codex alimentarius commission

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

WORLD HEALTH ORGANIZATION

JOINT OFFICE: Viale delle Terme di Caracalla 00100 ROME Tel: 39 06 57051 www.codexalimentarius.net Email: codex@fao.org Facsimile: 39 06 5705 4593

Agenda Item 15 (e) **CX/FAC 04/36/30**

January 2004

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON FOOD ADDITIVES AND CONTAMINANTS

Thirty-sixth Session

Rotterdam, The Netherlands, 22 -26 March 2004

PROPOSED DRAFT MAXIMUM LEVELS FOR CADMIUM

COMMENTS AT STEP 3

The following comments have been received from: Argentina,Australia, Canada, Japan, Mexico, New Zealand, Poland, USA, and CIAA
in response to CL 2003/13-FAC and CL 2003/33-FAC

ARGENTINA:

The Committee resolved to send back to Step 3 the proposed drafts of maximum levels for cadmium in polished rice (0.2 mg/kg), dry soy (0.2 mg/kg); molluscs (including cephalopods) (1.0 mg/kg); and peanuts (0.2 mg/kg), for distribution, invitations for comments and submission for a new examination at its 36th Session.

As regards this item we should point out that it would be necessary to have more specific scientific information at our disposal, including exhaustive studies of exposure levels, risk assessment of cadmium contamination sources for the peanut production in different regions, since otherwise it will not be possible to give an opinion on the proposed limit of 0.2 mg/kg, as the available scientific basis is insufficient.

AUSTRALIA:

The 35th Session of this Committee decided to return the proposed draft maximum levels for cadmium in rice, polished; soy bean (dry); molluscs (including cephalopods); and peanuts at Step 3 (see Appendix XIV of ALINORM 03/12A) for circulation, comments and further consideration at its 36th Session.

Australia provided a detailed paper to the 34th CCFAC containing comments on the proposed MLs for cadmium in foods. Australia would like to repeat these comments in relation to the proposed draft ML for cadmium in molluscs.

Extensive Australian data on levels of cadmium in molluscs reflect the occurrence of natural levels of cadmium in aquatic animals living in unpolluted oceans. Molluscs contain naturally high levels of cadmium, which is concentrated in the viscera. The levels of cadmium in Australian molluscs represent naturally-occurring background levels in the ocean, and would not be expected to differ significantly from the levels in wild-caught molluscs elsewhere in the world. It appears that these findings are not unique to the Australian environment and, in light of this finding, Australia recommends that the proposed maximum levels for molluscs be re-examined in consideration of the natural occurrence of this heavy metal and the total exposure to cadmium from all sources.

Australian dietary survey data indicate that exposure to cadmium through consumption of molluscs is not a significant contributor to overall cadmium exposure. To meet its objectives of protecting the health of consumers and promoting fair practices in food trade, it is important that Codex ensures the standards set for contaminants are based on scientific risk analysis. Principles to be met in elaborating MLs for contaminants are set out in the Preamble to the General Standard for Contaminants and Toxins. These state that MLs shall be set:

1. Only for those contaminants that present both a significant risk to public health and a known or expected problem in international trade;

2. Only for those foods that are significant for the total exposure of the consumer to the contaminant;

3. As low as reasonably achievable. Providing it is acceptable from the toxicological point of view, MLs shall be set at a level which is (slightly) higher than the normal range of variation in levels in foods that are produced with current adequate technological methods, in order to avoid undue disruptions of food production and trade.

Australia believes that an ML for cadmium in molluscs is not warranted because exposure to cadmium from molluscs does not contribute significantly to overall cadmium exposure (criteria 2).

CANADA:

This refers to CL 2003/13-FAC with specific reference to Part B Paragraph 16 **Proposed Draft Maximum Levels for Cadmium**. As outlined in the Report of the 35th Session of the Codex Committee on Food Additives and Contaminants (CCFAC) (ALINORM 03/12A, paragraph 165), the Committee returned the proposed draft maximum level (ML) of 1.0 mg/kg for cadmium in molluscs to Step 3 for circulation, comments and further consideration at the 36th Session of CCFAC. Canada welcomes the opportunity to provide additional comments and specific data from Canadian sources in relation to this matter.

Canada has previously provided comments concerning the proposed ML of 1.0 mg/kg for cadmium in molluscs with particular reference to oysters (Ref. CL-2001/13-FAC). At that time it was apparent, based on limited data available, that naturally-occurring cadmium levels in oysters caught in unpolluted Canadian waters can frequently exceed the 1.0 mg/kg level.

Attached to this letter are additional raw and summary data from Canadian sources outlining cadmium levels in oysters from various sites. These data confirm the previous findings and we understand that similar results have been seen in other countries. Based on these results, Canada is of the opinion that it is premature to proceed with the further development of a proposed ML of 1.0 mg/kg for cadmium in oysters at this time. The data clearly show that a further assessment of this matter is required and, in this connection, Canada supports the request outlined in Paragraph 143 of the Report of the 34th Session of CCFAC wherein it was proposed that the Joint FAO/WHO Expert Committee on Food Additives (JECFA) consider this matter further. Specifically, the Committee agreed to ask JECFA to: 1) give distribution curves for the cadmium contamination levels for various food groups including molluscs; and 2) to perform an exposure and risk assessment for cadmium resulting from consumption of foods in these food groups taking into consideration the proposed ML, one level lower than the proposed ML and one level higher. In fact, given the available data, it may be useful to ask JECFA to go beyond this initial request and to undertake a broader review. For example, it may also be of interest to consider a proposed ML which is two levels higher (e.g. 3.0 mg/kg) in terms of total exposure to this heavy metal and the potential impact on the risk assessment. This would help to ensure that CCFAC has the information needed to develop an appropriate risk management strategy in relation to this specific issue.

Canada supports further consideration of MLs for cadmium in various foods and food groups based on the principles outlined in the Preamble to the General Standard for Contaminants and Toxins in Food. However, Canada recommends that CCFAC hold further development of such MLs until JECFA is able to complete this assessment.

Attachment (1) 2002 - 2003 Wild Oyster Data (Supplied by the British Columbia Ministry of Agriculture, Food & Fisheries, Courtenay, B.C., Canada)

Please find below a spreadsheet of recently completed analyses of natural or "wild" populations of Pacific oysters (*Crassostrea gigas*)from the east and west coasts of Vancouver Island and mainland coast from Desolation Sound, Jervis and Sechelt Inlet areas. There are two size classes in the data: small (4-6" shell length) and large (over 6").

Columns are:

- Sample ID,
- Blotted whole wet weight inclusive of gut content,
- Length (mm),
- µg Cd / gram wet weight of tissue, (with actual moisture content of oyster used in calculation),
- standardized µg Cd / gram wet weight of tissue determined by multiplying dry weight of tissue by 0.15,
- µg Cd / gram wet weight of tissue, corrected for freezing by multiplying the standardized concentration of Cd in oysters by 1.5,
- another estimate of Cd where µg Cd/gram wet weight of tissue corrected for freezing multiplying the concentration of Cd in oysters using actual moisture content,
- Moisture content (%),
- Type,
- Site,

Date of sampling.

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled	
ARR-1	107.404	208.6	1.04	1.01	1.52	1.56	0.92	AlmaRussellIsle(Lg)	18-Jun-02	Barkley Sd
ARR-4	66.912	192.55	1.6	1.44	2.16	2.4	0.9	AlmaRussellIsle(Lg)	18-Jun-02	
ARR-7	33.58	121.9	1.52	1.45	2.18	2.28	0.88	AlmaRussellIsle(Lg)	18-Jun-02	
ARR-9	22.639	99.25	1.79	1.2	1.8	2.685	0.82	AlmaRussellIsle(Lg)	18-Jun-02	
ARR-11	51.195	154.05	2.37	1.99	2.99	3.555	0.87	AlmaRussellIsle(Lg)	18-Jun-02	
ARR-13	46.547	118	1.88	1.54	2.31	2.82	0.86	AlmaRussellIsle(Lg)	18-Jun-02	
ARR-15	43.488	124.9	1.49	1.53	2.3	2.235	0.85	AlmaRussellIsle(Lg)	18-Jun-02	
ARR-17	54.131	129.3	1.59	1.51	2.26	2.385	0.82	AlmaRussellIsle(Lg)	18-Jun-02	
ARR-19	32.79	121.6	1.34	1.14	1.72	2.01	0.89	AlmaRussellIsle(Lg)	18-Jun-02	
ARR-20	36.674	124.2	2.5	2.18	3.27	3.75	0.9	AlmaRussellIsle(Lg)	18-Jun-02	
ARR-21	47.311	137.8	1.94	1.28	1.92	2.91	0.83	AlmaRussellIsle(Lg)	18-Jun-02	
ARR-22	33.275	131.8	1.93	1.98	2.97	2.895	0.91	AlmaRussellIsle(Lg)	18-Jun-02	
ARR-23	53.438	125.8	1.78	1.36	2.03	2.67	0.86	AlmaRussellIsle(Lg)	18-Jun-02	

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled	
ARR-24	42.957	116.6	1.91	1.67	2.51	2.865	0.87	AlmaRussellIsle(Lg)	18-Jun-02	
ARR-25	15.067	89.3	1.61	1.01	1.52	2.415	0.83	AlmaRussellIsle(Lg)	18-Jun-02	
ARI-1	12.451	102.65	1.08	0.92	1.38	1.62	0.79	AlmaRussellIsle(sm)	18-Jun-02	
ARI-3	11.087	90.25	1.2	1.19	1.79	1.8	0.86	AlmaRussellIsle(sm)	18-Jun-02	
ARI-5	8.567	107.5	1.05	1.14	1.71	1.575	0.89	AlmaRussellIsle(sm)	18-Jun-02	
ARI-7	25.205	103.4	1.06	0.78	1.17	1.59	0.74	AlmaRussellIsle(sm)	18-Jun-02	
ARI-9	20.409	107.3	1.17	1.24	1.86	1.755	0.85	AlmaRussellIsle(sm)	18-Jun-02	
ARI-11	22.055	102.9	0.99	0.9	1.36	1.485	0.85	AlmaRussellIsle(sm)	18-Jun-02	
ARI-13	18.221	80.6	1.4	1.24	1.86	2.1	0.83	AlmaRussellIsle(sm)	18-Jun-02	
ARI-15	25.072	89	1.11	1.07	1.61	1.665	0.85	AlmaRussellIsle(sm)	18-Jun-02	
ARI-17	27.263	128.5	1.02	1.09	1.64	1.53	0.9	AlmaRussellIsle(sm)	18-Jun-02	
ARI-19	20.581	101.5	0.94	0.83	1.24	1.41	0.89	AlmaRussellIsle(sm)	18-Jun-02	
ARI-21	0.307	33.7	2.71	1.87	2.8	4.065	0.81	AlmaRussellIsle(sm)	18-Jun-02	
ARI-22	14.191	104	1.63	1.12	1.68	2.445	0.86	AlmaRussellIsle(sm)	18-Jun-02	
ARI-23	25.473	108.1	0.62	0.53	0.79	0.93	0.89	AlmaRussellIsle(sm)	18-Jun-02	
ARI-24	21.31	109.55	1.95	1.08	1.62	2.925	0.76	AlmaRussellIsle(sm)	18-Jun-02	
ARI-25	20.76	126.55	2.57	1	1.5	3.855	0.85	AlmaRussellIsle(sm)	18-Jun-02	
ARI-26	20.85	138	1.71	1.28	1.92	2.565	0.87	AlmaRussellIsle(sm)	18-Jun-02	
ARI-27	17.922	103.65	0.99	0.76	1.14	1.485	0.88	AlmaRussellIsle(sm)	18-Jun-02	
ARI-28	18.024	104	0.96	1.12	1.67	1.44	0.93	AlmaRussellIsle(sm)	18-Jun-02	
ARI-29	19.203	93.6	1.58	1.13	1.7	2.37	0.85	AlmaRussellIsle(sm)	18-Jun-02	
ARI-30	30.624	127.6	1.12	0.96	1.45	1.68	0.87	AlmaRussellIsle(sm)	18-Jun-02	
ARI-31	15.803	136.6	1.9	1.21	1.81	2.85	0.8	AlmaRussellIsle(sm)	18-Jun-02	
ARI-32	3.797	57.5	1.85	1.31	1.97	2.775	0.84	AlmaRussellIsle(sm)	18-Jun-02	
ARL-1	30.556	134.5	2.14	1.94	2.92	3.21	0.86	AtrevidaReef(Lg)	12-Jul-02	Powell River
ARL-3	55.077	140.5	1.42	1.89	2.84	2.13	0.91	AtrevidaReef(Lg)	12-Jul-02	
ARL-5	35.629	142.8	2.56	2.11	3.17	3.84	0.83	AtrevidaReef(Lg)	12-Jul-02	
ARL-7	53.908	147.1	1.78	1.91	2.87	2.67	0.92	AtrevidaReef(Lg)	12-Jul-02	
ARL-9	31.073	122.9	2	1.9	2.85	3	0.83	AtrevidaReef(Lg)	12-Jul-02	
ARL-11	46.439	138	2.19	1.99	2.98	3.285	0.88	AtrevidaReef(Lg)	12-Jul-02	
ARL-12	41.443	115.5	2.13	1.88	2.82	3.195	0.88	AtrevidaReef(Lg)	12-Jul-02	
ARL-13	38.069	135.9	2.63	2.23	3.35	3.945	0.86	AtrevidaReef(Lg)	12-Jul-02	

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled	
ARL-14	21.36	111.6	1.71	1.78	2.67	2.565	0.86	AtrevidaReef(Lg)	12-Jul-02	
ARL-15	48.796	138	1.55	1.82	2.73	2.325	0.93	AtrevidaReef(Lg)	12-Jul-02	
ARS-1	31.196	98.75	1.26	1.05	1.58	1.89	0.87	AtrevidaReef(sm)	12-Jul-02	
ARS-3	14.174	89.1	2.22	1.71	2.56	3.33	0.8	AtrevidaReef(sm)	12-Jul-02	
ARS-5	11.073	106.9	2.26	1.55	2.32	3.39	0.74	AtrevidaReef(sm)	12-Jul-02	
ARS-7	25.394	100.7	1.56	1.42	2.12	2.34	0.89	AtrevidaReef(sm)	12-Jul-02	
ARS-9	13.739	81.7	1.86	1.34	2.02	2.79	0.84	AtrevidaReef(sm)	12-Jul-02	
ARS-11	28.662	107.05	2.09	1.54	2.32	3.135	0.86	AtrevidaReef(sm)	12-Jul-02	
ARS-13	14.018	81	2.1	1.7	2.55	3.15	0.86	AtrevidaReef(sm)	12-Jul-02	
ARS-14	16.948	84.05	2.41	2.11	3.16	3.615	0.87	AtrevidaReef(sm)	12-Jul-02	
ARS-15	15.072	100.4	2.7	2.04	3.06	4.05	0.83	AtrevidaReef(sm)	12-Jul-02	
ARS-16	15.555	74.1	1.53	1.21	1.81	2.295	0.84	AtrevidaReef(sm)	12-Jul-02	
ARS-17	13.008	67.5	1.97	1.67	2.51	2.955	0.88	AtrevidaReef(sm)	12-Jul-02	
BSSP-1	50.021	127	1.1	1.2	1.8	1.65	0.85	AtrevidaReef(sm)	12-Jul-02	
BSSP-3	50.059	150.2	0.75	0.79	1.19	1.125	0.87	BaySndShip(Lg)	12-Jul-02	Baynes Sound
BSSP-5	43.303	126.85	1.08	0.92	1.38	1.62	0.86	BaySndShip(Lg)	12-Jul-02	
BSSP-7	30.499	114.3	1.08	0.79	1.19	1.62	0.86	BaySndShip(Lg)	12-Jul-02	
BSSP-9	53.019	119.15	0.62	0.59	0.88	0.93	0.91	BaySndShip(Lg)	12-Jul-02	
BSSP-11	40.626	138	0.53	0.46	0.69	0.795	0.89	BaySndShip(Lg)	12-Jul-02	
BSSP-12	44.441	121.25	0.64	0.68	1.02	0.96	0.88	BaySndShip(Lg)	12-Jul-02	
BSSP-13	32.475	106.2	0.67	0.85	1.27	1.005	0.92	BaySndShip(Lg)	12-Jul-02	
BSSP-14	39.011	101.5	0.6	0.63	0.95	0.9	0.88	BaySndShip(Lg)	12-Jul-02	
BSSP-15	61.351	113.5	0.7	0.85	1.28	1.05	0.91	BaySndShip(Lg)	12-Jul-02	
SP-1	16.367	89.1	1.59	1.65	2.48	2.385	0.94	BaySndShip(sm)	12-Jul-02	
SP-3	13.085	89.55	2.07	1.77	2.65	3.105	0.87	BaySndShip(sm)	12-Jul-02	
SP-5	20.402	90.1	1.84	1.69	2.53	2.76	0.86	BaySndShip(sm)	12-Jul-02	
SP-7	15.967	86.95	1.81	1.71	2.57	2.715	0.89	BaySndShip(sm)	12-Jul-02	
SP-9	18.403	89.5	1.61	1.65	2.47	2.415	0.86	BaySndShip(sm)	12-Jul-02	
SP-11	13.623	84.5	1.83	1.74	2.61	2.745	0.88	BaySndShip(sm)	12-Jul-02	
SP-13	13.314	71.1	1.77	1.53	2.3	2.655	0.88	BaySndShip(sm)	12-Jul-02	
SP-14	18.956	95.5	2.26	1.64	2.45	3.39	0.84	BaySndShip(sm)	12-Jul-02	
SP-15	12.096	78.9	1.74	1.63	2.45	2.61	0.9	BaySndShip(sm)	12-Jul-02	

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled	
SP-16	10.936	87.8	1.81	1.66	2.48	2.715	0.91	BaySndShip(sm)	12-Jul-02	
SP-17	13.016	87.1	1.56	1.53	2.3	2.34	0.91	BaySndShip(sm)	12-Jul-02	
CCB-1	57.935	136.25	1.2	1.11	1.67	1.8	0.87	CarringtonBay(sm)	12-Jul-02	N. Cortes Is.
CCB-3	34.972	113.15	1.98	1.37	2.05	2.97	0.79	CarringtonBay(sm)	12-Jul-02	
CCB-5	22.005	101.5	1.67	1.21	1.82	2.505	0.83	CarringtonBay(sm)	12-Jul-02	
CCB-7	24.881	113.7	1.6	1.27	1.91	2.4	0.77	CarringtonBay(sm)	12-Jul-02	
CCB-9	28.134	93.2	0.93	0.83	1.25	1.395	0.86	CarringtonBay(sm)	12-Jul-02	
CCB-10	25.273	94.85	1.09	1.04	1.56	1.635	0.87	CarringtonBay(sm)	12-Jul-02	
CCB-12	25.273	91.9	1.45	1.09	1.64	2.175	0.82	CarringtonBay(sm)	12-Jul-02	
CCB-13	18.655	80.1	1.42	1.1	1.66	2.13	0.87	CarringtonBay(sm)	12-Jul-02	
CCB-14	28.057	80.35	1.39	1.11	1.67	2.085	0.85	CarringtonBay(sm)	12-Jul-02	
CCB-15	12.003	77.5	1.18	0.86	1.29	1.77	0.84	CarringtonBay(sm)	12-Jul-02	
CCBL-1	99.07	178.3	1.53	2.03	3.04	2.295	0.89	CarringtonBay(Lg)	12-Jul-02	
CCBL-3	58.007	173.25	1.4	2.09	3.13	2.1	0.9	CarringtonBay(Lg)	12-Jul-02	
CCBL-5	65.888	154.2	1.32	1.42	2.13	1.98	0.86	CarringtonBay(Lg)	12-Jul-02	
CCBL-7	65.81	138	1.3	1.41	2.12	1.95	0.87	CarringtonBay(Lg)	12-Jul-02	
CCBL-9	68.47	155	1.49	1.41	2.11	2.235	0.87	CarringtonBay(Lg)	12-Jul-02	
CCBL-13	50.41	139	1.29	1.14	1.71	1.935	0.87	CarringtonBay(Lg)	12-Jul-02	
CSL-1	27.219	146.2	2.33	2.12	3.18	3.495	0.89	CortesSeafood(Lg)	12-Jul-02	Eastside Cortes Il
CISL-3	29.739	140	2.33	1.81	2.71	3.495	0.88	CortesSeafood(Lg)	12-Jul-02	
CISL-5	20.906	138	1.59	1.24	1.86	2.385	0.89	CortesSeafood(Lg)	12-Jul-02	
CISL-7	24.907	126.2	2.48	1.88	2.82	3.72	0.86	CortesSeafood(Lg)	12-Jul-02	
CISL-9	34.521	143.9	1.67	1.48	2.21	2.505	0.86	CortesSeafood(Lg)	12-Jul-02	
CISL-11	24.306	143	2.76	2.49	3.73	4.14	0.87	CortesSeafood(Lg)	12-Jul-02	
CISL-12	18	147	1.95	1.53	2.29	2.925	0.86	CortesSeafood(Lg)	12-Jul-02	
CISL-13	34.6	97.6	2.93	2.81	4.22	4.395	0.9	CortesSeafood(Lg)	12-Jul-02	
CISL-14	27.7	.	2.09	1.6	2.4	3.135	0.84	CortesSeafood(Lg)	12-Jul-02	
CISL-15	18.6	172.6	2.36	1.84	2.76	3.54	0.85	CortesSeafood(Lg)	12-Jul-02	
CSF-1	21.765	107.2	2.33	2.05	3.07	3.495	0.89	CortesSeafood(Lg)	12-Jul-02	
CSF-3	31.138	130.4	2.07	2.32	3.47	3.105	0.89	CortesSeafood(Lg)	12-Jul-02	
CSF-5	19.228	112.2	1.97	2.18	3.27	2.955	0.84	CortesSeafood(Lg)	12-Jul-02	
CSF-7	14.768	109.8	2.37	2.09	3.14	3.555	0.83	CortesSeafood(Lg)	12-Jul-02	

