhynchus nerka</i>) frozen	41.003	49.931	41.697	57.800	59.963
Other salmonidae, frozen	88.676	88.408	57.303	64.799	59.026
Cold-water shrimps and prawns (<i>Pandalus</i> spp., <i>Crangon crangon</i>), whether in shell or not, not frozen	48.683	53.619	55.638	65.469	58.355
Haddock (<i>Melanogrammus aeglefinus</i>), fillets, frozen	29.988	34.266	39.797	68.009	57.762
Catfish, frozen	4.813	2.513	2.340	44.003	57.289
Jack and horse mackerel (<i>Trachurus</i> spp.), fresh or chilled	48.759	55.213	38.398	35.634	55.418
Hake (<i>Merluccius</i> spp., <i>Urophycis</i> spp.), fresh or chilled	64.481	58.098	52.437	55.288	55.347
Haddock (<i>Melanogrammus aeglefinus</i>), fresh or chilled	60.137	64.305	64.338	58.387	54.569
Other flatfish, fresh or chilled	57.866	65.191	57.139	48.895	54.382
Sole (<i>Solea</i> spp.), frozen	41.727	53.737	47.169	40.280	53.978
Other shrimps and prawns, whether in shell or not, not frozen	77.037	94.675	92.492	73.324	53.565
Yellowfin tunas (<i>Thunnus albacares</i>), fresh or chilled	33.095	34.996	38.952	55.512	51.201
Swordfish (<i>Xiphias gladius</i>), frozen	40.870	37.902	62.188	38.995	49.454
Mussels, other than live, fresh or chilled	50.938	64.478	57.086	59.664	48.590

Trout, fillets, frozen	32.378	39.268	44.268	58.606	48.169
Plaice (<i>Pleuronectes platessa</i>), fresh or chilled	33.318	37.195	41.664	44.502	47.557
Other crustaceans, prepared or preserved	43.613	48.195	33.331	44.181	47.213
Lobsters (<i>Homarus</i> spp.), whether in shell or not, not frozen	25.229	33.353	39.558	48.433	46.827
Other molluscs, prepared or preserved	294.773	299.804	324.872	49.337	45.741
Other molluscs, live, fresh or chilled	75.018	71.739	64.631	47.130	44.875
Anchovies, prepared or preserved	37.655	39.824	39.532	45.231	42.826
Eels (<i>Anguilla</i> spp.), live	34.578	38.556	30.269	31.736	41.489
Other fish fillets, dried, salted or in brine, not smoked	70.431	78.551	85.317	48.166	41.335
Other fish, salted or in brine	39.882	39.942	37.191	44.023	39.444
Nile perch (<i>Lates niloticus</i>) and snakeheads (<i>Channa</i> spp.), fresh or chilled	...	6	...	3.660	38.779
Coalfish (=Saithe), frozen	68.878	59.935	66.186	42.558	38.710
Fish heads, tails and maws, dried, salted or in brine, smoked	17.527	16.512	16.622	32.152	38.581
Lobsters (<i>Homarus</i> spp.), whether in shell or not, frozen	21.907	24.881	29.771	29.057	38.520
Nile Perch (<i>Lates niloticus</i>), fillets, fresh or chilled	...	20.775	23.104	25.518	36.934
Coalfish(=Saithe), fresh or chilled	43.155	43.586	38.182	30.681	35.156
Caviar substitutes	27.277	28.590	30.435	31.649	34.306
Other Gadiformes, fresh or chilled	15.678	19.452	19.716	40.658	34.234
Jellyfish (<i>Rhopilema</i> spp.), live, fresh, chilled, frozen, dried, salted or in brine	6.685	6.856	8.937	25.362	34.092
Rock lobster and other sea crawfish (<i>Palinurus</i> spp., <i>Panulirus</i> spp., <i>Jasus</i> spp.), whether in shell or not, frozen	18.100	23.056	20.813	28.095	32.782
Other crustaceans, whether in shell or not, frozen	20.912	21.241	15.727	14.486	31.368
Eels (<i>Anguilla</i> spp.), prepared or preserved	33.559	39.209	36.543	34.667	30.552
Fish flours fit for human consumption	35.715	35.805	34.222	43.278	30.518
Pacific salmon, fresh or chilled	11.282	21.097	18.329	24.229	29.764
Tilapias (<i>Oreochromis</i> spp.), fillets, fresh or chilled	13.193	12.782	12.723	16.694	28.864
Oysters, live, fresh, chilled	33.472	36.546	37.252	28.844	28.846
Octopus, prepared or preserved	...	...	...	28.390	28.409