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled	
CSF-9	8.815	104.4	2.4	2.48	3.73	3.6	0.9	CortesSeafood(Lg)	12-Jul-02	
CSF-11	8.423	109.35	3.11	3.2	4.8	4.665	0.88	CortesSeafood(Lg)	12-Jul-02	
CSF-12	9.337	103.9	2.03	2.55	3.83	3.045	0.94	CortesSeafood(Lg)	12-Jul-02	
CSF-13	19.843	105.6	2.82	3.68	5.52	4.23	0.94	CortesSeafood(Lg)	12-Jul-02	
CSF-14	14.381	97.6	1.96	2	3.01	2.94	0.91	CortesSeafood(Lg)	12-Jul-02	
CSF-15	14.698	81	2.27	2.23	3.35	3.405	0.89	CortesSeafood(Lg)	12-Jul-02	
GBL-1	26.036	138	1.79	1.47	2.2	2.685	0.71	GaileyBay(Lg)	12-Jul-02	Desolation Sd
GBL-3	40.948	141	1.46	1.71	2.56	2.19	0.88	GaileyBay(Lg)	12-Jul-02	
GBL-5	28.824	170.5	1.32	1.64	2.46	1.98	0.87	GaileyBay(Lg)	12-Jul-02	
GBL-7	52.633	173.2	1.38	1.71	2.56	2.07	0.91	GaileyBay(Lg)	12-Jul-02	
GBL-9	50.491	142.5	1.35	1.51	2.27	2.025	0.9	GaileyBay(Lg)	12-Jul-02	
GBL-11	49.873	155.3	1.04	1.09	1.64	1.56	0.89	GaileyBay(Lg)	12-Jul-02	
GBL-12	50.485	165.1	1.28	1.44	2.16	1.92	0.89	GaileyBay(Lg)	12-Jul-02	
GBL-13	45.401	140	1.27	1.29	1.93	1.905	0.9	GaileyBay(Lg)	12-Jul-02	
GBL-14	46.81	139	2.28	2.5	3.74	3.42	0.91	GaileyBay(Lg)	12-Jul-02	
GBL-15	63.376	171.3	1.52	1.89	2.83	2.28	0.91	GaileyBay(Lg)	12-Jul-02	
GBL-16	.	63.05	1.63	1.61	2.41	2.445	0.85	GaileyBay(Lg)	12-Jul-02	
GBS-1	11.426	84.5	1.28	1.02	1.53	1.92	0.92	GaileyBay(sm)	12-Jul-02	
GBS-3	9.506	80.5	0.94	1.07	1.6	1.41	0.91	GaileyBay(sm)	12-Jul-02	
GBS-5	8.583	82.25	3.3	2.29	3.43	4.95	0.87	GaileyBay(sm)	12-Jul-02	
GBS-7	8.69	92.3	1.91	2.13	3.19	2.865	0.91	GaileyBay(sm)	12-Jul-02	
GBS-9	12.01	93.6	1.34	1.14	1.72	2.01	0.89	GaileyBay(sm)	12-Jul-02	
GBS-11	16.059	104.2	1.79	1.54	2.31	2.685	0.88	GaileyBay(sm)	12-Jul-02	
GBS-12	16.5	94.05	1.19	1.3	1.94	1.785	0.92	GaileyBay(sm)	12-Jul-02	
GBS-13	14.066	95.55	1.32	1.02	1.52	1.98	0.87	GaileyBay(sm)	12-Jul-02	
GBS-14	11.53	94.45	1.63	1.28	1.93	2.445	0.85	GaileyBay(sm)	12-Jul-02	
GBS-15	5.71	65.4	1.67	1.25	1.88	2.505	0.84	GaileyBay(sm)	12-Jul-02	
JBL-1	105	165.8	1.37	1.04	1.57	2.055	0.87	JaneBay(Lg)	18-Jul-02	Barkley Sd
JBL-4	72.594	158.7	1.75	1.4	2.1	2.625	0.88	JaneBay(Lg)	18-Jul-02	
JBL-6	82.261	175.9	1.3	1	1.5	1.95	0.89	JaneBay(Lg)	18-Jul-02	
JBL-9	15.286	92.3	1.51	1.05	1.58	2.265	0.87	JaneBay(Lg)	18-Jul-02	
JBL-11	60.971	142.65	1.08	0.9	1.35	1.62	0.86	JaneBay(Lg)	18-Jul-02	

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled
JBL-13	48.721	172.55	0.76	0.68	1.02	1.14	0.91	JaneBay(Lg)	18-Jul-02
JBL-15	46.124	165.3	1.39	1.5	2.25	2.085	0.9	JaneBay(Lg)	18-Jul-02
JBL-17	54.519	149.5	1.28	1.12	1.69	1.92	0.84	JaneBay(Lg)	18-Jul-02
JBL-19	52.346	164.2	0.93	0.6	0.9	1.395	0.82	JaneBay(Lg)	18-Jul-02
JBL-20	20.831	107.5	1.03	0.86	1.29	1.545	0.89	JaneBay(Lg)	18-Jul-02
JBL-21	74.733	170.5	1.32	1.07	1.6	1.98	0.87	JaneBay(Lg)	18-Jul-02
JBL-22	32.264	128	1.74	1.52	2.29	2.61	0.9	JaneBay(Lg)	18-Jul-02
JBL-23	55.393	155.2	1.12	1.06	1.58	1.68	0.91	JaneBay(Lg)	18-Jul-02
JBL-24	45.069	137.55	0.5	0.41	0.61	0.75	0.88	JaneBay(Lg)	18-Jul-02
JBL-25	58.648	150.95	0.56	0.4	0.6	0.84	0.89	JaneBay(Lg)	18-Jul-02
JB-1	8.082	71.45	0.97	0.72	1.09	1.455	0.86	JaneBay(sm)	18-Jun-02
JB-3	49.131	123.75	0.9	0.91	1.36	1.35	0.91	JaneBay(sm)	18-Jun-02
JB-5	29.66	117.95	0.87	0.84	1.27	1.305	0.86	JaneBay(sm)	18-Jun-02
JB-7	25.956	115.1	0.98	0.83	1.24	1.47	0.82	JaneBay(sm)	18-Jun-02
JB-9	18.497	101.6	1.44	1.61	2.42	2.16	0.82	JaneBay(sm)	18-Jun-02
JB-11	27.686	113.95	0.9	1.1	1.65	1.35	0.98	JaneBay(sm)	18-Jun-02
JB-13	36.898	89.7	0.8	0.61	0.92	1.2	0.87	JaneBay(sm)	18-Jun-02
JB-15	78.045	132.6	0.43	1.01	1.52	0.645	0.78	JaneBay(sm)	18-Jun-02
JB-17	25.342	114.15	0.89	1.02	1.53	1.335	0.86	JaneBay(sm)	18-Jun-02
JB-19	44.043	125.1	0.7	0.74	1.1	1.05	0.87	JaneBay(sm)	18-Jun-02
JB-21	27.097	132.2	1.15	1.21	1.81	1.725	0.87	JaneBay(sm)	18-Jun-02
JB-23	10.979	73.7	0.95	0.73	1.09	1.425	0.8	JaneBay(sm)	18-Jun-02
JB-25	27.729	107.1	0.86	0.6	0.9	1.29	0.83	JaneBay(sm)	18-Jun-02
JB-27	27.169	114	0.91	0.96	1.44	1.365	0.9	JaneBay(sm)	18-Jun-02
JB-29	23.25	100.05	1.14	0.95	1.43	1.71	0.88	JaneBay(sm)	18-Jun-02
JB-30	24.629	125.55	1.21	1.27	1.9	1.815	0.9	JaneBay(sm)	18-Jun-02
JB-31	10.505	51.12	1.6	1.1	1.65	2.4	0.83	JaneBay(sm)	18-Jun-02
JB-32	18.012	87.2	1.39	1.11	1.67	2.085	0.87	JaneBay(sm)	18-Jun-02
JB-33	8.287	72.3	1.06	0.92	1.38	1.59	0.91	JaneBay(sm)	18-Jun-02
JB-34	38.977	100.7	1.04	0.78	1.16	1.56	0.87	JaneBay(sm)	18-Jun-02
JB-35	66.743	144.2	0.67	0.52	0.78	1.005	0.85	JaneBay(sm)	18-Jun-02
JB-36	23.415	148.4	1.79	1.3	1.95	2.685	0.85	JaneBay(sm)	18-Jun-02

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled	
JB-37	20.596	117.5	1.53	1.6	2.41	2.295	0.92	JaneBay(sm)	18-Jun-02	
JB-38	19.389	100.15	0.31	0.76	1.13	0.465	0.96	JaneBay(sm)	18-Jun-02	
JB-39	47.429	171.85	1.4	1.25	1.88	2.1	0.89	JaneBay(sm)	18-Jun-02	
JB-40	54.096	120.05	0.62	0.51	0.76	0.93	0.88	JaneBay(sm)	18-Jun-02	
JB-41	14.061	114.45	1.76	2.91	4.36	2.64	0.96	JaneBay(sm)	18-Jun-02	
LB-1	37.94	134.5	1.8	1.85	2.78	2.7	0.81	LogansBeach(Lg)	18-Jun-02	Effingham/Barkely Sd
LB-3	12.089	128.4	2.36	3.46	5.19	3.54	0.9	LogansBeach(Lg)	18-Jun-02	
LB-5	34.919	137.8	1.98	2.58	3.86	2.97	0.87	LogansBeach(Lg)	18-Jun-02	
LB-7	36.526	126.35	2.34	2.76	4.14	3.51	0.89	LogansBeach(Lg)	18-Jun-02	
LB-9	25.357	.	2.13	1.81	2.71	3.195	0.8	LogansBeach(Lg)	18-Jun-02	
LB-11	9.125	.	2.11	1.88	2.82	3.165	0.85	LogansBeach(Lg)	18-Jun-02	
LB-13	45.745	.	2.2	3.83	5.74	3.3	0.93	LogansBeach(Lg)	18-Jun-02	
LB-15	40.672	169.65	2.61	4.3	6.45	3.915	0.93	LogansBeach(Lg)	18-Jun-02	
LB-18	24.004	143.5	1.9	3.62	5.43	2.85	0.95	LogansBeach(Lg)	18-Jun-02	
LB-20	49.943	140	1.71	1.93	2.89	2.565	0.9	LogansBeach(Lg)	18-Jun-02	
LB-22	53.09	143.3	1.26	1.42	2.13	1.89	0.9	LogansBeach(Lg)	18-Jun-02	
LB-23	26.301	111.6	0.97	1.09	1.63	1.455	0.9	LogansBeach(Lg)	18-Jun-02	
LB-24	23.373	114.8	0.58	1.38	2.08	0.87	0.97	LogansBeach(Lg)	18-Jun-02	
LB-25	38.593	130.2	1.46	1.82	2.73	2.19	0.93	LogansBeach(Lg)	18-Jun-02	
LB-26	21.547	99.4	1.27	1.17	1.76	1.905	0.89	LogansBeach(Lg)	18-Jun-02	
LB-27	20.283	73.6	1.08	0.95	1.42	1.62	0.88	LogansBeach(Lg)	18-Jun-02	
LB-28	2.426	50.6	1.71	1.98	2.97	2.565	0.96	LogansBeach(Lg)	18-Jun-02	
LB-29	54.478	138.2	1.94	1.97	2.96	2.91	0.9	LogansBeach(Lg)	18-Jun-02	
LB-30	41.327	175	1.57	2.02	3.04	2.355	0.94	LogansBeach(Lg)	18-Jun-02	
LB-31	19.387	97.9	1.81	1.69	2.53	2.715	0.89	LogansBeach(Lg)	18-Jun-02	
LBS-1	21.828	128.8	2.99	2.7	4.04	4.485	0.88	LogansBeach(sm)	18-Jun-02	
LBS-3	17.641	123.7	1.69	1.26	1.89	2.535	0.8	LogansBeach(sm)	18-Jun-02	
LBS-5	19.84	98.6	0.93	0.95	1.43	1.395	0.83	LogansBeach(sm)	18-Jun-02	
LBS-7	29.603	137.95	1.73	2.06	3.09	2.595	0.86	LogansBeach(sm)	18-Jun-02	
LBS-9	7.042	75.2	3.32	3.58	5.37	4.98	0.91	LogansBeach(sm)	18-Jun-02	
LBS-11	30.047	102.5	1.02	1	1.51	1.53	0.86	LogansBeach(sm)	18-Jun-02	
LBS-13	10.765	98.1	1.43	1.44	2.17	2.145	0.88	LogansBeach(sm)	18-Jun-02	

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled
LBS-15	19.513	88	1.25	1.19	1.79	1.875	0.88	LogansBeach(sm)	18-Jun-02
LBS-17	15.297	70	2.36	1.94	2.91	3.54	0.87	LogansBeach(sm)	18-Jun-02
LBS-19	2.291	61	3.16	3.18	4.77	4.74	0.85	LogansBeach(sm)	18-Jun-02
LBS-21	12.063	110.95	2.91	3.03	4.54	4.365	0.89	LogansBeach(sm)	18-Jun-02
LBS-23	20.014	143.7	4.07	4.59	6.88	6.105	0.91	LogansBeach(sm)	18-Jun-02
LBS-25	21.386	114.5	2.17	2.67	4.01	3.255	0.94	LogansBeach(sm)	18-Jun-02
LBS-26	31.019	122.5	2.08	1.92	2.88	3.12	0.88	LogansBeach(sm)	18-Jun-02
LBS-27	18.418	112	2.2	2.75	4.13	3.3	0.93	LogansBeach(sm)	18-Jun-02
LBS-28	36.379	120	1.98	2.08	3.12	2.97	0.89	LogansBeach(sm)	18-Jun-02
LBS-29	20.479	119.55	1.85	2.31	3.47	2.775	0.92	LogansBeach(sm)	18-Jun-02
LBS-30	13.887	110	2.74	3.27	4.9	4.11	0.94	LogansBeach(sm)	18-Jun-02
LBS-31	10.921	88.3	2.12	2.3	3.45	3.18	0.92	LogansBeach(sm)	18-Jun-02
LBS-32	3.499	87.1	2.69	3.5	5.25	4.035	0.93	LogansBeach(sm)	18-Jun-02
LBS-33	7.172	61.05	2.64	2.67	4	3.96	0.92	LogansBeach(sm)	18-Jun-02
LBS-34	1.082	48.3	2.97	3.03	4.55	4.455	0.88	LogansBeach(sm)	18-Jun-02
LBS-35	2.585	49.55	2.36	2.5	3.75	3.54	0.92	LogansBeach(sm)	18-Jun-02
LBS-36	24.248	87.85	1.36	1.4	2.1	2.04	0.97	LogansBeach(sm)	18-Jun-02
LBS-37	10.107	81.55	1.68	1.41	2.11	2.52	0.86	LogansBeach(sm)	18-Jun-02
SSBL-1	56.417	174.2	2.51	2.37	3.56	3.765	0.89	SecheltInlet(Lg)	12-Jul-02
SSBL-3	62.97	170	1.54	1.87	2.8	2.31	0.92	SecheltInlet(Lg)	12-Jul-02
SSBL-6	73.29	138	1.21	1.31	1.96	1.815	0.87	SecheltInlet(Lg)	12-Jul-02
SSBL-8	44.4	131.6	2.03	1.91	2.86	3.045	0.8	SecheltInlet(Lg)	12-Jul-02
SSBL-10	57.3	117.2	1.73	1.8	2.7	2.595	0.87	SecheltInlet(Lg)	12-Jul-02
SSBL-12	52.1	145.3	2.14	2.13	3.19	3.21	0.89	SecheltInlet(Lg)	12-Jul-02
SSBL-14	55.7	133	2	1.59	2.38	3	0.87	SecheltInlet(Lg)	12-Jul-02
SSBL-16	48.13	140	2.23	1.83	2.75	3.345	0.88	SecheltInlet(Lg)	12-Jul-02
SSBL-17	36.6	127.85	2.07	1.83	2.75	3.105	0.88	SecheltInlet(Lg)	12-Jul-02
SSBL-18	45.3	116.45	1.38	1.37	2.06	2.07	0.93	SecheltInlet(Lg)	12-Jul-02
SSB-1	34.9	98.7	0.65	0.83	1.24	0.975	0.84	SecheltInlet(sm)	12-Jul-02
SSB-3	27.55	94.5	0.87	0.78	1.17	1.305	0.83	SecheltInlet(sm)	12-Jul-02
SSB-5	21.45	84	1.61	1.09	1.64	2.415	0.82	SecheltInlet(sm)	12-Jul-02
SSB-7	28.6	92.85	1.26	0.85	1.28	1.89	0.79	SecheltInlet(sm)	12-Jul-02

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled
SSB-9	28.03	94	2.07	1.52	2.28	3.105	0.83	SecheltInlet(sm)	12-Jul-02
SSB-11	21.8	85.9	1.37	0.93	1.39	2.055	0.84	SecheltInlet(sm)	12-Jul-02
SSB-12	31.15	96.5	1.18	0.91	1.37	1.77	0.86	SecheltInlet(sm)	12-Jul-02
SSB-13	29.66	92.9	0.87	0.75	1.13	1.305	0.89	SecheltInlet(sm)	12-Jul-02
SSB-14	35.88	109.1	1.65	1.1	1.66	2.475	0.84	SecheltInlet(sm)	12-Jul-02
SSB-15	16.51	88.8	2.33	2.03	3.05	3.495	0.9	SecheltInlet(sm)	12-Jul-02
SS2L-1	108.7	176.45	1.81	1.71	2.57	2.715	0.88	SecheltInlet(Lg)	.
SS2L-4	85.99	208.09	1.52	1.41	2.12	2.28	0.91	SecheltInlet(Lg)	.
SS2L-7	66.18	158.34	0.96	0.9	1.35	1.44	0.89	SecheltInlet(Lg)	.
SS2L-10	67.45	148.51	1.48	1.53	2.3	2.22	0.92	SecheltInlet(Lg)	.
SS2L-14	92.27	146.35	0.97	0.97	1.45	1.455	0.89	SecheltInlet(Lg)	.
SS2L-17	98.53	152.95	1.73	1.79	2.69	2.595	0.9	SecheltInlet(Lg)	.
SS2L-19	71.67	149.15	1.1	1.29	1.94	1.65	0.93	SecheltInlet(Lg)	.
SS2L-21	66.41	174.3	2.13	1.71	2.57	3.195	0.9	SecheltInlet(Lg)	.
SS2L-23	75.93	124.65	0.86	0.85	1.27	1.29	0.88	SecheltInlet(Lg)	.
SS2L-25	76.49	151.4	3.31	2.2	3.3	4.965	0.89	SecheltInlet(Lg)	.
SS2-1	50.93	101	0.63	0.63	0.94	0.945	0.9	SecheltInlet(sm)	12-Jul-02
SS2-3	50.37	100.85	0.78	1.4	2.11	1.17	0.9	SecheltInlet(sm)	12-Jul-02
SS2-4	27.21	96.15	1.08	0.57	0.85	1.62	0.8	SecheltInlet(sm)	12-Jul-02
SS2-12	51.01	113.9	1.66	1.33	2	2.49	0.83	SecheltInlet(sm)	12-Jul-02
SS2-13	21.19	85.1	1.27	0.99	1.48	1.905	0.85	SecheltInlet(sm)	12-Jul-02
SS2-14	23.59	86.2	1.39	1.08	1.62	2.085	0.84	SecheltInlet(sm)	12-Jul-02
SS2-15	20.4	90.8	1.52	1.34	2.02	2.28	0.9	SecheltInlet(sm)	12-Jul-02
SS3-3	51.31	146.9	1.63	1.15	1.73	2.445	0.85	SecheltInlet(mix)	12-Jul-02
SS3-5	46.54	123.9	1.1	1.01	1.51	1.65	0.86	SecheltInlet(mix)	12-Jul-02
SS3-7	48.24	133.15	1.26	1.03	1.55	1.89	0.82	SecheltInlet(mix)	12-Jul-02
SS3-9	46.14	133.4	0.77	0.72	1.08	1.155	0.87	SecheltInlet(mix)	12-Jul-02
SS3-11	19.14	97.3	1.5	1.32	1.98	2.25	0.85	SecheltInlet(mix)	12-Jul-02
SS3-13	22.93	93.25	1.04	0.97	1.45	1.56	0.83	SecheltInlet(mix)	12-Jul-02
SS3-15	28.24	89.5	0.85	0.85	1.27	1.275	0.84	SecheltInlet(mix)	12-Jul-02
SS3-17	28.92	96	1.1	0.86	1.29	1.65	0.82	SecheltInlet(mix)	12-Jul-02
SS3-19	28.21	90.88	1.04	0.99	1.48	1.56	0.86	SecheltInlet(mix)	12-Jul-02

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled	
SS3-21	47.85	130.55	1.02	0.95	1.43	1.53	0.89	SecheltInlet(mix)	12-Jul-02	
SS3-22	41.21	129.3	0.89	0.83	1.25	1.335	0.88	SecheltInlet(mix)	12-Jul-02	
SS3-23	29.78	113.75	1.47	1.35	2.03	2.205	0.89	SecheltInlet(mix)	12-Jul-02	
SS3-24	43.6	118	0.9	0.75	1.13	1.35	0.86	SecheltInlet(mix)	12-Jul-02	
SS3-25	36.4	133.15	0.91	1	1.51	1.365	0.9	SecheltInlet(mix)	12-Jul-02	
SS3-26	12.6	83.8	0.79	0.7	1.04	1.185	0.88	SecheltInlet(mix)	12-Jul-02	
SS3-27	12.54	71.45	1.29	1.02	1.53	1.935	0.87	SecheltInlet(mix)	12-Jul-02	
SS3-28	13.66	79.4	2.05	1.32	1.99	3.075	0.81	SecheltInlet(mix)	12-Jul-02	
SS3-29	12.86	71.5	1.19	0.83	1.24	1.785	0.82	SecheltInlet(mix)	12-Jul-02	
SS3-30	7.48	76.5	0.37	0.3	0.45	0.555	0.86	SecheltInlet(mix)	12-Jul-02	
LSI-1	15.25	89.2	1.1	0.92	1.38	1.65	0.92	LasquetiIsland	25-Jul-02	
LSI-3	37.12	138	1.7	1.22	1.83	2.55	0.89	LasquetiIsland	25-Jul-02	
LSI-5	33.42	106.1	1.83	1.09	1.64	2.745	0.87	LasquetiIsland	25-Jul-02	
LSI-7	25.49	104.3	1.77	1.04	1.57	2.655	0.87	LasquetiIsland	25-Jul-02	
LSI-9	14.18	89.1	1.38	1.23	1.84	2.07	0.92	LasquetiIsland	25-Jul-02	
LSI-11	32.47	100.9	1.49	0.85	1.28	2.235	0.81	LasquetiIsland	25-Jul-02	
LSI-12	45.2	112.6	1.09	0.86	1.28	1.635	0.86	LasquetiIsland	25-Jul-02	
LSI-13	31.6	101.5	1.47	0.9	1.35	2.205	0.83	LasquetiIsland	25-Jul-02	
LSI-14	45.5	96.2	0.84	0.88	1.33	1.26	0.88	LasquetiIsland	25-Jul-02	
LSI-15	16.7	82	1.39	0.99	1.48	2.085	0.87	LasquetiIsland	25-Jul-02	
bobs-1	13.7	109.1	1.59	1.34	2.01	2.385	0.93	BoothBay(sm)	23-Jul-02	Salt Spring
bobs-3	14.3	71.2	1.27	1.11	1.67	1.905	0.92	BoothBay(sm)	23-Jul-02	
bobs-5	16.4	94.6	1.27	0.93	1.39	1.905	0.93	BoothBay(sm)	23-Jul-02	
bobs-7	20.9	117.6	0.73	0.67	1.01	1.095	0.94	BoothBay(sm)	23-Jul-02	
bobs-9	12.4	83.6	1.76	1.08	1.62	2.64	0.92	BoothBay(sm)	23-Jul-02	
bobs-11	17.451	85.4	1.36	1.07	1.61	2.04	0.87	BoothBay(sm)	23-Jul-02	
bobs-12	15.063	90.3	1.15	1.07	1.6	1.725	0.9	BoothBay(sm)	23-Jul-02	
bobs-13	16.823	125.9	0.91	0.6	0.9	1.365	0.85	BoothBay(sm)	23-Jul-02	
bobs-14	6.81	79.8	3.11	1.76	2.64	4.665	0.82	BoothBay(sm)	23-Jul-02	
bobs-15	7.087	63.9	2.07	1.12	1.68	3.105	0.79	BoothBay(sm)	23-Jul-02	
bobl-1	38.074	164.3	1.89	1.46	2.19	2.835	0.92	BoothBay(lg)	23-Jul-02	
bobl-4	26.65	106.4	1.57	1.65	2.47	2.355	0.93	BoothBay(lg)	23-Jul-02	

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled	
bobl-6	29.13	103.5	1.35	0.96	1.44	2.025	0.9	BoothBay(lg)	23-Jul-02	
bobl-8	33.885	136.6	1.38	0.93	1.4	2.07	0.92	BoothBay(lg)	23-Jul-02	
bobl-11	27.384	110.3	1.34	1	1.49	2.01	0.93	BoothBay(lg)	23-Jul-02	
bobl-13	5.931	86.9	1.99	1.31	1.97	2.985	0.86	BoothBay(lg)	23-Jul-02	
bobl-14	15.798	153.3	2.61	1.28	1.92	3.915	0.77	BoothBay(lg)	23-Jul-02	
bobl-16	8.544	82.1	0.99	0.74	1.1	1.485	0.88	BoothBay(lg)	23-Jul-02	
bobl-17	16.779	130.2	2.21	2.08	3.11	3.315	0.9	BoothBay(lg)	23-Jul-02	
bobl-19	20.31	138	0.71	1.43	2.15	1.065	0.96	BoothBay(lg)	23-Jul-02	
RBS-1	11.775	118.9	0.89	0.69	1.03	1.335	0.91	RainyBay(sm)	8-Aug-02	Barkley Sd
RBS-3	15.097	116.2	2.43	1.78	2.68	3.645	0.91	RainyBay(sm)	8-Aug-02	
RBS-5	16.176	112.2	0.87	0.69	1.03	1.305	0.9	RainyBay(sm)	8-Aug-02	
RBS-7	37.163	115.6	0.92	0.64	0.96	1.38	0.89	RainyBay(sm)	8-Aug-02	
RBS-9	32.143	124.9	0.7	0.52	0.78	1.05	0.9	RainyBay(sm)	8-Aug-02	
RBL-1	31.436	163.1	0.76	0.56	0.84	1.14	0.85	RainyBay(lg)	8-Aug-02	
RBL-3	35.945	128.9	0.57	0.38	0.58	0.855	0.87	RainyBay(lg)	8-Aug-02	
RBL-5	27.296	134	0.96	0.65	0.97	1.44	0.89	RainyBay(lg)	8-Aug-02	
RBL-7	36.013	124	0.87	0.42	0.63	1.305	0.75	RainyBay(lg)	8-Aug-02	
RBL-9	34.345	126.1	1.16	0.71	1.06	1.74	0.87	RainyBay(lg)	8-Aug-02	
RBL-11	.	154.3	1.12	0.68	1.02	1.68	0.82	RainyBay(lg)	8-Aug-02	
RBL-12	42.448	136.6	1.14	0.68	1.02	1.71	0.81	RainyBay(lg)	8-Aug-02	
RBL-13	51.823	140	0.91	0.54	0.81	1.365	0.82	RainyBay(lg)	8-Aug-02	
RBL-14	29.173	143.5	0.89	0.57	0.85	1.335	0.82	RainyBay(lg)	8-Aug-02	
RBL-15	41.879	156.2	0.91	0.51	0.77	1.365	0.81	RainyBay(lg)	8-Aug-02	
CIS-1	11.163	80.3	2.46	2.04	3.06	3.69	0.88	CachalotInlet(sm)	10-Jul-02	Kyuquot Sd
CIS-3	16.086	102	3.02	2.35	3.52	4.53	0.85	CachalotInlet(sm)	10-Jul-02	
CIS-5	22.086	104.6	2.37	1.82	2.73	3.555	0.89	CachalotInlet(sm)	10-Jul-02	
CIS-7	12.681	111.4	3.84	3.12	4.68	5.76	0.88	CachalotInlet(sm)	10-Jul-02	
CIS-9	41.88	98.9	2.19	1.94	2.91	3.285	0.9	CachalotInlet(sm)	10-Jul-02	
CIS-11	17.265	107.7	2.67	2.14	3.21	4.005	0.89	CachalotInlet(sm)	10-Jul-02	
CIS-12	15.094	99.7	2.78	2.33	3.5	4.17	0.9	CachalotInlet(sm)	10-Jul-02	
CIS-13	19.626	94.6	3.72	3.18	4.77	5.58	0.9	CachalotInlet(sm)	10-Jul-02	
CIS-14	7.916	83.9	4.33	3.4	5.11	6.495	0.88	CachalotInlet(sm)	10-Jul-02	

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled	
CIS-15	10.298	76	3	2.35	3.53	4.5	0.9	CachalotInlet(sm)	10-Jul-02	
CIL-1	45.031	128	1.43	1.54	2.31	2.145	0.91	CachalotInlet(lg)	10-Jul-02	
CIL-3	27.246	138	1.61	1.46	2.19	2.415	0.88	CachalotInlet(lg)	10-Jul-02	
CIL-5	27.998	116.4	3.04	2.67	4	4.56	0.87	CachalotInlet(lg)	10-Jul-02	
CIL-7	32.215	114.1	2.06	1.58	2.36	3.09	0.88	CachalotInlet(lg)	10-Jul-02	
CIL-9	58.003	145.1	3.11	3.7	5.55	4.665	0.93	CachalotInlet(lg)	10-Jul-02	
CIL-11	43.85	134.7	2.49	2.16	3.24	3.735	0.9	CachalotInlet(lg)	10-Jul-02	
CIL-12	39.467	99.3	3.36	2.44	3.65	5.04	0.88	CachalotInlet(lg)	10-Jul-02	
CIL-13	22.136	119.7	3.3	3.16	4.74	4.95	0.91	CachalotInlet(lg)	10-Jul-02	
CIL-14	38.543	126.2	2.27	2.31	3.46	3.405	0.91	CachalotInlet(lg)	10-Jul-02	
CIL-15	35.046	117.9	5.52	3.95	5.93	8.28	0.86	CachalotInlet(lg)	10-Jul-02	
LBL-1	24.142	100.3	1.27	1.31	1.96	1.905	0.84	LuckyBeach(lg)	12-Jul-02	Barkley Sd
LBL-3	38.833	121	1.22	1.26	1.89	1.83	0.91	LuckyBeach(lg)	12-Jul-02	
LBL-5	24.791	97.5	1.57	2.12	3.17	2.355	0.9	LuckyBeach(lg)	12-Jul-02	
LBL-7	35.787	112.4	1.5	2.15	3.23	2.25	0.95	LuckyBeach(lg)	12-Jul-02	
LBL-9	22.431	93.2	1.33	1.69	2.54	1.995	0.95	LuckyBeach(lg)	12-Jul-02	
LBL-11	27.155	99.1	1.27	1.49	2.24	1.905	0.92	LuckyBeach(lg)	12-Jul-02	
LBL-12	29.898	121.6	1.85	3.54	5.32	2.775	0.96	LuckyBeach(lg)	12-Jul-02	
LBL-13	19.58	102.4	1.37	1.68	2.52	2.055	0.93	LuckyBeach(lg)	12-Jul-02	
LBL-14	20.386	93.3	2.16	2.61	3.92	3.24	0.94	LuckyBeach(lg)	12-Jul-02	
LBL-15	13.174	88.3	1.72	2.06	3.09	2.58	0.92	LuckyBeach(lg)	12-Jul-02	
LBP-1	18.473	91.1	2.03	2.95	4.43	3.045	0.88	LuckyBeach(sm)	12-Jul-02	
LBP-3	9.434	83.1	1.2	3.28	4.92	1.8	0.9	LuckyBeach(sm)	12-Jul-02	
LBP-5	14.395	72.2	1.65	2.27	3.4	2.475	0.83	LuckyBeach(sm)	12-Jul-02	
LBP-7	14.716	79.6	0.79	1.47	2.2	1.185	0.85	LuckyBeach(sm)	12-Jul-02	
LBP-9	11.505	78.6	1.01	2.33	3.49	1.515	0.85	LuckyBeach(sm)	12-Jul-02	
LBP-11	16.117	80.9	0.85	1.38	2.07	1.275	0.96	LuckyBeach(sm)	12-Jul-02	
LBP-12	12.537	72	1.67	2.78	4.17	2.505	0.94	LuckyBeach(sm)	12-Jul-02	
LBP-13	12.733	72.2	0.62	1.39	2.09	0.93	0.96	LuckyBeach(sm)	12-Jul-02	
LBP-14	16.36	70.9	0.62	1.1	1.65	0.93	0.95	LuckyBeach(sm)	12-Jul-02	
LBP-15	12.022	93.6	0.96	1.3	1.95	1.44	0.93	LuckyBeach(sm)	12-Jul-02	
BBL-1	36.088	111.3	1.84	1.41	2.12	2.76	0.91	BurgoyneBay(lg)	23-Jul-02	Salt Spring

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled	
BBL-3	27.988	118.2	1.57	1.24	1.87	2.355	0.91	BurgoyneBay(lg)	23-Jul-02	
BBL-5	28.73	101	1.34	0.76	1.14	2.01	0.88	BurgoyneBay(lg)	23-Jul-02	
BBL-7	38.186	128.3	1.11	1.2	1.8	1.665	0.93	BurgoyneBay(lg)	23-Jul-02	
BBL-9	48.909	164.5	0.96	0.8	1.21	1.44	0.9	BurgoyneBay(lg)	23-Jul-02	
BBL-11	31.029	124.8	0.78	0.89	1.34	1.17	0.94	BurgoyneBay(lg)	23-Jul-02	
BBL-12	43.182	132.8	2.17	1.71	2.56	3.255	0.88	BurgoyneBay(lg)	23-Jul-02	
BBL-13	45.969	138	2.21	1.32	1.98	3.315	0.82	BurgoyneBay(lg)	23-Jul-02	
BBL-14	25.19	129.7	2.01	1.09	1.63	3.015	0.8	BurgoyneBay(lg)	23-Jul-02	
BBL-15	41.187	117.35	1.49	1.03	1.55	2.235	0.87	BurgoyneBay(lg)	23-Jul-02	
bbs-1	30.962	108.9	2.03	1.42	2.13	3.045	0.86	BurgoyneBay(sm)	23-Jul-02	
bbs-3	21.025	115.1	1.61	1.18	1.78	2.415	0.91	BurgoyneBay(sm)	23-Jul-02	
bbs-5	14.724	94.3	1.43	0.94	1.4	2.145	0.89	BurgoyneBay(sm)	23-Jul-02	
bbs-7	17.399	105.8	1.67	0.91	1.36	2.505	0.87	BurgoyneBay(sm)	23-Jul-02	
bbs-9	9.225	85.4	1.54	1.07	1.6	2.31	0.91	BurgoyneBay(sm)	23-Jul-02	
bbs-11	10.787	88.6	1.43	0.85	1.27	2.145	0.84	BurgoyneBay(sm)	23-Jul-02	
bbs-12	26.22	97.2	0.85	0.56	0.84	1.275	0.84	BurgoyneBay(sm)	23-Jul-02	
bbs-13	18.235	102.6	1.59	0.86	1.28	2.385	0.79	BurgoyneBay(sm)	23-Jul-02	
bbs-14	10.174	90.1	2.05	1.01	1.52	3.075	0.78	BurgoyneBay(sm)	23-Jul-02	
bbs-15	28.04	110.9	1.43	0.88	1.32	2.145	0.83	BurgoyneBay(sm)	23-Jul-02	
SIKS-1	37.718	117.1	3.4	2.22	3.34	5.1	0.87	SurpriseIsland	9-Jul-02	Kyuquot Sd
SIKS-3	41.415	117.7	3.24	2.66	3.99	4.86	0.88	SurpriseIsland	9-Jul-02	
SIKS-5	34.367	133.2	2.9	1.76	2.64	4.35	0.82	SurpriseIsland	9-Jul-02	
SIKS-7	57.671	133.9	1.86	1.23	1.84	2.79	0.86	SurpriseIsland	9-Jul-02	
SIKS-9	38.768	135.2	2.91	1.6	2.39	4.365	0.85	SurpriseIsland	9-Jul-02	
SIKS-11	59.929	131.2	2.18	1.38	2.07	3.27	0.83	SurpriseIsland	9-Jul-02	
SIKS-12	49.881	150	3.12	1.88	2.82	4.68	0.83	SurpriseIsland	9-Jul-02	
SIKS-13	33.446	125.8	4.12	2.94	4.41	6.18	0.89	SurpriseIsland	9-Jul-02	
SIKS-14	64.794	127.2	4.87	3.54	5.32	7.305	0.87	SurpriseIsland	9-Jul-02	
SIKS-15	18.735	122.7	3.55	3.58	5.37	5.325	0.92	SurpriseIsland	9-Jul-02	
MIDS-1	11.463	113.37	3.89	2.43	3.64	5.835	0.81	Melville	6-May-03	Desolation Sd
MIDS-2	14.019	123.39	3.61	2.38	3.57	5.415	0.82	Melville	6-May-03	
MIDS-3	13.296	124.37	4.07	2.56	3.83	6.105	0.83	Melville	6-May-03	

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled	
MIDS-4	9.621	119.49	5.1	3.27	4.9	7.65	0.83	Melville	6-May-03	
MIDS-5	20.739	128.62	4.14	2.39	3.58	6.21	0.8	Melville	6-May-03	
MIDS-6	4.223	91.97	3.62	2.82	4.23	5.43	0.85	Melville	6-May-03	
MIDS-7	5.232	76.98	2.06	2.36	3.54	3.09	0.92	Melville	6-May-03	
MIDS-8	6.302	87.19	2.26	2.56	3.84	3.39	0.91	Melville	6-May-03	
MIDS-9	15.997	127.73	4.84	2.79	4.18	7.26	0.8	Melville	6-May-03	
MIDS-10	4.841	99.31	2.74	1.83	2.74	4.11	0.82	Melville	6-May-03	
MIDS-11	5.337	87.73	3.58	3.15	4.72	5.37	0.87	Melville	6-May-03	
MIDS-13	4.734	90.01	3.36	2.15	3.23	5.04	0.83	Melville	6-May-03	
MIDS-15	4.435	83.91	3.08	1.78	2.67	4.62	0.79	Melville	6-May-03	
MIDS-17	3.984	79.9	3.53	2.27	3.4	5.295	0.81	Melville	6-May-03	
MIDS-19	4.637	89.67	3.77	2.16	3.24	5.655	0.78	Melville	6-May-03	
SHI-1	14.428	123.3	4.6	3.4	5.1	6.9	0.87	SouthHardy	.	Jervis Inlet/Mainland
SHI-3	15.177	116.86	3.71	2.6	3.9	5.565	0.87	SouthHardy	.	
SHI-5	18.654	112.32	3.63	2.23	3.34	5.445	0.79	SouthHardy	.	
SHI-7	6.752	98.92	5.72	4.4	6.61	8.58	0.85	SouthHardy	.	
SHI-9	9.201	99.34	4.48	3.08	4.62	6.72	0.82	SouthHardy	.	
SHI-11	12.047	91.14	3.65	3.42	5.12	5.475	0.9	SouthHardy	.	
SHI-12	8.355	81.04	2.97	3.07	4.61	4.455	0.91	SouthHardy	.	
SHI-13	7.876	82.29	4.44	3.43	5.14	6.66	0.88	SouthHardy	.	
SHI-14	3.023	58.64	5.74	3.96	5.94	8.61	0.83	SouthHardy	.	
SHI-15	6.082	80.87	3.6	2.7	4.05	5.4	0.84	SouthHardy	.	
AC-1	7.583	75.18	4.04	2.2	3.29	6.06	0.8	Agammemon	.	Sechelt Penisula
AC-3	4.872	68.82	2.34	1.27	1.91	3.51	0.78	Agammemon	.	
AC-5	20.576	109.05	4.12	2.22	3.34	6.18	0.82	Agammemon	.	
AC-7	21.039	93.92	3.33	1.63	2.45	4.995	0.79	Agammemon	.	
AC-9	22.702	109.84	2.73	1.33	1.99	4.095	0.79	Agammemon	.	
AC-11	10.761	73.05	3.27	1.8	2.7	4.905	0.8	Agammemon	.	
AC-12	10.973	75.77	2.62	1.53	2.3	3.93	0.82	Agammemon	.	
AC-13	12.008	86.64	4.35	2.65	3.97	6.525	0.82	Agammemon	.	
AC-14	21.655	106.93	2.42	1.14	1.71	3.63	0.76	Agammemon	.	
AC-15	5.497	68.44	4.95	3.2	4.8	7.425	0.82	Agammemon	.	

Wild Oyster Sample ID	Whole blotted wet wt. (g)	Length (mm)	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing (standardised wet wt.)	Cd corrected for freezing (w/w)	moisture%	site	Date Sampled
D-111	102.46	170	1.98	0.83	1.24	2.97	0.83	D-11	.
D-114	108.62	165	2.45	1.46	2.2	3.675	0.83	D-11	.
D-117	76.19	165	1.35	0.77	1.15	2.025	0.87	D-11	.
D-1110	41.22	117.44	1.35	0.72	1.08	2.025	0.82	D-11	.
D-1112	53.43	180	2.33	1.21	1.81	3.495	0.77	D-11	.
D-1114	15.72	124	0.72	0.29	0.44	1.08	0.74	D-11	.
D-1116	33.3	127	2.48	1	1.51	3.72	0.74	D-11	.
D-1117	34.62	121.79	2.41	1.14	1.71	3.615	0.77	D-11	.
D-1118	31.39	146.63	2.44	1.78	2.66	3.66	0.89	D-11	.
D-1120	37.1	145.63	1.12	0.81	1.22	1.68	0.88	D-11	.
			1.82175399	**1.579567198**	**2.369589977**	**2.73263098**			
			(average)	**(average)**	**(average)**	**(average)**			

Attachment (2) 2003 - 2003 Cultured Oyster Data (Supplied by the British Columbia Ministry of Agriculture, Food & Fisheries, Courtenay, B.C., Canada)

Please find below a spreadsheet with the Cd residue data for the cultured oyster project from the BC coast. Samples were collected on approximately a 2-month frequency, at 1m and 7m. The headings for columns are the same as for the WILD oysters spreadsheet with an additional column entitled "Months at site".