Gadiformes, fillets, dried, salted or in brine, not smoked	35.151	34.792	26.299	22.476	27.893
Other fish meat, minced or not, fresh or chilled	37.029	36.789	34.575	27.847	26.668
Fish livers and roes, dried, salted or in brine, smoked	25.815	28.872	21.797	25.428	26.415
Other fish, including fillets, smoked	58.960	52.877	53.883	42.254	25.644
Catfish, fillets, fresh or chilled	471	5.847	6.041	31.482	23.986
Anchovies, salted or in brine	33.549	42.753	37.875	28.003	23.753
Clams, cockles and ark shells, other than live, fresh or chilled	19.805	25.143	21.161	25.303	23.641
Trout, including fillets, smoked	17.081	18.643	19.788	20.871	23.190
Scallops, including queen scallop, live, fresh or chilled	31.702	37.006	40.892	32.437	22.938
Fish-liver oils	18.659	18.888	21.385	21.570	22.121
Bigeye tuna, fresh or chilled	11.229	17.076	18.275	24.070	21.803
Octopus, live, fresh or chilled	21.489	20.826	19.293	20.090	20.971
Other animal products not elsewhere specified or included	22.374	18.712	18.682	17.419	20.436
Trout (<i>Salmo</i> spp.), live	16.200	15.325	16.695	19.942	20.187
Anchovies (<i>Engraulis</i> spp.), fresh or chilled	21.357	24.564	21.510	21.656	19.073
Norway lobsters (<i>Nephrops norvegicus</i>), whether in shell or not, frozen	26.483	27.699	24.498	21.869	18.303
Other tunas, fresh or chilled	33.323	24.283	21.308	10.987	17.932
Gadiformes, meat, minced or not, fresh or chilled	78	93	69	16.249	17.698
Ornamental fish, live, other	18.356	24.277	24.459	18.565	16.868
Sole (<i>Solea</i> spp.), fresh or chilled	19.621	18.522	16.652	16.861	16.784
Herrings, including fillets, smoked	16.117	16.830	19.644	16.606	16.077
Nile perch (<i>Lates niloticus</i>) and snakeheads (<i>Channa</i> spp.), frozen	64	80	68	22.308	15.934
Greenland, Atlantic and Pacific halibut, fresh or chilled	18.569	17.370	14.850	14.029	14.006
Toothfish (<i>Dissostichus</i> spp.), frozen	14.844	15.149	16.214	13.564	14.003
Swordfish (<i>Xiphias gladius</i>), fresh or chilled	11.631	13.088	14.732	15.150	13.962
Other aquatic invertebrates, prepared or preserved	27.056	21.417	19.492	17.823	13.376
Bluefin tuna (<i>Thunnus thynnus</i> , <i>Thunnus orientalis</i>), fresh or chilled	17.403	17.731	14.636	11.696	13.153
Lobster, prepared or preserved	8.106	11.025	10.095	11.202	13.149

Scallops, including queen scallops, prepared or preserved	1.900	1.472	2.320	11.025	13.063
Agar - agar	12.821	13.225	13.073	12.233	13.002
Trout, fillets, fresh or chilled	8.836	11.705	10.764	12.739	12.934
Albacore or longfinned tuna (<i>Thunnus alalunga</i>), fresh or chilled	12.315	11.281	17.112	14.793	12.707
Rays and skates (<i>Rajidae</i>), frozen	1.944	1.994	1.879	14.011	12.658
Oysters, other than live, fresh or chilled	6.997	8.088	8.133	10.932	12.539
Sea urchins, live, fresh or chilled	2.471	2.849	3.429	12.272	12.184
Plaice (<i>Pleuronectes platessa</i>), frozen	13.251	17.527	13.401	20.307	12.069
Rock lobster and other sea crawfish (<i>Palinurus</i> spp., <i>Panulirus</i> spp., <i>Jasus</i> spp.), whether in shell or not, not frozen	10.083	8.805	9.349	10.499	12.030
Sea cucumbers, other than live, fresh or chilled	4.558	10.985	8.564	12.678	11.181
Other aquatic invertebrates, live, fresh, chilled, frozen, dried, salted or in brine, smoked	18.890	24.867	35.592	18.300	11.175
Carp, frozen	436	342	756	10.231	11.146
Carps, eels and snakeheads, fillets, fresh or chilled	...	1	2	15.538	11.105
Oysters, prepared or preserved	2.175	2.122	2.388	10.530	10.856
Nile Perch (<i>Lates niloticus</i>), fillets, frozen	2.443	11.935	15.548	13.319	10.355
Eels, frozen	11.026	10.821	13.070	11.456	10.336
Carp, fresh or chilled	340	448	5.146	8.855	10.148
Seabass (<i>Dicentrarchus</i> spp.), frozen	6.632	7.282	7.421	8.311	9.762
Turbots (<i>Psetta maxima</i>), fresh or chilled	819	844	822	14.659	9.662
Flat fish, fillets, fresh or chilled	2.420	2.511	2.033	10.933	9.500
Herrings, salted or in brine	11.037	11.040	9.724	9.637	9.052
Southern bluefin tuna (<i>Thunnus maccoyii</i>), frozen	6.060	5.751	7.939	8.093	8.990
Ornamental freshwater fish, live	3.308	8.546	7.995	9.021	8.769
Bluefin tuna (<i>Thunnus thynnus</i> , <i>Thunnus orientalis</i>), frozen	1.711	2.424	2.668	4.574	8.487
Norway lobsters (<i>Nephrops norvegicus</i>), whether in shell or not, not frozen	9.923	9.745	8.976	7.965	7.406
Carps, eels and snakeheads, fillets, frozen	...	...	...	14.682	7.330
Dogfish and other sharks, fresh or chilled	9.732	9.238	9.772	8.862	7.202