Cultured Oyster Sample ID	whole blotted wet wt. (g)	Length (mm)	[AA]	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing using standardized ww	Cd corrected using actual ww	moisture%	site	Date Sampled	months at site
LKCG-1	1.873	53	0.15	4.3	1.82	2.74	6.45	0.79	Birnie Isle	28-Oct-02	14
LKCG-3	1.667	39	0.09	2.36	1.18	1.76	3.54	0.79	Birnie Isle	28-Oct-02	14
LKCG-5	1.746	50	0.13	2.85	1.53	2.3	4.275	0.79	Birnie Isle	28-Oct-02	14
LKCG-7	1.931	54	0.08	1.75	1.32	1.98	2.625	0.83	Birnie Isle	28-Oct-02	14
LKCG-9	3.073	56	0.22	2.62	1.86	2.79	3.93	0.78	Birnie Isle	28-Oct-02	14
LKCG-11	3.028	61	0.18	2.86	1.93	2.9	4.29	0.77	Birnie Isle	28-Oct-02	14
O1LKCG-1	3.114	58	0.23	3.92	2.6	3.91	5.88	0.8	Birnie Isle	28-Oct-02	14
O1LKCG-3	2.349	52	0.12	2.38	1.63	2.45	3.57	0.88	Birnie Isle	28-Oct-02	14
O1LKCG-5	1.35	48	0.2	3.35	2.09	3.13	5.025	0.75	Birnie Isle	28-Oct-02	14
O1LKCG-7	6.309	65	0.28	2.9	1.91	2.87	4.35	0.81	Birnie Isle	28-Oct-02	14
O1LKCG-9	3.659	64	0.25	2.52	2.31	3.46	3.78	0.86	Birnie Isle	28-Oct-02	14
O1LKCG-11	5.225	63	0.29	2.43	1.63	2.45	3.645	0.82	Birnie Isle	28-Oct-02	14
O1LKCG-13	9.527	65	0.38	1.57	1.45	2.17	2.355	0.86	Birnie Isle	28-Oct-02	14
O1LKCG-15	7.852	75	0.4	2.75	1.99	2.98	4.125	0.86	Birnie Isle	28-Oct-02	14
1RSCG-1	17.891	90	0.22	1.12	0.73	1.09	1.68	0.79	BkSnd.Rich.St.	21-Jan-03	17
1RSCG-3	23.791	82	0.39	0.92	0.68	1.02	1.38	0.76	BkSnd.Rich.St.	21-Jan-03	17
1RSCG-5	19.704	106	0.29	1.27	0.99	1.49	1.905	0.79	BkSnd.Rich.St.	21-Jan-03	17
1RSCG-7	16.433	74	0.39	1.8	1.07	1.61	2.7	0.68	BkSnd.Rich.St.	21-Jan-03	17
1RSCG-9	13.066	85	0.55	1.87	1.09	1.63	2.805	0.71	BkSnd.Rich.St.	21-Jan-03	17
1RSCG-11	11.418	76	0.3	1.27	0.9	1.35	1.905	0.77	BkSnd.Rich.St.	21-Jan-03	17
1BMCG-1	16.85	70	0.43	1.21	1.06	1.59	1.815	0.81	Bob Milne	21-Jan-03	17
1BMCG-3	14.553	89	0.61	1.15	0.93	1.4	1.725	0.83	Bob Milne	21-Jan-03	17
1BMCG-5	30.207	111	0.32	1.04	0.92	1.39	1.56	0.84	Bob Milne	21-Jan-03	17
1BMCG-7	9.822	102	0.65	1.69	1.27	1.91	2.535	0.8	Bob Milne	21-Jan-03	17
1BMCG-9	14.33	101	0.32	0.92	0.79	1.18	1.38	0.86	Bob Milne	21-Jan-03	17
1BMCG-11	23.279	98	0.32	1.2	0.99	1.48	1.8	0.78	Bob Milne	21-Jan-03	17
1BMCG-13	9.623	76.5	0.29	1.33	1.04	1.56	1.995	0.81	Bob Milne	21-Jan-03	17

Cultured Oyster Sample ID	whole blotted wet wt. (g)	Length (mm)	[AA]	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing using standardized ww	Cd corrected using actual ww	moisture%	site	Date Sampled	months at site
1BMCG-15	8.093	85	0.33	1.84	1.48	2.21	2.76	0.84	Bob Milne	21-Jan-03	17
5BMCG-1	8.735	68	0.58	1.86	1.41	2.11	2.79	0.82	Bob Milne	21-Jan-03	17
5BMCG-3	2.093	61	0.19	2.5	2.45	3.68	3.75	0.86	Bob Milne	21-Jan-03	17
5BMCG-5	7.24	62	0.5	1.48	1.25	1.88	2.22	0.83	Bob Milne	21-Jan-03	17
5BMCG-7	7.248	65	0.5	2.37	2.15	3.22	3.555	0.78	Bob Milne	21-Jan-03	17
5BMCG-9	3.949	63	0.43	2.75	1.98	2.97	4.125	0.79	Bob Milne	21-Jan-03	17
5BMCG-11	0.885	35	0.27	3.54	3.26	4.89	5.31	0.87	Bob Milne	21-Jan-03	17
5BMCG-12	3.61	58	0.22	3.05	2.6	3.9	4.575	0.86	Bob Milne	21-Jan-03	17
5BMCG-13	2.168	47	0.16	1.75	1.74	2.61	2.625	0.92	Bob Milne	21-Jan-03	17
5BMCG-14	2.691	53	0.32	4.82	3.2	4.8	7.23	0.79	Bob Milne	21-Jan-03	17
O7RMCGD-1	5.742	55	0.24	1.15	0.85	1.28	1.725	0.81	Bob Milne	?	
O7RMCGD-5	2.769	43	0.2	1.6	1.09	1.64	2.4	0.72	Bob Milne	?	
O7RMCGD-7	2.41	48	0.12	1.89	1.29	1.94	2.835	0.91	Bob Milne	?	
O7RMCGD-9	0.538	30	0.04	1.75	1.24	1.86	2.625	0.78	Bob Milne	?	
1EICG-1	19.809	99	0.69	1.46	1.63	2.44	2.19	0.74	Eff.Bk.Snd.	21-Jan-03	17
1EICG-3	22.613	123	0.6	1.67	1.28	1.92	2.505	0.77	Eff.Bk.Snd.	21-Jan-03	17
1EICG-5	22.048	91	0.66	1.35	1.32	1.97	2.025	0.64	Eff.Bk.Snd.	21-Jan-03	17
1EICG-7	8.393	88	0.65	2.32	1.33	1.99	3.48	0.45	Eff.Bk.Snd.	21-Jan-03	17
1EICG-9	23.051	96	0.45	1.43	1.3	1.95	2.145	0.68	Eff.Bk.Snd.	21-Jan-03	17
1EICG-11	34.628	100	0.47	0.94	0.88	1.32	1.41	0.92	Eff.Bk.Snd.	21-Jan-03	17
1EICG-13	12.729	122	0.53	2.95	1.69	2.54	4.425	0.62	Eff.Bk.Snd.	21-Jan-03	17
3EICG-1	29.73	119	1.07	2.04	1.82	2.73	3.06	0.69	Eff.Bk.Snd.	21-Jan-03	17
3EICG-3	22.516	108	1.01	2.1	1.88	2.82	3.15	0.76	Eff.Bk.Snd.	21-Jan-03	17
3EICG-5	12.059	105	1.06	3.59	3.24	4.86	5.385	0.71	Eff.Bk.Snd.	21-Jan-03	17
3EICG-7	13.359	108	0.93	3.5	3.28	4.92	5.25	0.63	Eff.Bk.Snd.	21-Jan-03	17
3EICG-9	27.515	133	0.83	2.16	2	3	3.24	0.75	Eff.Bk.Snd.	21-Jan-03	17
3EICG-11	.	103	0.23	3.45	2.65	3.97	5.175	0.89	Eff.Bk.Snd.	21-Jan-03	17
3EICG-12	.	110	0.26	3.09	2.62	3.93	4.635	0.89	Eff.Bk.Snd.	21-Jan-03	17
3EICG-13	.	99	0.2	3.05	2.4	3.6	4.575	0.88	Eff.Bk.Snd.	21-Jan-03	17
3EICG-14	.	82	0.3	4.36	3.33	5	6.54	0.87	Eff.Bk.Snd.	21-Jan-03	17
7EICG-1	5.472	87	1.39	5.7	3.65	5.47	8.55	0.75	Effingham Inlet	21-Jan-03	17
7EICG-3	3.785	84	1.14	5.31	3.36	5.04	7.965	0.7	Effingham Inlet	21-Jan-03	17
7EICG-5	1.947	68	0.73	5.97	4.41	6.62	8.955	0.68	Effingham Inlet	21-Jan-03	17

Cultured Oyster Sample ID	whole blotted wet wt. (g)	Length (mm)	[AA]	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing using standardized ww	Cd corrected using actual ww	moisture%	site	Date Sampled	months at site
7EICG-7	3.141	71	0.98	5.3	4.13	6.19	7.95	0.67	Effingham Inlet	21-Jan-03	17
7EICG-9	3.445	61	1.34	7.02	3.53	5.3	10.53	0.55	Effingham Inlet	21-Jan-03	17
7EICG-11	1.299	51	0.59	8.55	4.29	6.44	12.825	0.65	Effingham Inlet	21-Jan-03	17
7EICG-13	8.912	74	1.28	4.13	3.75	5.63	6.195	0.71	Effingham Inlet	21-Jan-03	17
7EICG-15	1.608	58	0.58	6.75	5.44	8.16	10.125	0.7	Effingham Inlet	21-Jan-03	17
O1EICG-1	25.523	100	0.19	1.12	0.79	1.19	1.68	0.83	Effingham Inlet	22-Oct-02	14
O1EICG-3	13.837	84	0.36	2.41	1.56	2.33	3.615	0.76	Effingham Inlet	22-Oct-02	14
O1EICG-5	21.503	84	0.31	1.91	1.16	1.74	2.865	0.77	Effingham Inlet	22-Oct-02	14
O1EICG-7	8.194	106	0.27	1.95	1.17	1.75	2.925	0.72	Effingham Inlet	22-Oct-02	14
O1EICG-9	31.995	123	0.42	2.03	1.26	1.9	3.045	0.79	Effingham Inlet	22-Oct-02	14
1PCCG- 1	28.849	103	0.35	0.56	0.57	0.85	0.84	0.84	Fatty Basin	21-Jan-03	17
1PCCG- 3	33.661	93	0.26	0.55	0.61	0.91	0.825	0.87	Fatty Basin	21-Jan-03	17
1PCCG- 5	24.198	92	0.36	0.86	0.75	1.12	1.29	0.75	Fatty Basin	21-Jan-03	17
1PCCG- 7	24.352	95	0.32	0.57	0.66	0.99	0.855	0.88	Fatty Basin	21-Jan-03	17
1PCCG- 9	10.393	94	0.12	1.22	1.2	1.8	1.83	0.89	Fatty Basin	21-Jan-03	17
1PCCG- 10	3.367	71	0.07	1	0.9	1.35	1.5	0.92	Fatty Basin	21-Jan-03	17
1PCCG- 11	22.663	98	0.09	1	0.84	1.26	1.5	0.88	Fatty Basin	21-Jan-03	17
1PCCG- 12	11.857	108	0.07	0.8	0.8	1.2	1.2	0.9	Fatty Basin	21-Jan-03	17
O7PCCGD-1	8.414	.	0.18	1.4	0.83	1.24	2.1	0.76	Fatty Basin	23-Oct-02	14
O7PCCGD-3	15.914	76	0.15	0.74	0.58	0.87	1.11	0.87	Fatty Basin	23-Oct-02	14
O7PCCGD-5	17.232	91	0.2	1.14	0.79	1.18	1.71	0.74	Fatty Basin	23-Oct-02	14
O7PCCGD-7	12.045	76.5	0.03	2.03	1.45	2.18	3.045	0.85	Fatty Basin	23-Oct-02	14
O7PCCGD-9	22.651	98.8	0.17	1.2	0.79	1.19	1.8	0.79	Fatty Basin	23-Oct-02	14
PCCG-1	26.085	108.65	0.33	0.79	0.91	1.37	1.185	0.87	Fatty Basin	23-Oct-02	14
PCCG-3	5.609	94	0.31	2.81	0.84	1.26	4.215	0.89	Fatty Basin	23-Oct-02	14
PCCG-5	17.401	104.9	0.4	0.76	1.19	1.79	1.14	0.91	Fatty Basin	23-Oct-02	14
PCCG-7	14.324	99.25	0.3	1.41	1.07	1.6	2.115	0.84	Fatty Basin	23-Oct-02	14
PCCG-9	2.285	78.75	0.12	1.22	1.41	2.11	1.83	0.95	Fatty Basin	23-Oct-02	14
PCCG-11	3.659	78.15	0.18	1.22	1.23	1.85	1.83	0.85	Fatty Basin	23-Oct-02	14
PCCG-13	8.268	100.75	0.21	0.73	1.23	1.84	1.095	0.93	Fatty Basin	23-Oct-02	14
PCCG-15	10.907	109.3	0.23	1.09	0.89	1.34	1.635	0.85	Fatty Basin	23-Oct-02	14
3PCCG-1	14.057	101	0.38	0.95	1.09	1.64	1.425	0.87	Fatty Basin Paul C.	21-Jan-03	17
3PCCG-3	26.613	106	0.18	0.57	0.6	0.9	0.855	0.87	Fatty Basin Paul C.	21-Jan-03	17

Cultured Oyster Sample ID	whole blotted wet wt. (g)	Length (mm)	[AA]	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing using standardized ww	Cd corrected using actual ww	moisture%	site	Date Sampled	months at site
3PCCG-5	14.329	117	0.49	1.09	1.73	2.59	1.635	0.91	Fatty Basin Paul C.	21-Jan-03	17
3PCCG-7	13.832	92	0.42	0.97	1.06	1.59	1.455	0.85	Fatty Basin Paul C.	21-Jan-03	17
3PCCG-9	10.166	113	0.39	1.18	1.35	2.02	1.77	0.82	Fatty Basin Paul C.	21-Jan-03	17
3PCCG-11	19.543	106	0.41	1.27	0.91	1.36	1.905	0.74	Fatty Basin Paul C.	21-Jan-03	17
3PCCG-13	9.36	81	0.24	1.58	1.21	1.82	2.37	0.88	Fatty Basin Paul C.	21-Jan-03	17
7GHCG-1	4.685	59.6	0.25	1.91	1.31	1.97	2.865	0.75	Gorge Hrbr.	1-Oct-02	13
7GHCG-3	16.533	83.85	0.43	1.88	1.35	2.03	2.82	0.78	Gorge Hrbr.	1-Oct-02	13
7GHCG-5	5.501	79.2	0.25	1.88	1.51	2.27	2.82	0.75	Gorge Hrbr.	1-Oct-02	13
7GHCG-7	8.19	71.2	0.28	2.02	1.98	2.97	3.03	0.85	Gorge Hrbr.	1-Oct-02	13
7GHCG-9	8.469	60	0.41	2.66	2.09	3.13	3.99	0.8	Gorge Hrbr.	1-Oct-02	13
7GHCG-11	15.917	72.8	0.37	1.24	1.06	1.59	1.86	0.84	Gorge Hrbr.	1-Oct-02	13
7GHCG-13	10.052	87	0.24	1.76	1.05	1.58	2.64	0.75	Gorge Hrbr.	1-Oct-02	13
1GHCG-1	15.989	86	0.15	1.02	0.86	1.3	1.53	0.81	Gorge Hrbr.	1-Oct-02	13
1GHCG-3	12.367	79	0.33	1.5	0.88	1.32	2.25	0.76	Gorge Hrbr.	1-Oct-02	13
1GHCG-5	28.639	102	0.32	1.1	0.82	1.24	1.65	0.85	Gorge Hrbr.	1-Oct-02	13
1GHCG-7	30.14	90	0.46	0.94	0.72	1.08	1.41	0.85	Gorge Hrbr.	1-Oct-02	13
1GHCG-9	24.275	91	0.38	1.57	1.11	1.66	2.355	0.82	Gorge Hrbr.	1-Oct-02	13
D1GH-1	29.031	98	0.38	0.96	1.03	1.55	1.44	0.85	Gorge Hrbr.	4-Dec-02	15
D1GH-3	18.508	118	0.42	1.42	1.5	2.26	2.13	0.81	Gorge Hrbr.	4-Dec-02	15
D1GH-5	13.528	104	0.35	1.6	1.19	1.78	2.4	0.8	Gorge Hrbr.	4-Dec-02	15
D1GH-7	25.56	87	0.15	1.14	0.93	1.39	1.71	0.82	Gorge Hrbr.	4-Dec-02	15
D1GH-9	23.169	119	0.31	1.33	1.04	1.56	1.995	0.82	Gorge Hrbr.	4-Dec-02	15
D7GH-1	10.955	83	0.4	2.01	2.03	3.04	3.015	0.85	Gorge Hrbr.	4-Dec-02	15
D7GH-3	10.324	96	0.47	1.56	1.86	2.79	2.34	0.89	Gorge Hrbr.	4-Dec-02	15
D7GH-5	12.043	63	0.31	1.46	1.22	1.83	2.19	0.83	Gorge Hrbr.	4-Dec-02	15
D7GH-7	20.481	107	0.69	1.87	1.82	2.73	2.805	0.83	Gorge Hrbr.	4-Dec-02	15
D7GH-9	4.952	81	0.45	2.5	1.76	2.64	3.75	0.78	Gorge Hrbr.	4-Dec-02	15
3HBCG-1	5.002	96	0.19	1.49	1.84	2.76	2.235	0.85	Hank Bay	21-Jan-03	17
3HBCG-3	14.67	95	0.52	1.13	1.08	1.62	1.695	0.82	Hank Bay	21-Jan-03	17
3HBCG-5	20.299	117	0.41	1.66	1.17	1.76	2.49	0.75	Hank Bay	21-Jan-03	17
3HBCG-7	26.397	91	0.48	1.41	1.22	1.83	2.115	0.81	Hank Bay	21-Jan-03	17
3HBCG-9	33.063	110	0.42	0.83	1.11	1.67	1.245	0.82	Hank Bay	21-Jan-03	17
3HBCG-11	19.972	108	0.11	1.61	1.18	1.77	2.415	0.81	Hank Bay	21-Jan-03	17

Cultured Oyster Sample ID	whole blotted wet wt. (g)	Length (mm)	[AA]	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing using standardized ww	Cd corrected using actual ww	moisture%	site	Date Sampled	months at site
3HBCG-12	21.138	108	0.12	1.44	1.23	1.85	2.16	0.84	Hank Bay	21-Jan-03	17
3HBCG-13	3.574	58	0.14	1.3	1.6	2.4	1.95	0.93	Hank Bay	21-Jan-03	17
3HBCG-14	35.782	100	0.09	1.21	1.02	1.53	1.815	0.84	Hank Bay	21-Jan-03	17
1HBCG-1	27.936	104	0.36	0.96	0.77	1.16	1.44	0.77	Hank Bay	21-Jan-03	17
1HBCG-3	24.25	97	0.32	1.11	0.79	1.19	1.665	0.77	Hank Bay	21-Jan-03	17
1HBCG-5	11.046	85	0.28	1.32	0.91	1.36	1.98	0.76	Hank Bay	21-Jan-03	17
1HBCG-7	3.414	81	0.29	2.42	2.05	3.07	3.63	0.73	Hank Bay	21-Jan-03	17
1HBCG-9	22.774	99	0.43	1.23	1.05	1.58	1.845	0.76	Hank Bay	21-Jan-03	17
1HBCG-11	8.244	89	0.12	1.47	1.2	1.8	2.205	0.86	Hank Bay	21-Jan-03	17
1HBCG-12	17.849	107	0.08	1.35	0.9	1.35	2.025	0.79	Hank Bay	21-Jan-03	17
1HBCG-13	29.847	109	0.05	0.66	0.58	0.87	0.99	0.84	Hank Bay	21-Jan-03	17
1HBCG-14	15.839	88	0.06	0.96	0.72	1.08	1.44	0.85	Hank Bay	21-Jan-03	17
1HBCG-15	12.097	86	0.09	1.23	0.88	1.32	1.845	0.81	Hank Bay	21-Jan-03	17
HBCGD-1	14.482	103.15	0.28	1.28	0.77	1.15	1.92	0.75	Hank.B	23-Oct-02	14
HBCGD-3	25.459	87.2	0.36	1.14	0.88	1.32	1.71	0.82	Hank.B	23-Oct-02	14
HBCGD-5	7.924	57.4	0.33	1.57	1.01	1.52	2.355	0.8	Hank.B	23-Oct-02	14
HBCGD-7	15.877	71.2	0.3	1.61	1	1.49	2.415	0.79	Hank.B	23-Oct-02	14
HBCGD-9	9.208	61.2	0.23	1.34	0.78	1.17	2.01	0.81	Hank.B	23-Oct-02	14
HBCGD-11	4.752	88	0.34	2.87	0.93	1.4	4.305	0.79	Hank.B	23-Oct-02	14
HBCGD-13	10.117	90.35	0.27	1.25	0.83	1.24	1.875	0.82	Hank.B	23-Oct-02	14
1HCOVE-1	3.349	55	0.11	1.17	0.63	0.95	1.755	0.62	Hecate Cove	3-Jul-02	11
1HCOVE-3	1.455	38	0.04	1.61	0.79	1.18	2.415	0.95	Hecate Cove	3-Jul-02	11
1HCOVE-5	1.917	42.5	0.05	1.29	0.68	1.02	1.935	0.65	Hecate Cove	3-Jul-02	11
1HCOVE-7	4.235	56	0.07	1.23	0.58	0.87	1.845	0.69	Hecate Cove	3-Jul-02	11
1HCOVE-9	1.445	33.5	0.04	1.43	0.8	1.2	2.145	0.73	Hecate Cove	3-Jul-02	11
7HCOVE-1	0.447	24	0.02	1.75	1.29	1.94	2.625	0.73	Hecate Cove	3-Jul-02	11
7HCOVE-3	0.629	22	0.02	1.56	1.47	2.21	2.34	0.79	Hecate Cove	3-Jul-02	11
7HCOVE-5	0.196	20	0.01	1.7	1.02	1.53	2.55	0.73	Hecate Cove	3-Jul-02	11
7HCOVE-7	0.552	27.5	0.01	1.28	1.04	1.56	1.92	0.82	Hecate Cove	3-Jul-02	11
7HCOVE-9	0.314	33	0.02	1.98	0.8	1.2	2.97	0.76	Hecate Cove	3-Jul-02	11
O7HBCG-1	1.205	60	0.16	3.28	2.28	3.42	4.92	0.75	Humpback Bay	24-Oct-02	14
O7HBCG-3	3.486	57	0.24	2.7	1.92	2.89	4.05	0.79	Humpback Bay	24-Oct-02	14
O7HBCG-5	3.935	67	0.17	2.44	1.95	2.93	3.66	0.83	Humpback Bay	24-Oct-02	14

Cultured Oyster Sample ID	whole blotted wet wt. (g)	Length (mm)	[AA]	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing using standardized ww	Cd corrected using actual ww	moisture%	site	Date Sampled	months at site
O7HBCG-7	5.613	62	0.26	2.68	2	2.99	4.02	0.98	Humpback Bay	24-Oct-02	14
O5HBCG-1	2.533	56	0.15	2.43	1.47	2.21	3.645	0.64	Humpback Bay	24-Oct-02	14
O5HBCG-3	3.817	61	0.2	2.55	1.95	2.92	3.825	0.78	Humpback Bay	24-Oct-02	14
O5HBCG-5	2.246	73	0.11	2.84	1.76	2.63	4.26	0.72	Humpback Bay	24-Oct-02	14
O5HBCG-7	2.256	65	0.18	2.91	1.95	2.92	4.365	0.74	Humpback Bay	24-Oct-02	14
O5HBCG-9	3.419	64	0.13	2.12	1.38	2.08	3.18	0.77	Humpback Bay	24-Oct-02	14
5JFCG-1	19.696	88.8	0.45	1.36	1.13	1.69	2.04	0.75	J.Free Seddal Is.	21-Jan-03	17
5JFCG-3	10.827	71	0.3	1.05	1.02	1.53	1.575	0.84	J.Free Seddal Is.	21-Jan-03	17
5JFCG-5	1.279	57	0.2	3.32	2.31	3.46	4.98	0.71	J.Free Seddal Is.	21-Jan-03	17
5JFCG-7	7.092	61	0.29	1.19	1.66	2.49	1.785	0.89	J.Free Seddal Is.	21-Jan-03	17
5JFCG-9	6.67	71	0.26	1.29	1.19	1.78	1.935	0.82	J.Free Seddal Is.	21-Jan-03	17
5JFCG-11	11.989	78	0.14	0.85	0.75	1.12	1.275	0.8	J.Free Seddal Is.	21-Jan-03	17
1JFCG-1	16.676	91	0.19	1.1	0.84	1.27	1.65	0.84	J.Free Seddal Is.	21-Jan-03	17
1JFCG-3	32.521	101	0.29	0.75	0.61	0.92	1.125	0.86	J.Free Seddal Is.	21-Jan-03	17
1JFCG-5	13.943	73	0.22	0.99	0.95	1.42	1.485	0.82	J.Free Seddal Is.	21-Jan-03	17
1JFCG-7	30.427	85	0.27	0.69	0.66	0.99	1.035	0.82	J.Free Seddal Is.	21-Jan-03	17
1JFCG-9	7.321	80	0.29	1.5	0.96	1.43	2.25	0.74	J.Free Seddal Is.	21-Jan-03	17
1JFCG-11	14.728	76	0.27	1.13	0.94	1.41	1.695	0.78	J.Free Seddal Is.	21-Jan-03	17
1JFCG-13	5.614	58	0.17	0.63	0.64	0.96	0.945	0.89	J.Free Seddal Is.	21-Jan-03	17
1JFCG-15	14.519	67	0.18	0.59	0.48	0.72	0.885	0.82	J.Free Seddal Is.	21-Jan-03	17
JFCGS-1	12.926	71.2	0.16	0.63	0.42	0.63	0.945	0.86	J.Free Us.In.	23-Oct-02	14
JFCGS-3	24.796	85.1	0.21	0.51	0.37	0.56	0.765	0.87	J.Free Us.In.	23-Oct-02	14
JFCGS-5	10.422	75.3	0.22	0.75	0.5	0.75	1.125	0.83	J.Free Us.In.	23-Oct-02	14
JFCGS-7	11.128	60.2	0.12	0.57	0.36	0.54	0.855	0.8	J.Free Us.In.	23-Oct-02	14
JFCGS-9	3.663	119.5	0.11	0.72	0.48	0.72	1.08	0.83	J.Free Us.In.	23-Oct-02	14
O1MKCG-1	3.825	45	0.15	1.59	2.11	3.17	2.385	0.74	Metlakatla Bay	28-Oct-02	14
O1MKCG-3	2.173	51	0.13	2.14	1.85	2.77	3.21	0.86	Metlakatla Bay	28-Oct-02	14
O1MKCG-5	1.752	51	0.16	1.63	1.3	1.95	2.445	0.81	Metlakatla Bay	28-Oct-02	14
O1MKCG-7	0.853	51	0.17	1.81	1.7	2.56	2.715	0.79	Metlakatla Bay	28-Oct-02	14
O1MKCG-9	1.1	59	0.25	1.51	1.57	2.35	2.265	0.92	Metlakatla Bay	28-Oct-02	14
O7MKCG-1	1.821	60	0.14	3.85	1.53	2.29	5.775	0.91	Metlakatla Bay	28-Oct-02	14
O7MKCG-3	4.127	50	0.14	1.47	0.94	1.41	2.205	0.79	Metlakatla Bay	28-Oct-02	14
O7MKCG-5	4.097	46	0.08	1.94	1.62	2.44	2.91	0.82	Metlakatla Bay	28-Oct-02	14

Cultured Oyster Sample ID	whole blotted wet wt. (g)	Length (mm)	[AA]	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing using standardized ww	Cd corrected using actual ww	moisture%	site	Date Sampled	months at site
O7MKCG-7	3.095	42	0.04	2.22	1.78	2.67	3.33	0.82	Metlakatla Bay	28-Oct-02	14
O7MKCG-9	5.074	31	0.04	2.55	2.06	3.09	3.825	0.78	Metlakatla Bay	28-Oct-02	14
7OBCG-1	11.43	90	1.11	2.58	2.54	3.81	3.87	0.81	Orchard Bay	5-Dec-02	15
7OBCG-3	4.113	85	0.72	4.67	3.75	5.62	7.005	0.81	Orchard Bay	5-Dec-02	15
7OBCG-5	3.31	65	0.71	5.08	4.57	6.86	7.62	0.8	Orchard Bay	5-Dec-02	15
7OBCG-7	2.969	65	0.65	5.44	4.66	6.99	8.16	0.79	Orchard Bay	5-Dec-02	15
7OBCG-9	0.796	45	0.12	5.54	3.78	5.67	8.31	0.79	Orchard Bay	5-Dec-02	15
7OBCG-11	14.715	88	0.55	2.12	1.53	2.3	3.18	0.82	Orchard Bay	5-Dec-02	15
1OBCG-1	24.876	100	0.41	1.97	1.49	2.24	2.955	0.81	Orchard Bay	5-Dec-02	15
1OBCG-3	8.674	83	0.55	3.05	2.48	3.72	4.575	0.82	Orchard Bay	5-Dec-02	15
1OBCG-5	8.011	75	0.53	3.39	2.28	3.41	5.085	0.74	Orchard Bay	5-Dec-02	15
1OBCG-7	4.901	73	0.63	4.57	3.03	4.55	6.855	0.79	Orchard Bay	5-Dec-02	15
1OBCG-9	3.669	64.35	0.55	3.46	2.61	3.91	5.19	0.78	Orchard Bay	5-Dec-02	15
1OBCG-11	3.763	62	0.47	4.16	3.16	4.73	6.24	0.81	Orchard Bay	5-Dec-02	15
1OBCG-13	2.05	63	0.14	4.06	4.06	6.09	6.09	0.7	Orchard Bay	5-Dec-02	15
1/2/OBCG-1	6.486	71	0.33	1.37	1.44	2.17	2.055	0.88	Orchard Bay	1-Oct-02	14
1/2/OBCG-3	3.942	68	0.25	1.28	1.45	2.17	1.92	0.86	Orchard Bay	1-Oct-02	14
1/2/OBCG-5	7.434	76	0.42	1.1	0.86	1.3	1.65	0.84	Orchard Bay	1-Oct-02	14
1/2/OBCG-7	12.522	85	0.38	1.55	1.94	2.91	2.325	0.9	Orchard Bay	1-Oct-02	14
1/2/OBCG-9	7.739	74	0.19	1.23	1.1	1.66	1.845	0.85	Orchard Bay	1-Oct-02	14
O7OBCG-1	3.459	69	0.37	2.79	2.19	3.28	4.185	0.83	Orchard Bay	1-Oct-02	14
O7OBCG-3	5.181	58	0.39	2.3	2.59	3.88	3.45	0.84	Orchard Bay	1-Oct-02	14
O7OBCG-5	3.986	55	0.36	3.3	2.25	3.38	4.95	0.84	Orchard Bay	1-Oct-02	14
O7OBCG-7	4.41	56	0.34	2.38	1.88	2.83	3.57	0.88	Orchard Bay	1-Oct-02	14
O7OBCG-9	3.984	67.5	0.24	1.74	1.63	2.45	2.61	0.87	Orchard Bay	1-Oct-02	14
O1PHCG-1	13.856	74	0.18	1.11	0.82	1.23	1.665	0.81	Plumper Hrbr	3-Oct-02	14
O1PHCG-3	7.139	72	0.22	1.57	0.97	1.46	2.355	0.73	Plumper Hrbr	3-Oct-02	14
O1PHCG-5	11.336	62	0.28	1.53	1.01	1.51	2.295	0.77	Plumper Hrbr	3-Oct-02	14
O1PHCG-7	7.087	60	0.27	2.33	1.46	2.19	3.495	0.73	Plumper Hrbr	3-Oct-02	14
O1PHCG-9	20.234	68.3	0.31	1.85	1.12	1.67	2.775	0.72	Plumper Hrbr	3-Oct-02	14
O7PHCG-1	11.867	87	0.28	1.99	1.43	2.14	2.985	0.71	Plumper Hrbr	3-Oct-02	14
O7PHCG-3	4.599	48	0.3	2.31	1.65	2.47	3.465	0.69	Plumper Hrbr	3-Oct-02	14
O7PHCG-5	10.734	82	0.21	1.68	1.19	1.78	2.52	0.8	Plumper Hrbr	3-Oct-02	14

Cultured Oyster Sample ID	whole blotted wet wt. (g)	Length (mm)	[AA]	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing using standardized ww	Cd corrected using actual ww	moisture%	site	Date Sampled	months at site
O7PHCG-7	7.361	60	0.47	2.33	1.43	2.15	3.495	0.78	Plumper Hrbr	3-Oct-02	14
O7PHCG-9	6.987	71	0.21	1.89	1.47	2.21	2.835	0.83	Plumper Hrbr	3-Oct-02	14
O7PHCG-11	8.315	61	0.38	1.96	1.25	1.88	2.94	0.81	Plumper Hrbr	3-Oct-02	14
O7PNCG-1	2.165	43	0.1	1.56	1	1.5	2.34	0.75	Poetts Nook	22-Oct-02	15
O7PNCG-3	0.986	40	0.04	2.46	1.11	1.66	3.69	0.7	Poetts Nook	22-Oct-02	15
O7PNCG-5	4.744	36	0.08	0.81	1.38	2.07	1.215	0.78	Poetts Nook	22-Oct-02	15
O7PNCG-7	2.149	55	0.1	1.6	1.06	1.6	2.4	0.78	Poetts Nook	22-Oct-02	15
O7PNCG-9	0.5	42	0.04	1.38	0.91	1.37	2.07	0.74	Poetts Nook	22-Oct-02	15
7PNCG-1	8.618	82.5	0.32	1.26	0.75	1.12	1.89	0.75	Poetts Nook	21-Jan-03	17
7PNCG-3	5.614	65	0.22	1.55	1.29	1.94	2.325	0.81	Poetts Nook	21-Jan-03	17
7PNCG-5	6.309	72	0.26	1.73	1.4	2.1	2.595	0.81	Poetts Nook	21-Jan-03	17
7PNCG-7	6.607	92	0.25	1.59	1.24	1.86	2.385	0.9	Poetts Nook	21-Jan-03	17
7PNCG-9	2.883	77	0.08	1.38	1.36	2.05	2.07	0.9	Poetts Nook	21-Jan-03	17
7PNCG-11	5.734	31.15	0.19	1.41	1	1.5	2.115	0.84	Poetts Nook	21-Jan-03	17
7PNCG-13	6.462	62	0.23	1.66	1.41	2.11	2.49	0.82	Poetts Nook	21-Jan-03	17
1PNCG-1	10.351	80	0.25	1.21	0.92	1.37	1.815	0.81	Poetts Nook	20-Jan-03	17
1PNCG-3	5.232	63	0.16	1.03	1.14	1.7	1.545	0.8	Poetts Nook	20-Jan-03	17
1PNCG-5	15.019	87	0.14	0.92	0.79	1.18	1.38	0.81	Poetts Nook	20-Jan-03	17
1PNCG-7	8.997	56	0.28	0.89	0.77	1.16	1.335	0.86	Poetts Nook	20-Jan-03	17
1PNCG-9	18.098	93	0.3	1.03	0.86	1.29	1.545	0.8	Poetts Nook	20-Jan-03	17
F1PNCG-1	8.696	90	0.12	0.8	0.75	1.12	1.2	0.95	Poetts Nook	21-Jan-03	17
F3PNCG-1	20.531	98	0.33	1.11	0.79	1.19	1.665	0.76	Poetts Nook	21-Jan-03	17
1RBCG-1	13.003	106.3	0.85	2.97	2.38	3.58	4.455	0.79	Redonda Bay	5-Dec-02	15
1RBCG-3	33.8567	67.45	0.88	2.04	1.59	2.39	3.06	0.83	Redonda Bay	5-Dec-02	15
1RBCG-5	11.243	89	0.77	2.34	1.77	2.65	3.51	0.79	Redonda Bay	5-Dec-02	15
1RBCG-7	14.637	58	0.9	2.2	1.53	2.3	3.3	0.83	Redonda Bay	5-Dec-02	15
O7RBCG-1	25.753	91	0.51	1.37	1.04	1.56	2.055	0.82	Redonda Bay	1-Oct-02	14
O7RBCG-3	15.574	81	0.43	2.21	1.5	2.25	3.315	0.8	Redonda Bay	1-Oct-02	14
O7RBCG-5	21.532	50	0.56	1.99	1.53	2.3	2.985	0.84	Redonda Bay	1-Oct-02	14
O7RBCG-7	14.589	63	0.35	1.29	1.17	1.76	1.935	0.87	Redonda Bay	1-Oct-02	14
O7RBCG-9	11.486	78	0.3	2.12	1.84	2.77	3.18	0.83	Redonda Bay	1-Oct-02	14
O1RBCG-1	6.367	56	0.54	2.13	1.65	2.47	3.195	0.82	Redonda Bay	1-Oct-02	14
O1RBCG-3	1.479	37	0.19	3.63	2.68	4.02	5.445	0.82	Redonda Bay	1-Oct-02	14

Cultured Oyster Sample ID	whole blotted wet wt. (g)	Length (mm)	[AA]	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing using standardized ww	Cd corrected using actual ww	moisture%	site	Date Sampled	months at site
O1RBCG-5	0.59	23	0.08	2.94	2.63	3.95	4.41	0.82	Redonda Bay	1-Oct-02	14
O1RBCG-7	13.453	78	0.71	1.89	1.35	2.02	2.835	0.83	Redonda Bay	1-Oct-02	14
O1RBCG-9	9.035	57.9	0.63	2.92	2.12	3.18	4.38	0.82	Redonda Bay	1-Oct-02	14
7RBCG-1	7.642	86	0.45	2.88	2	3	4.32	0.76	Redonda Bay	5-Dec-02	16
7RBCG-3	7.681	60	0.57	2.32	1.54	2.31	3.48	0.77	Redonda Bay	5-Dec-02	16
7RBCG-5	3.563	53	0.27	3.2	2.18	3.28	4.8	0.78	Redonda Bay	5-Dec-02	16
7RBCG-7	1.469	41	0.23	3.71	2.28	3.41	5.565	0.8	Redonda Bay	5-Dec-02	16
7RBCG-8	2.462	44	0.29	3.31	1.98	2.97	4.965	0.74	Redonda Bay	5-Dec-02	16
1RSCGQ-1	2.658	45	0.24	2.6	1.85	2.78	3.9	0.86	Rennell Snd.	20-Oct-02	14
1RSCGQ-3	0.688	49	0.06	2.92	1.98	2.98	4.38	0.85	Rennell Snd.	20-Oct-02	14
1RSCGQ-5	1.827	35	0.18	2.82	1.92	2.88	4.23	0.79	Rennell Snd.	20-Oct-02	14
1RSCGQ-7	3.028	44	0.18	2.43	1.68	2.52	3.645	0.84	Rennell Snd.	20-Oct-02	14
1RSCGQ-9	3.1635	49	0.26	2.8	1.78	2.67	4.2	0.73	Rennell Snd.	20-Oct-02	14
1RSCGQ-11	1.079	36	0.15	3.75	2.25	3.37	5.625	0.75	Rennell Snd.	20-Oct-02	14
1RSCGQ-13	5.73	70	0.27	1.66	1.08	1.61	2.49	0.77	Rennell Snd.	20-Oct-02	14
O5RSCG-1	2.265	64	0.14	2.44	1.78	2.67	3.66	0.75	Rennell Snd.	20-Oct-02	14
O5RSCG-3	2.496	47	0.14	2.33	1.54	2.31	3.495	0.74	Rennell Snd.	20-Oct-02	14
O5RSCG-5	2.101	75	0.11	2.19	1.8	2.71	3.285	0.79	Rennell Snd.	20-Oct-02	14
O5RSCG-7	2.019	60	0.16	2.13	1.66	2.49	3.195	0.76	Rennell Snd.	20-Oct-02	14
O5RSCG-9	4.125	76	0.16	1.72	1.44	2.15	2.58	0.83	Rennell Snd.	20-Oct-02	14
O3RSCG-1	10.527	63	0.16	0.86	0.5	0.75	1.29	0.8	Rich. Steel	23-Oct-02	14
O3RSCG-3	6.646	74	0.08	0.78	0.52	0.77	1.17	0.71	Rich. Steel	23-Oct-02	14
O3RSCG-5	11.39	70	0.11	0.68	0.42	0.63	1.02	0.8	Rich. Steel	23-Oct-02	14
O3RSCG-7	10.364	72	0.22	1.08	0.73	1.09	1.62	0.8	Rich. Steel	23-Oct-02	14
O3RSCG-9	5.271	68	0.19	1.11	0.67	1	1.665	0.8	Rich. Steel	23-Oct-02	14
3RSCG-1	27.972	92	0.62	1.14	1.04	1.57	1.71	0.82	Richard St.	21-Jan-03	17
3RSCG-3	23.214	94	0.44	1.1	1.03	1.55	1.65	0.97	Richard St.	21-Jan-03	17
3RSCG-5	6.515	89	0.25	1.48	1.08	1.62	2.22	0.78	Richard St.	21-Jan-03	17
3RSCG-7	11.199	78	0.62	1.49	1.35	2.02	2.235	0.79	Richard St.	21-Jan-03	17
3RSCG-9	16.222	111	0.63	1.64	1.16	1.74	2.46	0.76	Richard St.	21-Jan-03	17
3RSCG-11	7.983	61	0.63	1.36	1.35	2.02	2.04	0.84	Richard St.	21-Jan-03	17
3RSCG-13	13.061	68	0.65	1.27	1	1.5	1.905	0.83	Richard St.	21-Jan-03	17
N7PICG-1	5.919	67	0.43	2.84	1.83	2.74	4.26	0.81	Rivers Inlet	28-Nov-02	15