Other edible fish offal, dried, salted or in brine	...	...	90	3.168	6.994
Swordfish (<i>Xiphias gladius</i>), fillets, frozen	5.111	9.952	7.101	5.011	6.746
Abalone, prepared or preserved	3.434	4.595	3.923	6.519	6.702
Meat of tilapias, catfish, carp, eels, Nile perch and snakeheads, minced or not, fresh or chilled	132	1 F	...	5.254	5.861
Rays and skates (<i>Rajidae</i>), fresh or chilled	486	508	605	5.610	5.733
Turbots (<i>Psetta maxima</i>), frozen	1	0 0	0 0	3.517	5.661
Livers and roes, fresh or chilled	7.227	7.800	7.809	6.109	5.267
Shark fins, dried, salted or in brine	4.826	5.745	5.232	5.147	5.251
Abalone (<i>Haliotis</i> spp.), other than live, fresh or chilled	3.289	2.933	3.131	4.955	5.013
Jellyfish, prepared or preserved	1.427	2.277	1.719	3.697	4.907
Alaska Pollack (<i>Theragra chalcogramma</i>), fresh or chilled	18.119	18.574	11.576	7.178	4.757
Abalone (<i>Haliotis</i> spp.), live, fresh or chilled	3.477	3.777	3.945	4.333	4.692
Sea cucumbers, prepared or preserved	113	38	60	2.893	4.467
Swordfish (<i>Xiphias gladius</i>) meat, frozen	3.781	4.661	4.204	5.717	4.305
Swordfish (<i>Xiphias gladius</i>), fillets, fresh or chilled	5.031	5.952	5.452	4.687	4.283
Tilapias (<i>Oreochromis</i> spp.), fresh or chilled	1.066	1.941	798	15.521	3.848
Swordfish (<i>Xiphias gladius</i>) meat, minced or not, fresh or chilled	2.613	3.107	3.128	3.581	3.508
Skipjack or stripe-bellied bonito, fresh or chilled	1.217	4.423	4.468	12.692	2.966
Fresh or chilled southern bluefin tuna (<i>Thunnus maccoyii</i>)	4.595	3.248	1.602	2.513	2.828
Salmonidae, meat, minced or not, fresh or chilled	145	42	10	2.515	2.789
Eels (<i>Anguilla</i> spp.), fresh or chilled	5.280	1.801	1.043	1.915	2.692
Sea cucumbers, live, fresh or chilled	23	32	43	2.513	2.613
Oils of marine mammals	1.538	1.998	1.962	1.967	2.408
Sea urchins, other than live, fresh or chilled	3.051	2.439	2.831	2.010	2.272
Bluefin tunas (<i>Thunnus thynnus</i> , <i>Thunnus orientalis</i>), live	2.157	3.373	3.444	1.433	2.154
Toothfish (<i>Dissostichus</i> spp.) meat, frozen	2.097	1.507	977	3.420	1.761
Tilapias, catfish, carp, eels, Nile perch and snakeheads, including fillets, smoked	326	250	176	456	1.612
Tilapias, catfish, carp, eels, Nile perch and snakeheads, fillets, dried, salted or in brine, not smoked	2.615	1.532

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Tilapias, catfish, carp, eels, Nile perch and snakeheads meat, frozen	2	23 F	36	1.801	1.512
Toothfish (Dissostichus spp.), fillets, frozen	2.914	1.646	1.994	1.764	1.278
Toothfish (Dissostichus spp.), fresh or chilled	673	676	488	1.544	920
Caviar	70	81	275	1.015	816
Catfish, fresh or chilled	73	113	36	6.330	727
Tilapias, catfish, carp, eels, Nile perch and snakeheads, salted or in brine	...	...	...	1.154	671
Sea urchins, prepared or preserved	402	253	468	781	560
Toothfish (Dissostichus spp.), fillets, fresh or chilled	919	683	1.152	920	296
Cobia (Rachycentron canadum), fresh or chilled	1	3	5	502	206
Cobia (Rachycentron canadum), frozen	1	0 0	...	4.300	182
Southern bluefin tunas (Thunnus maccoyii), live	329	5	6	54	115
Toothfish (Dissostichus spp.), meat, minced or not, fresh or chilled	255	228	339	63	8
Total	118.464.784	122.292.750	127.250.972	128.371.133	129.934.902