Cultured Oyster Sample ID	whole blotted wet wt. (g)	Length (mm)	[AA]	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing using standardized ww	Cd corrected using actual ww	moisture%	site	Date Sampled	months at site
N7PICG-3	4.586	59	0.37	2.56	2.28	3.42	3.84	0.84	Rivers Inlet	28-Nov-02	15
N7PICG-5	3.193	50	0.12	1.6	1.57	2.36	2.4	0.86	Rivers Inlet	28-Nov-02	15
N7PICG-7	3.952	62	0.17	2.33	1.72	2.58	3.495	0.81	Rivers Inlet	28-Nov-02	15
N7PICG-9	5.056	63	0.23	2.52	1.88	2.82	3.78	0.82	Rivers Inlet	28-Nov-02	15
7PEND-1	0.791	34	0.08	2.59	2.6	3.9	3.885	0.84	Rivers Inlet	4-Jul-02	11
7PEND-3	1.669	48.3	0.15	2.46	2.2	3.31	3.69	0.9	Rivers Inlet	4-Jul-02	11
7PEND-5	1.082	33	0.03	1.51	1.28	1.91	2.265	0.88	Rivers Inlet	4-Jul-02	11
7PEND-7	0.951	38	0.06	2.72	2.33	3.49	4.08	0.86	Rivers Inlet	4-Jul-02	11
7PEND-9	0.671	32	0.04	1.43	1.55	2.33	2.145	0.89	Rivers Inlet	4-Jul-02	11
7PEND-11	2.22	53	0.12	1.98	1.87	2.8	2.97	0.87	Rivers Inlet	4-Jul-02	11
TOSB-1	0.791	35.5	0.06	2.73	1.74	2.61	4.095	0.73	Sooke Basin (time 0)	22-Jul-02	0
TOSB-3	0.255	31	0.02	2.14	1.19	1.78	3.21	0.42	Sooke Basin (time 0)	22-Jul-02	0
TOSB-5	0.102	30	0.01	4.38	1.31	1.97	6.57	0.62	Sooke Basin (time 0)	22-Jul-02	0
TOSB-7	0.239	31	0.03	3.52	2.33	3.5	5.28	0.85	Sooke Basin (time 0)	22-Jul-02	0
TOSB-9	0.19	31	0.03	4.48	2.83	4.25	6.72	0.67	Sooke Basin (time 0)	22-Jul-02	0
TOSB-11	0.177	28.8	0.04	5.69	2.16	3.24	8.535	0.71	Sooke Basin (time 0)	22-Jul-02	0
7TACG-1	3.971	68	0.36	4.43	3.02	4.53	6.645	0.71	Teakerne Arm	5-Dec-02	15
7TACG-3	10.468	76	0.53	1.97	1.99	2.98	2.955	0.81	Teakerne Arm	5-Dec-02	15
7TACG-5	7.396	76	0.63	3.36	3.23	4.85	5.04	0.82	Teakerne Arm	5-Dec-02	15
7TACG-7	4.578	70	0.47	3.7	2.85	4.27	5.55	0.79	Teakerne Arm	5-Dec-02	15
7TACG-9	3.048	61	0.27	3.09	2.65	3.98	4.635	0.76	Teakerne Arm	5-Dec-02	15
7/2/TACG-1	12.865	78	0.69	2.69	2.28	3.42	4.035	0.78	Teakerne Arm	1-Oct-02	14
7/2/TACG-3	7.941	76	0.41	1.84	1.38	2.07	2.76	0.79	Teakerne Arm	1-Oct-02	14
7/2/TACG-5	10.632	63	0.3	1.41	0.98	1.47	2.115	0.79	Teakerne Arm	1-Oct-02	14
7/2/TACG-7	9.031	69	0.47	2.27	1.79	2.69	3.405	0.82	Teakerne Arm	1-Oct-02	14
7/2/TACG-9	2.188	39	0.21	2.62	2.1	3.16	3.93	0.8	Teakerne Arm	1-Oct-02	14
O1TACG-1	14.623	79	0.51	1.9	1.5	2.25	2.85	0.87	Teakerne Arm	1-Oct-02	14
O1TACG-3	11.051	64	0.46	1.71	1.29	1.94	2.565	0.82	Teakerne Arm	1-Oct-02	14
O1TACG-7	9.807	70	0.44	1.76	1.68	2.51	2.64	0.88	Teakerne Arm	1-Oct-02	14
O1TACG-9	9.586	61.5	0.33	1.74	1.64	2.46	2.61	0.87	Teakerne Arm	1-Oct-02	14
D1TACG-1	4.996	62	0.34	2.44	2.53	3.79	3.66	0.84	Teakerne Arm	5-Dec-02	16
D1TACG-3	17.565	99	0.78	1.68	1.64	2.46	2.52	0.86	Teakerne Arm	5-Dec-02	16
D1TACG-5	25.008	102	0.56	0.89	1.26	1.89	1.335	0.86	Teakerne Arm	5-Dec-02	16

Cultured Oyster Sample ID	whole blotted wet wt. (g)	Length (mm)	[AA]	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing using standardized ww	Cd corrected using actual ww	moisture%	site	Date Sampled	months at site
D1TACG-7	9.878	90	0.63	2.94	2.22	3.33	4.41	0.81	Teakerne Arm	5-Dec-02	16
D1TACG-9	2.351	47	0.11	2.1	2.21	3.32	3.15	0.86	Teakerne Arm	5-Dec-02	16
1TCCG-1	11.656	72	0.28	1.17	0.66	0.99	1.755	0.66	Thors Cove	1-Oct-02	14
1TCCG-3	9.94	75	0.39	1.58	1	1.51	2.37	0.81	Thors Cove	1-Oct-02	14
1TCCG-5	1.62	50	0.2	1.86	1.24	1.86	2.79	0.68	Thors Cove	1-Oct-02	14
1TCCG-7	7.206	62	0.28	2.09	0.92	1.37	3.135	0.71	Thors Cove	1-Oct-02	14
1TCCG-9	7.997	64	0.46	2.99	1.44	2.16	4.485	0.74	Thors Cove	1-Oct-02	14
D1THOR-1	10.444	67	0.55	2.25	1.72	2.58	3.375	0.81	Thors Cove	4-Dec-02	16
D1THOR-3	9.127	80	0.61	2.12	1.73	2.6	3.18	0.83	Thors Cove	4-Dec-02	16
D1THOR-5	12.696	82	0.36	1.11	0.76	1.14	1.665	0.86	Thors Cove	4-Dec-02	16
D1THOR-7	7.082	76	0.47	1.94	1.43	2.15	2.91	0.76	Thors Cove	4-Dec-02	16
D1THOR-9	4.606	53	0.14	1.77	1.43	2.15	2.655	0.86	Thors Cove	4-Dec-02	16
D7THOR-1	2.938	56	0.35	3.29	2.83	4.24	4.935	0.79	Thors Cove	4-Dec-02	16
D7THOR-3	4.08	58	0.25	2.31	2.33	3.49	3.465	0.86	Thors Cove	4-Dec-02	16
D7THOR-5	6.97	63	0.27	0.85	3.61	5.42	1.275	0.8	Thors Cove	4-Dec-02	16
D7THOR-7	2.094	55	0.17	3.9	3.5	5.25	5.85	0.79	Thors Cove	4-Dec-02	16
D7THOR-9	1.136	35	0.08	3.08	2.94	4.4	4.62	0.88	Thors Cove	4-Dec-02	16
OT.COVE-1	1.586	43	0.17	3.18	2.1	3.15	4.77	0.79	Thors Cove	1-Oct-02	14
OT.COVE-3	1.727	52	0.16	3.89	2.24	3.35	5.835	0.68	Thors Cove	1-Oct-02	14
OT.COVE-5	2.29	53	0.12	2.98	2.09	3.13	4.47	0.79	Thors Cove	1-Oct-02	14
OT.COVE-7	3.896	52	0.14	2.35	1.79	2.69	3.525	0.81	Thors Cove	1-Oct-02	14
OT.COVE-9	2.808	45	0.17	3.17	2.23	3.35	4.755	0.77	Thors Cove	1-Oct-02	14
O73BCG-1	3.622	52	0.2	3.5	2.38	3.56	5.25	0.73	Three Bay Cove	3-Oct-02	14
O73BCG-3	1.419	51	0.14	3.84	3	4.49	5.76	0.89	Three Bay Cove	3-Oct-02	14
O73BCG-5	1.088	38	0.09	3.95	2.97	4.45	5.925	0.79	Three Bay Cove	3-Oct-02	14
O73BCG-7	6.771	63	0.37	2.18	1.56	2.33	3.27	0.77	Three Bay Cove	3-Oct-02	14
O73BCG-9	3.89	54	0.38	4.32	2.76	4.14	6.48	0.74	Three Bay Cove	3-Oct-02	14
O13BCG-1	6.164	57	0.23	2.1	1.31	1.97	3.15	0.79	Three Bay Cove	3-Oct-02	14
O13BCG-3	3.817	57	0.29	1.92	1.37	2.05	2.88	0.8	Three Bay Cove	3-Oct-02	14
O13BCG-5	11.838	48.5	0.17	1.6	1.12	1.68	2.4	0.85	Three Bay Cove	3-Oct-02	14
O13BCG-7	4.395	62.5	0.42	2.96	1.88	2.83	4.44	0.79	Three Bay Cove	3-Oct-02	14
O13BCG-9	7.896	81	0.42	2.05	1.33	2	3.075	0.76	Three Bay Cove	3-Oct-02	14
D1TVBY-1	6.848	58	0.16	1.76	1.5	2.25	2.64	0.84	Trev. Bay	4-Dec-02	16

Cultured Oyster Sample ID	whole blotted wet wt. (g)	Length (mm)	[AA]	total [Cd] w/w (ug Cd/g)	standardized [Cd] w/w (ug Cd/g)	Cd corrected for freezing using standardized ww	Cd corrected using actual ww	moisture%	site	Date Sampled	months at site
D1TVBY-3	4.34	58	0.13	1.41	1.28	1.93	2.115	0.86	Trev. Bay	4-Dec-02	16
D1TVBY-5	3.738	59	0.2	1.95	1.84	2.76	2.925	0.85	Trev. Bay	4-Dec-02	16
D1TVBY-7	3.071	53	0.12	1.66	1.59	2.39	2.49	0.86	Trev. Bay	4-Dec-02	16
D1TVBY-9	9.412	72	0.37	2.35	1.82	2.73	3.525	0.82	Trev. Bay	4-Dec-02	16
D7TVBY-1	5.516	78	0.52	2.6	2.06	3.09	3.9	0.8	Trev. Bay	4-Dec-02	16
D7TVBY-3	4.026	43	0.24	2.31	2.12	3.17	3.465	0.82	Trev. Bay	4-Dec-02	16
D7TVBY-5	6.229	75	0.17	1.98	1.85	2.78	2.97	0.86	Trev. Bay	4-Dec-02	16
D7TVBY-7	4.9	63	0.16	1.22	1.47	2.21	1.83	0.87	Trev. Bay	4-Dec-02	16
D7TVBY-9	1.469	48	0.16	3.56	2.76	4.14	5.34	0.81	Trev. Bay	4-Dec-02	16
7TBCG-1	3.786	60	0.56	2.5	1.19	1.78	3.75	0.81	Trevenen Bay	1-Oct-02	14
7TBCG-3	5.248	70	0.4	1.5	0.93	1.39	2.25	0.83	Trevenen Bay	1-Oct-02	14
7TBCG-5	4.092	64	0.32	1.52	1.27	1.9	2.28	0.84	Trevenen Bay	1-Oct-02	14
7TBCG-7	4.708	46.3	0.27	1.37	1.31	1.97	2.055	0.87	Trevenen Bay	1-Oct-02	14
7TBCG-9	2.23	57.5	0.17	2.18	2.14	3.21	3.27	0.86	Trevenen Bay	1-Oct-02	14
O1TBCG-1	19.626	87	0.36	1.21	1	1.5	1.815	0.88	Trevenen Bay	1-Oct-02	14
O1TBCG-3	17.576	87	0.37	1.52	1.37	2.06	2.28	0.87	Trevenen Bay	1-Oct-02	14
O1TBCG-5	12.344	52	0.45	1.31	0.8	1.2	1.965	0.75	Trevenen Bay	1-Oct-02	14
O1TBCG-7	8.428	65	0.37	1.04	0.77	1.15	1.56	0.81	Trevenen Bay	1-Oct-02	14
O1TBCG-9	2.089	46	0.14	2.36	1.73	2.6	3.54	0.74	Trevenen Bay	1-Oct-02	14
				2.0702394 (average)	**1.58031915 (average)**	**2.370691489 (average)**	**3.105359043 (average)**				

Attachment (3) Tables (A) and (B) Data on Oysters caught off the East Coast of Canada [Supplied by the Canadian Food Inspection Agency (CFIA)] The data set in Table A represents 1998 data on oysters caught off of the New Brunswick coast (except data from Lobster Bay which is in Nova Scotia) and the data in Table B represents 1989-1993 data, also on oysters caught off of the New Brunswick coast.

With regard to the Moncton data, the following should be kept in mind:

1. The difference between "meat" and "whole" is that the digestive gland was separated from the animal before analysis for the "meat" samples.
2. The analysis done on whole animals were from lots that were sold for human consumption. The whole animal is consumed by humans.
3. Most of the samples are from the Gulf Shore of Nova Scotia where there is a low heavy metal content in the natural sediment. In North Eastern New Brunswick, the sediments have a higher heavy metal content.

TABLE A: CADMIUM DATA FOR OYSTERS FROM THE DARTMOUTH, NOVA SCOTIA LAB

Sampling Site	Sample Source	Species	Date Sampled	Analyte	Estimate	Units
Lobster Bay	S. d'Entremont	Crassostrea virginica	96.03.20	Cd	0.34	ug/g
Bouctouche Harbour		Crassostrea virginica	29-Apr-98	Cd	0.35	ug/g
Bouctouche Harbour		Crassostrea virginica	29-Apr-98	Cd	0.32	ug/g
Bouctouche Harbour		Crassostrea virginica	29-Apr-98	Cd	0.35	ug/g
Bouctouche Harbour		Crassostrea virginica	29-Apr-98	Cd	0.34	ug/g
Bouctouche Harbour		Crassostrea virginica	29-Apr-98	Cd	0.29	ug/g
Average					0.33	

TABLE B: CADMIUM DATA FOR OYSTERS FROM THE MONCTON, NEW BRUNSWICK LAB

Sample #	Date sampled	Area	Type of Inspection	For	Form	Product	[Cd] (ppm)
93-016	11/17/1993	Antigonish, N.S.	Inspection	Heavy metal and pesticide analysis	By Products (Tongue,cheeks,liver,head,etc)	oysters	0.47
91-009	5/27/1991	Antigonish, N.S.	Monitoring	Heavy metal analyses	Round, whole or in shell - Fresh	Oysters	0.188
91-010	5/17/1991	Antigonish, N.S.	Monitoring	Heavy metal analyses	Round, whole or in shell - Fresh	Oysters	0.285
91-011	5/27/1991	Antigonish, N.S.	Monitoring	Heavy metal analyses	Round, whole or in shell - Fresh	Oysters	0.258
91-013	5/1/1991	Antigonish, N.S.	Monitoring	Heavy metal analyses	Round, whole or in shell - Fresh	Oysters	0.25
91-017	5/6/1991	Antigonish, N.S.	Monitoring	Heavy metal analysis	Round, whole or in shell - Fresh	Oysters	0.21
91-045	9/19/1990	Antigonish, N.S.	Heavy Metal Analysis	Monitoring	Round, whole or in shell - Fresh	Oysters	0.071
						Average	0.210
92-033	11/10/1991	Charlottetown, P.E.I.	Inspection	Heavy Metal Analysis	Round/Whole/In Shell	Whole oysters	0.46
90-004	2/9/1990	Shediac, N.B.	Inspection		Meat or Peeled/Shucked - Frozen	Oysters in shell	0.55
90-038	6/6/1990	Shediac, N.B.	Inspection	Chemical analysis	Meat or Peeled/Shucked - Frozen	Fresh oysters in shell	0.48
90-039	6/6/1990	Shediac, N.B.	Inspection	Chemical analysis	Meat or Peeled/Shucked - Frozen	Fresh oysters in shell	0.56
						Average	0.53
91-030	7/5/1991	Shediac, N.B.	Surveillance	Analyse de metaux lourds	Round, whole or in shell - Fresh	HuŒtres	0.337
91-032	7/5/1991	Shediac, N.B.	Surveillance	Analyse de metaux lourds	Round, whole or in shell - Fresh	HuŒtres	0.116
							0.227
94-024	8/2/1994	Shippagan, N.-B.	Inspection	Analyses de mercure et de metaux lourds - Baie de Chaleur - Mollusque	By Products (Tongue,cheeks,liver,head,etc)	huŒtres congel,es	0.04
89-076-1	10/6/1989	Shippagan, N.-B.	Inspection	Ouverture d'une bature	By Products (Tongue,cheeks,liver,head,etc)	Huitre, muscles	0.15
89-081-2	10/6/1989	Shippagan, N.-B.	Inspection	Ouvert. d'une bature - Miramichi	By Products (Tongue,cheeks,liver,head,etc)	Mollusques	0.47
						Average	0.22

Sample #	Date sampled	Area	Type of Inspection	For	Form	Product	[Cd] (ppm)
89-076-2	10/6/1989	Shippagan, N.-B.	Inspection	Ouverture d'une bature	congel,es	Huitre, glandes digestives	0.56
89-078-1	10/6/1989	Shippagan, N.-B.	Insepction	Overture d'une bature	Meat or Peeled/Shucked - Fresh	Huitre ,muscles.	0.52
89-078-2	10/6/1989	Shippagan, N.-B.	Insepction	Overture d'une bature	Meat or Peeled/Shucked - Fresh	Huitre ,glandes digestives.	0.54
89-079-1	10/13/1989	Shippagan, N.-B.	Inspection	Ouverture d`une bature	Meat or Peeled/Shucked - Frozen	Huitres ,muscles	0.35
89-079-2	10/6/1989	Shippagan, N.-B.	Inspection	Ouverture d`une bature - Miramichi	Meat or Peeled/Shucked - Frozen	Huitres,Glandes digestives	0.56
89-081-1	10/6/1989	Shippagan, N.-B.	Inspection	Ouverture d'une bature - Miramichi	Meat or Peeled/Shucked - Frozen	mollusques	0.48
90-066	9/21/1990	Shippagan, N.-B.	Surveillance	Analyses chimiques - Labo.	Meat or Peeled/Shucked - Frozen	Huitres en carapace (congelees).	0.27
						Average	0.469
90-067	9/21/1990	Shippagan, N.-B.	Inspection	Analyses chimiques - Baie de Chaleur	Round, whole or in shell - Fresh	Huitres en carapace (congelees).	0.43

Attachment (4) Tables A, B-1, and B-2 Summarized West Coast Oyster Data from the Year 2000 and Detailed Data for Various Years

(Supplied by the Canadian Food Inspection Agency)

Please find below Table A containing summary data that is limited to the 2000 survey data. Table B-1 contains data statistics for the complete cadmium survey data, including data from earlier year. Table B-2 contains the data from the complete cadmium survey data, including data from earlier years.

The following are some other points related to this issue:

1. The Cadmium is naturally occuring.
2. The historical and the 2000 survey data have similar profiles.
3. Approximatley 80% of BC oysters are exported.
4. A collaborative study is being undertaken by BC Government, the Department of Fisheries and Oceans (DFO), and industry to assess the impact of geographic locations and time in oyster Cadmium levels. They will be analysing oysters, from the same seed stock,as they grow in various geographical locations

Table A: Cadmium Data for B.C. Oysters from a survey conducted in 2000.*

Area	Mean Cd (ppm)	Median Cd (ppm)	% ∃2ppm	Low Cd (ppm)	High Cd (ppm)	No. Samp.
13	2.54	2.42	65%	1.19	5.10	17
14	2.14	2.09	60%	0.16	6.02	25
15	3.05	2.59	81%	1.33	5.55	27
16	3.14	3.06	95%	1.24	4.78	20
17	1.36	1.32	14%	0.58	2.87	21
18/19	2.12	2.24	75%	1.54	2.46	4
23	2.79	2.63	70%	1.43	4.57	10
24	1.87	1.97	33%	0.51	3.00	15
25	2.03	2.32	75%	0.86	2.60	4
Areas 13 to 19	2.46	2.28	65%	0.16	6.02	114
Areas 23 to 25	2.24	2.10	48%	0.51	4.57	29
All Areas	2.41	2.24	62%	0.16	6.02	143

* Data from CFIA and EC analyses as of 31/08/00.

Table B-1: Summary of Cadmium Data for B.C. Oysters from the year 2000 and earlier years (organised by area).

Area	**Mean [Cd] (ppm)**	**Med'n [Cd] (ppm)**	**Min [Cd] (ppm)**	**Max [Cd] (ppm)**	**% >2ppm**	**count**	**Stand. Dev.**
Area 13	2.54	2.42	1.19	5.10	65	17	1.018
Area 14	2.14	2.09	0.16	6.02	60	25	1.097
Area 15	3.05	2.59	1.33	5.55	81	27	1.248
Area 16	3.14	3.06	1.24	4.78	95	20	0.936
Area 17	1.36	1.32	0.58	2.87	14	21	0.472
Area 18/19	2.12	2.24	1.54	2.46	75	4	0.416
Area 23	2.79	2.63	1.43	4.57	70	10	1.033
Area 24	1.87	1.97	0.51	3.00	33	15	0.693
Area 25	2.03	2.32	0.86	2.60	75	4	0.801
Inside Waters	2.46	2.28	--	--	65	114	--
West Coast Waters	2.24	2.10	--	--	48	29	--
All samples	2.41	2.24	--	--	62	143	--

Table B-2: Cadmium Data for B.C. Oysters from the year 2000 and earlier years (organised by area).

	Date	**Stat. Area**	**Cd (ppm)**
1	16-Aug-00	13	1.19
2	EC data	13	1.28
3	Aug-00	13	1.56
4	Aug-00	13	1.62
5	Aug-00	13	1.66
6	**Aug-00**	**13**	**2.13**
7	**Mar-00**	**13**	**2.24**
8	**EC data**	**13**	**2.40**
9	**EC data**	**13**	**2.42**
10	**Mar-00**	**13**	**2.58**
11	**May-00**	**13**	**2.67**
12	**Mar-00**	**13**	**2.90**
13	**Mar-00**	**13**	**2.97**
14	**EC data**	**13**	**3.04**
15	**EC data**	**13**	**3.40**
16	**Mar-00**	**13**	**4.10**
17	**Feb-00**	**13**	**5.10**
1	Nov-97	14	0.16
2	Apr-93	14	0.60
3	Mar-95	14	1.01
4	Apr-93	14	1.23
5	May-97	14	1.36
6	EC data	14	1.42
7	Jun-00	14	1.86
8	Jul-00	14	1.91

	Date	Stat. Area	Cd (ppm)
9	Jul-00	14	1.95
10	Aug-00	14	1.97
11	**Jul-00**	**14**	**2.03**
12	**Mar-00**	**14**	**2.07**
13	**Jun-00**	**14**	**2.09**
14	**Apr-00**	**14**	**2.20**
15	**Apr-00**	**14**	**2.20**
16	**Mar-00**	**14**	**2.21**
17	**Jun-00**	**14**	**2.28**
18	**May-97**	**14**	**2.30**
19	**Jul-93**	**14**	**2.37**
20	**Jul-00**	**14**	**2.43**
21	**Jun-00**	**14**	**2.46**
22	**Jul-93**	**14**	**2.57**
23	**Jun-00**	**14**	**2.76**
24	**Mar-00**	**14**	**3.94**
25	**Jul-93**	**14**	**6.02**
1	Mar-96	15	1.33
2	EC data	15	1.38
3	EC data	15	1.74
4	Apr-00	15	1.91
5	Mar-00	15	1.96
6	**EC data**	**15**	**2.00**
7	**Aug-00**	**15**	**2.15**
8	**Mar-00**	**15**	**2.24**
9	**Mar-00**	**15**	**2.24**
10	**Aug-00**	**15**	**2.33**
11	**EC data**	**15**	**2.38**
12	**EC data**	**15**	**2.48**
13	**EC data**	**15**	**2.48**
14	**Mar-00**	**15**	**2.59**
15	**Nov-96**	**15**	**2.61**
16	**EC data**	**15**	**2.80**
17	**EC data**	**15**	**3.18**
18	**Mar-00**	**15**	**3.34**
19	**Apr-00**	**15**	**3.70**
20	**Mar-00**	**15**	**3.72**
21	**Mar-00**	**15**	**3.80**
22	**Apr-00**	**15**	**4.40**
23	**EC data**	**15**	**4.56**
24	**Mar-00**	**15**	**4.87**
25	**Mar-00**	**15**	**5.10**
26	**Mar-00**	**15**	**5.47**
27	**Mar-00**	**15**	**5.55**

	Date	Stat. Area	Cd (ppm)
1	Nov-96	16	1.24
2	**Jul-95**	**16**	**2.17**
3	**Jul-00**	**16**	**2.24**
4	**Jul-00**	**16**	**2.30**
5	**EC data**	**16**	**2.50**
6	**Jul-00**	**16**	**2.54**
7	**Aug-00**	**16**	**2.56**
8	**EC data**	**16**	**2.82**
9	**Jul-00**	**16**	**2.97**
10	**Aug-00**	**16**	**3.05**
11	**Jul-00**	**16**	**3.06**
12	**Mar-00**	**16**	**3.17**
13	**Jul-00**	**16**	**3.22**
14	**EC data**	**16**	**3.26**
15	**May-97**	**16**	**3.33**
16	**Jul-95**	**16**	**4.07**
17	**Mar-00**	**16**	**4.25**
18	**Jul-00**	**16**	**4.63**
19	**Jul-00**	**16**	**4.63**
20	**Aug-00**	**16**	**4.78**
1	EC data	17	0.58
2	EC data	17	0.66
3	Jun-93	17	0.71
4	EC data	17	0.78
5	Jun-93	17	0.88
6	Jul-00	17	0.93
7	Mar-95	17	0.97
8	EC data	17	1.10
9	EC data	17	1.14
10	EC data	17	1.26
11	EC data	17	1.32
12	EC data	17	1.36
13	EC data	17	1.38
14	Jul-00	17	1.47
15	Mar-00	17	1.58
16	Apr-00	17	1.82
17	EC data	17	1.64
18	Jul-00	17	1.67
19	**Jul-00**	**17**	**2.19**
20	**Mar-00**	**17**	**2.18**
21	**Jul-00**	**17**	**2.87**
1	**EC data**	**18**	**2.10**
2	EC data	19	1.54
3	**EC data**	**19**	**2.38**
4	**EC data**	**19**	**2.46**

	Date	Stat. Area	Cd (ppm)
1	Jul-00	23	1.43
2	Apr-00	23	1.52
3	Jul-00	23	1.59
4	**Apr-00**	**23**	**2.51**
5	**Mar-00**	**23**	**2.58**
6	**Jul-00**	**23**	**2.68**
7	**Jul-00**	**23**	**3.58**
8	**Jul-93**	**23**	**3.71**
9	**Jul-00**	**23**	**3.77**
10	**Mar-00**	**23**	**4.57**
1	Jan-97	24	0.51
2	Oct-94	24	1.10
3	Jan-96	24	1.24
4	Jul-93	24	1.30
5	Jul-00	24	1.46
6	Mar-00	24	1.54
7	Jul-00	24	1.85
8	Jul-00	24	1.97
9	Mar-00	24	1.97
10	Mar-00	24	1.99
11	**Mar-00**	**24**	**2.07**
12	**Mar-00**	**24**	**2.61**
13	**Feb-00**	**24**	**2.70**
14	**Mar-00**	**24**	**2.70**
15	**Mar-00**	**24**	**3.00**
1	Apr-93	25	0.86
2	**Mar-00**	**25**	**2.13**
3	**Mar-00**	**25**	**2.51**
4	**Mar-00**	**25**	**2.60**

Attachment (5) Additional Notes (Supplied by Department of Fisheries and Oceans and Health Canada)

The following additional notes are offered for information:

- It has been estimated that the Atlantic has 3-5x less dissolved Cd than the North Pacific, which is reflected in residues, confirmed by the extensive NOAA MusselWatch data base...as well as in Europe.
- The mean weights of cultured and wild oyster that DFO/BC Fisheries collected after the initial CFIA 2000 survey are given in the Table below.

At sites DLC (Barkley Sound) and LIW (Lasqueti Island), a broad range of sizes was purposely selected to check for Cd residue vs meat size. The rest represent oysters provided by growers (C) and matched as closely as possible in size to wild (W) ones growing nearby.

The locations include Barkley Sound, Twin Islands near Cortes Island, Redonda Island (Desolation Sound) and Sykes Island in Jervis Inlet.

- It is not at all clear that smaller oysters necessarily carry lower Cd residues. As presented in a workshop talk by Dr. George M. Kruzynski, DL long-line oysters were found to accumulate higher residues (µg Cd/g) though body burdens of large oysters were higher (see the two figures below that were supplied by Dr. George M. Kruzynski, Research Biologist with DFO Institute of Ocean Sciences).

Meat-weight per oyster for cadmium HHA

For commercial oysters sold in the half-shell (small/extra-small size): the range is ½ - ¾ oz/oyster. This works out to 14-21 grams meat per oyster. For commercial shucked oysters (sold in tubs): they are about 1 oz/oyster, based on an average of 8 oysters/8 oz tub. This works out to 28 grams meat per oyster. Obviously, wild oysters that native consumers have access to, can exceed 1oz of meat per oyster.

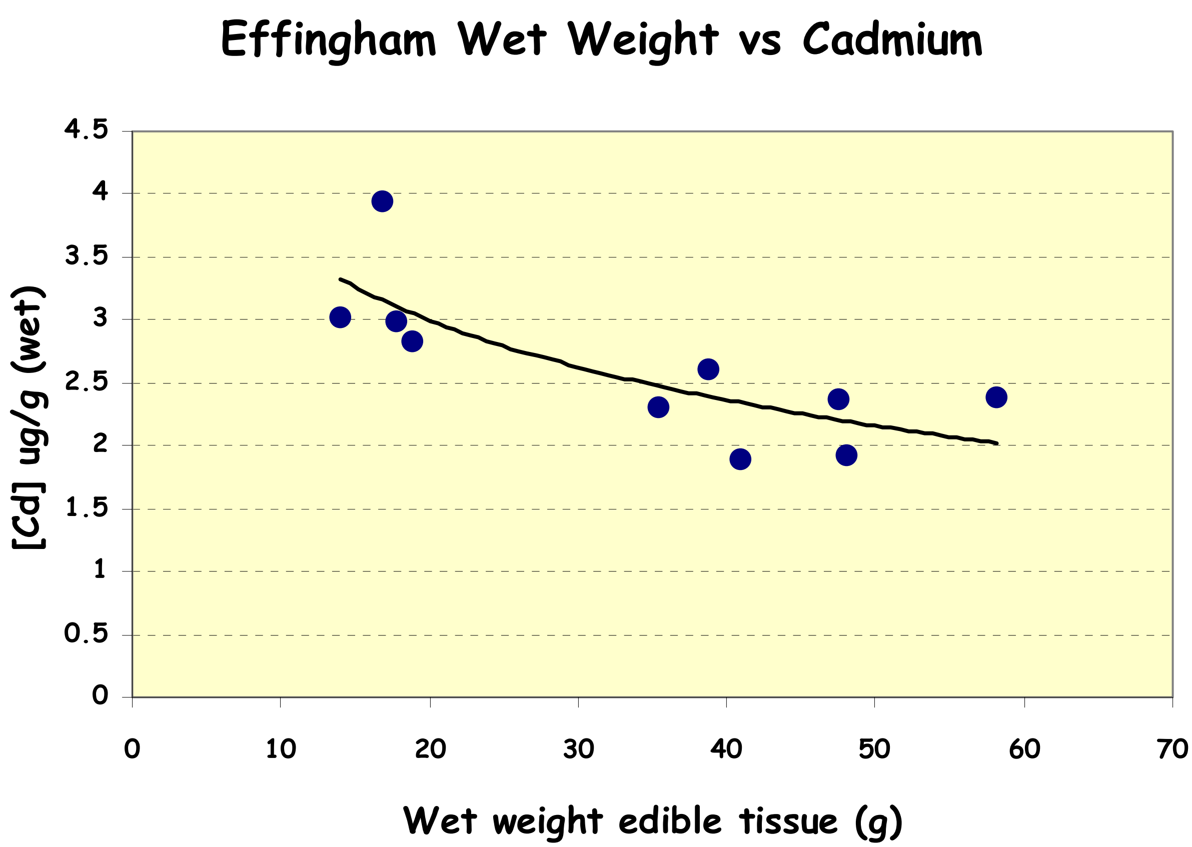
.....it is fair to assume that the average or median weight of meat per Pacific oyster (farmed commercial) will be close to the 25-30 gram range......

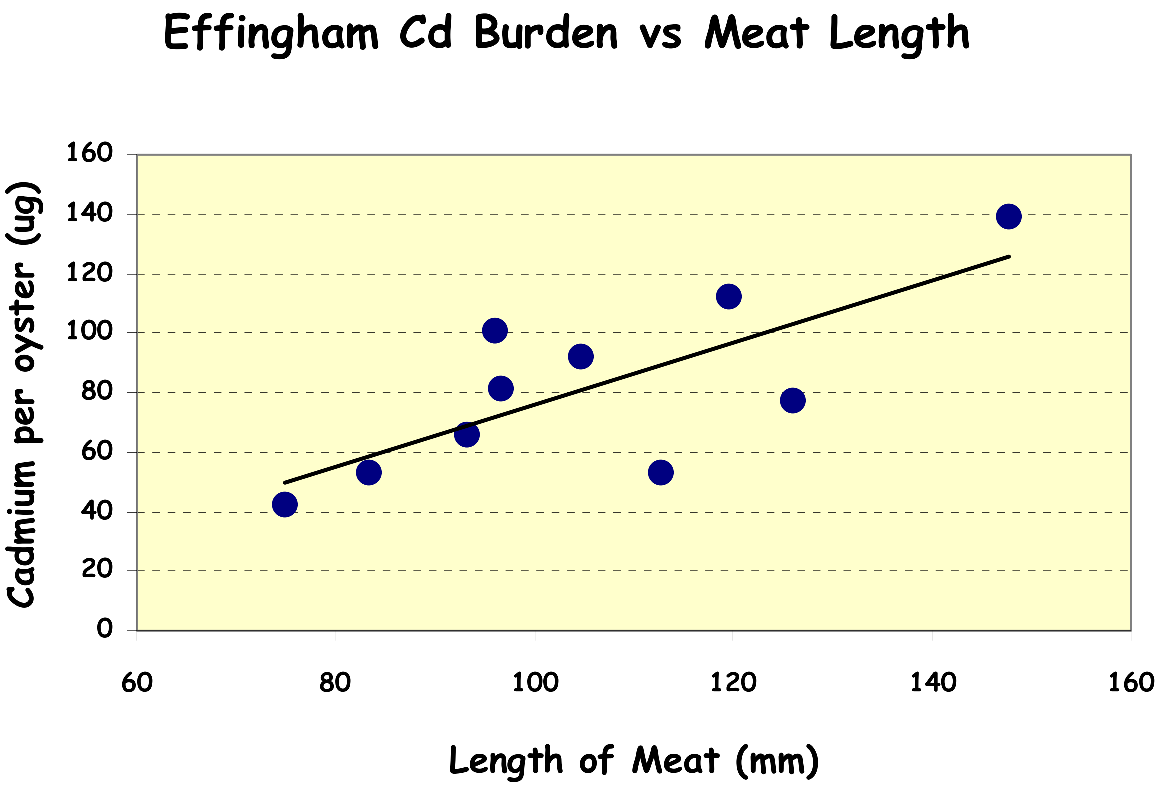
Table: The mean weights of cultured (C) and wild (W) oyster that DFO/BC Fisheries collected after the initial CFIA 2000 survey are given in Table A below.

ID	LIW	CEW	CEC	SIW	SIC	SCW	SCC	TIW	TIC	RJP	DLC
N	22.0	11	10	10.0	10.0	10.0	10.0	10	10.0	11	10
Mean	**52.0**	**54.6**	**53.7**	**46.5**	**44.1**	**80.3**	**59.3**	**43.8**	**52.0**	**53.7**	**33.6**
SD	17.2	19.8	9.7	8.8	11.4	13.3	8.9	11.9	11.5	24.1	15.7
SEM	3.7	6.0	3.1	2.8	3.6	4.2	2.8	3.7	3.6	7.3	5.0
Largest	82.3	85.6	69.9	62.2	56.9	102.4	78.5	58.2	68.4	91.2	58.2
Smallest	10.5	11.2	34.5	30.7	24.9	66.0	47.3	14.2	30.5	11.1	14.1
95% C.L.	7.6	13.3	7.0	6.3	8.1	9.5	6.4	8.5	8.2	16.0	11.3

raw data (LIW)	raw data (DLC)
82.3	58.2
73.4	48.1
72.1	47.5
70.6	40.9
69.6	38.7
65.2	35.4
60.5	18.8
59.3	17.7
58	16.8
52.9	14.1
51.6	
51.4	
51.3	
47.8	
47.8	
45.6	
41.8	
41.6	
33.6	
32.7	
24.7	
10.5	

Figures: Two graphs from a workshop talk by Dr. George M. Kruzynski, Research Biologist with DFO Institute of Ocean Sciences.




Effingham Cd Burden vs Meat Length
Cadmium per oyster (ug)
160
140
120
100
80
60
40
20
0
60
80
100
120
140
160
Length of Meat (mm)

JAPAN :

Background

Codex Alimentarius Commission

1. The 35th Codex Committee on Food Additives and Contaminants (CCFAC) decided to return the proposed draft maximum levels for cadmium in rice, polished; soy bean (dry); molluscs (including cephalopods); and peanuts at Step 3 for circulation, comments and further consideration at its 36th Session, and to forward remaining proposed draft maximum levels for cadmium to the 26th Session of the Codex Alimentarius Commission for preliminary adoption at Step 5 (ALINORM 03/12A, para. 165). The 26th Session of the Codex Alimentarius Commission (CAC), however, returned these proposed draft maximum levels to Step 3 (ALINORM 03/41, para. 126).

Joint FAO/WHO Expert Committee on Food Additives (JECFA)

2. The 61st JECFA performed toxicological evaluation on a basis of new data submitted after its 55th meeting and concluded that these new data did not provide a sufficient basis for revising the PTWI and therefore maintained it at 7 µg/kg-bw (JECFA/61/SC).

3. The 55th JECFA evaluated the dietary intakes of cadmium using the five GEMS/Food Regional Diets and the cadmium residue data from several countries and a region. The JECFA found organ meats such as liver and kidney had the highest mean values in the residue data from a couple of countries and a region. However, the JECFA suggested that organ meats were minor contributors to the dietary intake cadmium (Safety Evaluation of Certain Food Additives and Contaminants, WHO Food Additives Series: 46, 2001). The 61st JECFA concluded, on a basis of dietary intake estimates, that the following foods contributed 10% or more to the PTWI in or at least one of the GEMS/Food regions: rice, wheat, starchy root/tubers, molluscs. Vegetables (excluding leafy vegetables) contribute >5% to the PTWI in two regions (JECFA/61/SC). The JECFA did not conducted an exposure assessment for cadmium resulting from consumption of foods in these food groups, taking into account three different maximum levels in accordance with the risk assessment policy decided by the 34th CCFAC (ALINORM 03/12, para. 143).

Comments

4. We are of the strong opinion that the elaboration of maximum levels for cadmium shall be based on risk assessments by JECFA as stipulated in Section 1.4.3 of the preamble of the Codex General Standard of Contaminants and Toxins in Foods (GSCTF). The 61st JECFA was expected to conduct dietary exposure assessments for cadmium in response to the requests made by the 34th CCFAC. The JECFA, however, neither generated a distribution curve for cadmium contamination levels for the food groups contributing to intakes of cadmium, nor performed an exposure and risk assessment for cadmium resulting from consumption of foods in these food groups, taking into account three different levels, i.e., the draft maximum levels at Step 3, one level lower and one level higher than the proposed draft maximum levels. We still think that JECFA should be asked to complete the above-mentioned assessments and risk characterization.

5. In response to the request of the 26th CAC to accelerate the work of CCFAC to move revised draft maximum levels to Step 8 (ALINORM 03/41, para. 126), Japan paid some efforts with an objective to facilitate to discussions of CCFAC on the maximum levels by estimating dietary exposure to cadmium and estimating appropriate maximum levels in accordance with the ALARA principles on the basis of the cadmium surveillance data on agricultural commodities and molluscs obtained in Japan. We also considered those data from other countries contained in a working document (CX/FAC 01/28) prepared by Denmark in 2001. Please find below, our comments containing (1) proposals for amendments of the proposed draft maximum levels for cadmium in the foods and the food groups; and (2) information on the dietary intake estimates of cadmium.

Summary of comments

6. We have estimated appropriate maximum levels as shown in the attached Table 2 on a basis of the surveillance data of cadmium in agricultural commodities and molluscs obtained in Japan by applying the ALARA principle to these data. Annex I of the GSCTF stipulates in the *Establishment of maximum levels for contaminants* that providing it is acceptable from the toxicological point of view, MLs shall be set at a level which is (slightly) higher than the normal range of variation in levels in foods that are produced with current adequate technological methods, in order to avoid undue disruptions of food production and trade. We wish to clarify that the Japanese data previously submitted and contained in CX/FAC 01/28 do not include the analytical results of agricultural commodities produced in cadmium-polluted areas.

7. We have also estimated the current dietary intake of cadmium using probabilistic approach, using the data available in Japan on food consumption and surveillance of agricultural commodities and molluscs, for which maximum levels are being elaborated by the CCFAC. In addition, dietary intakes were estimated on a basis of: the proposed draft maximum levels presently at Step 3; and the proposals of the Japanese Government in the table 2. A report (see the appendix) demonstrated that there was an insignificant difference between the dietary intake of cadmium derived from the current proposed draft maximum levels and that from the Japanese proposals referred to as “scenario 6” in the report.

Proposal for amending maximum levels for cadmium in foods

Vegetables

Commodity	Proposed draft ML at Step3 (mg/kg)	ML proposed by Japan (mg/kg)
Bulb Vegetables	0.05	0.1
Leafy Vegetables	0.2	0.1
Spinach	0.2	0.3
Garlic	0.05	0.2
Burdock	0.1	0.2
Taro	0.1	0.3
Egg plant	0.05	0.1
Okra	0.05	0.2
Tomato	----	0.05

Soya Bean

Commodity	Proposed draft ML at Step3 (mg/kg)	ML proposed by Japan (mg/kg)
Soya bean	0.2	0.5

8. The cadmium concentrations of soya beans imported to Japan from three major producing countries show the maximum violation rate (against the current draft ML of 0.2 mg/kg) at 13% for one country and the overall violation rate at 7% for all samples from the three countries.

Wheat Grain

Commodity	Proposed draft ML at Step3 (mg/kg)	ML proposed by Japan (mg/kg)
Wheat Grain	0.2	0.3

Rice, polished

Commodity	Proposed draft ML at Step3 (mg/kg)	ML proposed by Japan (mg/kg)
Rice, polished	0.2	0.4

9. In Japan, risk management measures have been taken for reducing cadmium-contamination of rice, such as identifying polluted areas and removing the polluted soils. These measures are necessary as: (1) unlike many field crops, rice is cultivated in paddies whose soil is submerged in water. This practice is a unique and traditional basis of livelihood but makes it difficult to substitute rice with other crops for cultivation; and (2) the major cause of cadmium contamination of rice was the pollution of soil that had been irrigated in the past with stream water mixed with drainage of old mines containing high levels of cadmium. These risk management measures are in accordance with Section 1.3 *General Principles Regarding Contamination in Foods* which states that preventing food contamination at the source may serve to prevent or to reduce contamination of foods and feeds.

10. In Japan, it was concluded in 1969 that (1) if a rice sample contains cadmium in excess of 0.4 mg/kg, it should be regarded as an indication of soil contamination by cadmium; and (2) without any artificial or industrial contamination by cadmium, naturally occurring cadmium in rice could be close to 0.4 mg/kg. The area where rice with >0.2 mg/kg of cadmium is grown is far greater than the area where rice with >0.4 mg/kg is grown. Setting a maximum level for cadmium at unnecessarily low level may make the application of preventive measures unfeasible. On the other hand, a maximum level for cadmium in rice at 0.4 mg/kg is believed to be suitable for implementing preventive measures to remove Cd-contaminated rice from the market and reasonable from the technological and economic points of view. In addition, data of one European country on rice contained in CX/FAC 01/28 show the violation rate as high as 7-10%.

Potatoes

11. Since the surveillance data of Japan on potatoes show that the cadmium levels in potatoes (unpeeled) were well below 0.5 mg/kg, we propose that the specific entry for “Potato (peeled)” should be deleted and potatoes should be included in “stem and root vegetables”.

Dietary Intake Estimates

12. We have estimated the current dietary intake of cadmium using probabilistic approach on the data available in Japan on food consumption and surveillance of agricultural commodities and molluscs. In addition, dietary intakes were estimated on a basis of, *inter alia*: the proposed draft maximum levels presently at Step 3 and the proposals of the Japanese Government derived by applying the ALARA principle to the surveillance results (the report is attached; ref. scenarios 3 and 6).

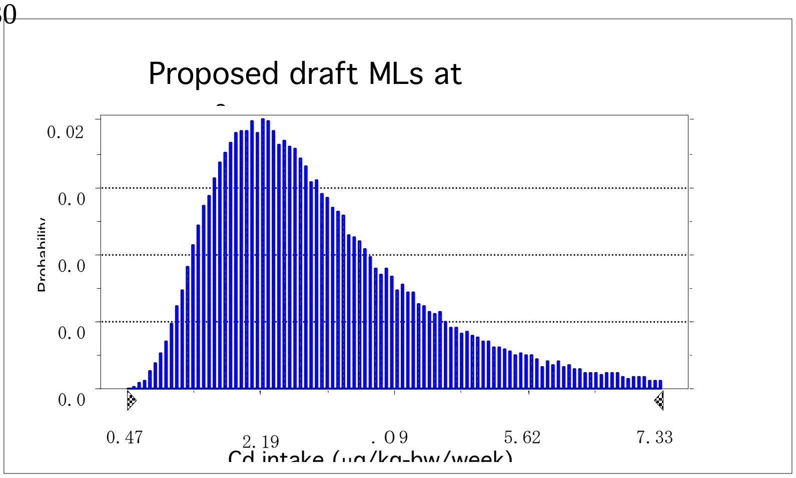
13. A pooled data of National Nutrition Survey conducted in Japan for 6 years from 1995 through 2000 and the data of cadmium surveillance were used as the food consumption data and cadmium concentration data. Lognormal distribution was presumed as the theoretical distribution of food consumption level and Cd concentration. Cd intake estimate were calculated using Monte Carlo simulation by multiplying randomly picked food consumption level (from distribution) and cadmium concentration for each food item and summing up calculated intake estimates for all items. This process was repeated 100 000 times for each scenario.

14. Table 1 and Figure 1 show the results of estimation expressed in µg per 1 kg body weight per week.

Table 1. Cd Intake Estimates

	Proposed draft MLs at Step3	MLs proposed by Japan
Mean	2.76–3.07	2.98–3.29
50th percentile	2.37–2.68	2.48–2.79
90th percentile	4.72–5.05	5.23–5.53
95th percentile	5.75–6.10	6.54–6.88

Unit: µg/kg-bw/week



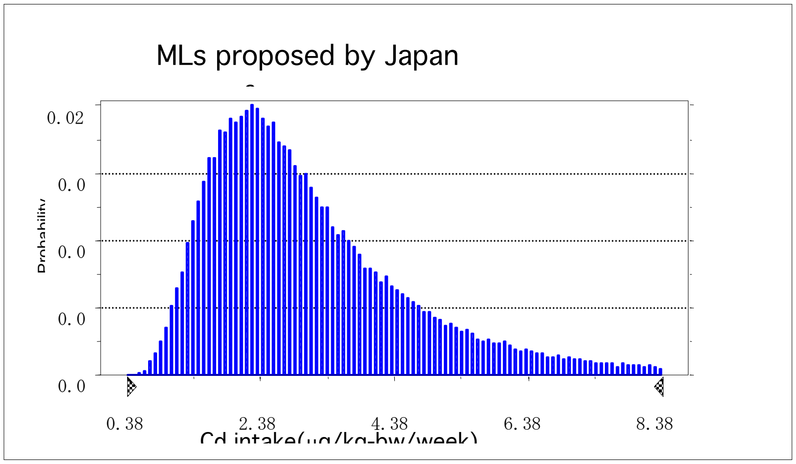


Figure 1. Cd Intake Estimates

These results demonstrate that:

- There is insignificant difference between the mean dietary intakes of cadmium: 3.1µg/kg-bw/week with the proposed draft maximum levels presently at Step 3 and 3.3 µg/kg-bw/week with the Japanese proposals
- The 95th percentile dietary intakes of cadmium calculated with the MLs proposed by Japan is below the PTWI (7 µg/kg-bw/week)

15. We believe that these proposals on MLs can ensure the protection of the health of consumers.

Amendment of a food group

16. The definition of the term "molluscs" in the Codex Classification of Foods and Animal Feeds is "molluscs, including cephalopods". We propose that this category should be divided into three, marine bivalve molluscs, scallops and cephalopods as specific considerations need to be given for portions of scallops and cephalopods for which maximum levels should apply. Furthermore, we propose that remarks should be inserted for these commodities:

- ✓ "excluding scallops" to bivalve molluscs;
- ✓ "without digestive caecum" to scallops as digestive caecum of scallops is normally removed before distribution and therefore is not consumed; and
- ✓ "without viscera" to cephalopods as the viscera of cephalopods are rarely consumed and are minor contributors to dietary exposure to cadmium even if consumed.

Table 2: Proposals of Maximum Levels for Cadmium
(struck-out words to be deleted and underline indicates amended texts)

Code NO.	Food	ML (mg/kg)	Remarks
FC 0001 FP 0009 FS 0012 FB 0018 FT 0026 FI 0030	Fruits	0.05	
GC 0654	Wheat Grain	0.3	
MM 0097 PM 0110	Meat of cattle, pigs, sheep and poultry	0.05	
MM 0816	Horse meat	0.2	
VR 0075 VS 0078 VA 0035 VL 0053	Stem and roots vegetables Bulb vegetables Leafy vegetables	0.1	Excluding celeriac, ~~potatoes,~~ burdock, taro, garlic, spinach
VR 0578 VR 0575 VA 0381	Celeriac Burdock, greater and edible Garlic	0.2	
VR 0505 VL 0502	Taro Spinach	0.3	
VB 0040 VC 0045 VO 0050 VP 0060 VD 0070	Brassica vegetables Fruiting vegetables, Cucurbits Fruiting vegetables, other than Cucurbits Pulses Legume vegetables	0.05	Excluding fungi, ~~tomatoes~~, egg plant, okra, soya bean
VO 0440	Egg plant	0.1	
VO 0449 VO 0442	Fungi, edible Okra	0.2	
VD 0541	Soya bean	0.5	
HH 0726	Herbs	0.2	fresh
CM 0649	Rice, polished	0.4	
SO 0697	Peanuts	0.2	
IM 0151	Marine bivalve molluscs	1.0	Excluding scallops
IM 1005	Scallops	1.0	Without digestive caecum
IM 0152	Cephalopods	1.0	Without viscera

A Special Health, Labour and Welfare Science Research Project
through a Research Grant from
the Ministry of Health, Labour and Welfare Science

Research on Estimation of Cadmium Exposure Level in Japanese Residents

Hiroshi Nitta
National Institute for Environmental Studies

December 2003

1. Purpose

While Joint FAO/WHO Food Standards Programme (Codex Alimentarius Commission), which develops international food standards, has been conducting examination of maximum level of cadmium, further speedup in creating the maximum levels was requested by the Codex Alimentarius Commission held in July of this year based on the results of risk evaluation by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) held in June of this year. Thus, it is expected that the examination by the Codex Committee on Food Additives and Contaminants (CCFAC) will be put into full gear and sped up. In Japan, the Ministry of Health, Labour and Welfare has requested the Food Safety Commission to conduct an evaluation of the health effects of cadmium.

To specify an appropriate standard value, risk assessment is inevitable on scientific grounds, and it is necessary that exposure assessment shall be conducted as an important pillar for risk assessment. In this research, statistical methods of exposure level estimation is examined in terms of intake via food, which is considered most important in cadmium (referred to as Cd hereafter) exposure, and Cd concentration by food product and data related to food intake level are applied to the prepared estimation model in order to estimate the exposure level distribution for the entire population of Japan.

2. Methods

2.1. Materials

A pool of database of National Nutrition Survey implemented by the Ministry of Health, Labour and Welfare for 6 years from 1995 and 2000 was used as the level of food intake, and data related to the proportion of those who take each food group as well as intake level distribution were obtained. For these 6 years, intake level data for individuals has been obtained by one-day survey. For the following analysis, estimation was made by converting the data on approximately 53,000 adults of 20 years old or older who are not pregnant to the intake level per 1 kg body weight per week. As to the Cd concentration in food, data from the survey on cadmium contained in agricultural and fishery products by the Ministry of Agriculture, Forestry and Fisheries was used. Concentration data from the United States was used as the Cd concentration values in imported soybeans and wheat.

As to data related to food distribution, the consumption rates of domestic and imported soybeans and wheat were used from the Food Balance Sheet.

2.2. Estimation Method

An outline of the estimation procedure is shown in Fig. 1. First, it is necessary that the average long-term intake levels should be calculated to achieve the purpose. In this interim analysis, data from National Nutrition Survey which was a one-day survey was used as it is. Since correlation is seen among food products (groups) in terms of food intake levels, this was also taken into consideration in estimating. In this interim analysis, only correlation among 3 food groups, rice, wheat and soybeans was considered (as rank correlation, rice-wheat: −0.32, rice-soybeans: 0.23, wheat-soybeans: −0.09 were presumed). On the other hand, the Cd concentration values in agricultural and fishery products have been obtained for approximately 130 products. However, there is no one-to-one correspondence between these agricultural and fishery products and about 1,000 items of foods contained in National Nutrition Survey database. In addition, some processed food products may be made of several agricultural and fishery products. Thus, it is necessary that a coefficient that indicates the type and amount of agricultural or fishery products contained in each product (referred to as conversion coefficient hereafter) be calculated. A value indicated by Yoshiike １ ） for trial calculation of exposure levels of residual agricultural chemicals was used as this conversion coefficient. Conversion coefficient 1 was used for all fishery products not indicated here, presuming that the fishery products be taken as food products without processing.

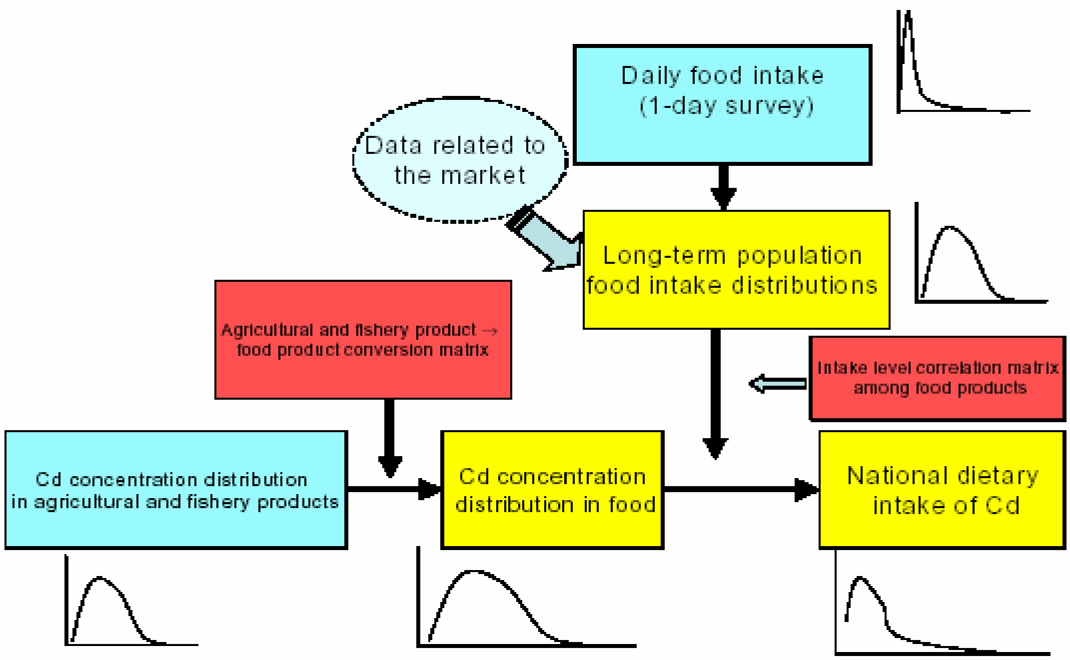


Figure 1. Outline of Estimation Procedure

(Note) In this interim analysis, data from the National Nutrition Survey, which is a one-day survey, is used as the average long-term intake level.

Ta

Table 1. Classification of foods

Groups	Items
Rice	rice, processed rice products, sake, rice crackers, etc.
Wheat	wheat, sponge cake, biscuits, and other sweets and snacks
Soybeans	soybeans, tofu (soybean curd), and other soybean products
Other cereals and beans	barley, beer, rye, buckwheat, other cereals, red beans, green peas, broad beans, snow peas, kidney beans, and other premature beans and peas
Vegetables	potato, taro, burdock, sweet potato, yam, konnyaku yam, Japanese radish, turnip, carrot, other root vegetables, spinach, Chinese cabbage, Komatsuna cabbage, potherb mustard, garland chrysanthemum, lettuce, other leaf vegetables, garlic, onion, Welsh onion, other bulb vegetables, eggplant, okra, tomato, sweet corn, pimento, green pepper, mushrooms, asparagus, celery, butterbur, cabbage, cauliflower, broccoli, ging-geng-cai, cucumber, pumpkin, watermelon, melon, other cucurbitaceous fruits and vegetables, sesame seed, rape oil, honewort, parsley, leek, watercress, ginger, chestnut, and other nuts
Fruits	citrus fruits, apple, pear, cherry, strawberry, grape, persimmon, kiwifruit, and banana
Meat	beef, beef (innards), horsemeat, pork, pork (innards), chicken, and chicken (innards)
Fishery products	short-necked clam, oyster, squid, octopus, other mollusks, echinoderms, salt-pickled squid, prawn, other shellfish, salmon, horse mackerel, sardine, bonito, mackerel, sea bream, tuna, other fish, and other salt-pickled fish and fish eggs

Monte Carlo Analysis was used for estimation by multiplying the intake level distribution by each of about 100 items of food groups (Table 1) and the Cd concentration distribution within the agricultural and fishery products in each food product group. In reality, Cd intake level distribution was estimated by repeating the process of generating random numbers following each distribution of the intake level and Cd concentration and then multiplying them to calculate the Cd intake level. Lognormal distribution was presumed as the theoretical distribution of intake level and Cd concentration. Distribution properties were determined based on the parameters estimated from mean values as well as standard deviation obtained by the National Nutrition Survey and cadmium survey. Furthermore, distribution was not presumed for Cd concentration data on food items other than rice, wheat and soybeans and median values were used as fixed values due to low contribution to exposure or insufficient quantity of specimens[2]. As to handling of products with Cd concentration values lower than the limit of quantification (LOQ), LOQ*0.5 was used for proportions lower than LOQ by 60%, and two types of estimates were stated for those larger than 60% according to the GEMS/Food report[3]. One used 0 (Estimate 1) and the other substituted the LOQ value (Estimate 2).

2.3. Trial Calculation Scenario

Cd intake distribution was estimated by the 7 scenarios provided in Table 2. In the scenarios other than Scenario 1, it was presumed that food products containing Cd in concentrations exceeding the maximum level shall not be distributed. Scenario 1 used no Cd maximum level for any food product; Scenario 2 used the Cd maximum level of 0.4mg/kg only for rice and omitted data containing higher concentrations; Scenario 3 omitted data with concentrations exceeding the proposed Cd maximum levels by the CCFAC; and Scenarios 4 to 7 omitted data with concentrations exceeding the alternative maximum levels assumed and proposed by the Ministry of Agriculture, Forestry and Fisheries by applying the principles of ALARA (As Low as Reasonably Achievable) stipulated in the "General Standard for Contaminants and Toxins in Foods (GSCTF)" by the Codex Alimentarius Commission on the results of the Cd survey (however, Scenarios 5 to 7 varied only in the maximum level for rice in Scenario 4). To set up the Cd concentration according to each scenario, a median value was calculated for each item except for rice, wheat and soybeans by omitting data with concentrations higher than or equal to the value. For rice, wheat and soybeans, estimation was conducted among the random values following the lognormal distribution during simulation by omitting those exceeding the set maximum levels.

2.4. Other Factors Related to Estimation

When looking at data on changes in Cd contents in the rice polishing process[5], changes in concentrations from unpolished to polished rice were small. Thus, Cd concentrations in the two were considered equivalent. They are not distinguished as unpolished and polished rice but expressed only as rice below. Since decrease in Cd concentration was seen in the wheat milling process[4], the average value was calculated from different grades of four, which was 0.65 times the Cd concentration of unmilled wheat.

For Cd concentrations of wheat and soybeans, domestic self-sufficiency rates were considered and data on wheat and soybeans from the United States[5] were used as the Cd concentrations for imported wheat and soybeans.

Table 2. Trial Calculation Scenario

		Scenario (when data higher than or equal to each value mg/kg were omitted)						
Item		1	2	3	4	5	6	7
Cereals								
	Polished rice	—	0.4	0.2	0.2	0.3	0.4	0.5
	Wheat	—	—	0.2	0.3	0.3	0.3	0.3
	Cereals other than rice and wheat	—	—	0.1	0.1	0.1	0.1	0.1
Beans (matured)								
	Soybean	—	—	0.2	0.5	0.5	0.5	0.5
	Beans other than soybean	—	—	0.1	0.1	0.1	0.1	0.1
Stem and root vegetables								
	Burdock	—	—	0.1	0.2	0.2	0.2	0.2
	Taro	—	—	0.1	0.3	0.3	0.3	0.3
	Potato	—	—	0.1	0.1	0.1	0.1	0.1
	Other than burdock, taro and potato	—	—	0.1	0.1	0.1	0.1	0.1
Leafy vegetables								
	Spinach	—	—	0.2	0.3	0.3	0.3	0.3
	Other than spinach	—	—	0.2	0.1	0.1	0.1	0.1
Bulb vegetables (Alliums)								
	Garlic	—	—	0.05	0.2	0.2	0.2	0.2
	Other than garlic	—	—	0.05	0.1	0.1	0.1	0.1
Non-cucurbitaceous fruits and vegetables (including mushrooms and sweet corn)								
	Eggplant	—	—	0.05	0.1	0.1	0.1	0.1
	Okra	—	—	0.05	0.2	0.2	0.2	0.2
	Tomato	—	—	—	0.05	0.05	0.05	0.05
	Other than tomato, eggplant, and okra	—	—	0.05	0.05	0.05	0.05	0.05
Stalk vegetables								
	Stalk vegetables	—	—	0.1	0.1	0.1	0.1	0.1
Cress (bulb-forming vegetables)								
	Cress	—	—	0.05	0.05	0.05	0.05	0.05
Cucurbitaceous fruits and vegetables								
	Cucurbitaceous fruits and vegetables	—	—	0.05	0.05	0.05	0.05	0.05
Beans and peas (prematured)								
	Fabaceous vegetables	—	—	0.1	0.05	0.05	0.05	0.05
Peanut								
	Peanut	—	—	0.2	0.2	0.2	0.2	0.2
Fruits								
	Fruits	—	—	0.05	0.05	0.05	0.05	0.05
Mollusks (including cephalopods)								
	Mollusks	—	—	1.0	1.0	1.0	1.0	1.0
Herbs								
	Herbs	—	—	0.2	0.2	0.2	0.2	0.2

3. Results

Table 3 provides the results of estimation by the Monte Carlo Analysis based on the food intake level and Cd concentration per 1 kg body weight per week using the number of trials for each scenario as 100,000 times. The average body weight in the data used was 57.8 kg, with the median of 56.5 kg. Difference in estimated value by the difference in the treatment of Cd concentration below LOQ (Estimates 1 and 2) was approximately 0.3μg/kg •bw/week. This difference arises due to the difference of setting the data below LOQ as 0 or as the LOQ value. Figure 2 shows the distribution of estimated Cd intake levels in Scenario 1 (Estimates 1 and 2). Distribution was not symmetrical but rather extensive in the high-concentration area. Therefore, the median value was smaller when average (arithmetic mean) and median (50 percentile) were compared. Both food products intake and Cd concentration in food products reflect the presumption of lognormal distribution extending toward the high-concentration area instead of symmetrical distribution. When Scenario 1 and 2 are compared, the difference between the median values was small, and only some differences are seen in the bottom area of distribution such as the 90 percentile and 95 percentile. In Scenario 3, 95 percentile had a value lower than the values of Scenarios 1 and 2 by approximately 1 µg/kg bw/week. Difference in median values was small when comparing Scenarios 4 to 7, and some differences were seen at the bottom area of distribution.

Contribution of each food group on Cd intake in Scenario 1 (based on average values) is provided in Figure 3. Rice consisted of 50% contribution in the entire intake. The degree of contribution varied for each scenario or statistic. As shown in Fig. 4, the distribution of Cd intake level by the food group has large extension in the high-concentration area. Therefore, the contribution of each food product on the median value of the total Cd intake and 95 percentile varies for example.

Table 3. Cd Intake Distribution Estimate by Scenario

Unit: µg/kg bw/week

	Scenario 1		Scenario 2		Scenario 3		Scenario 4		Scenario 5		Scenario 6		Scenario 7	
	Estimate 1	Estimate 2	Estimate 1	Estimate 2	Estimate 1	Estimate 2	Estimate 1	Estimate 2	Estimate 1	Estimate 2	Estimate 1	Estimate 2	Estimate 1	Estimate 2
mean	3.04	3.35	3	3.31	2.76	3.07	2.84	3.14	2.94	3.24	2.98	3.29	3.01	3.3
S.D.	2.11	2.16	1.97	2.01	1.63	1.65	1.7	1.71	1.87	1.87	1.93	1.96	2.03	2.01
25 percentile	1.75	2.05	1.74	2.04	1.68	1.98	1.72	2.01	1.73	2.03	1.74	2.04	1.74	2.04
50 percentile	2.5	2.81	2.49	2.8	2.37	2.68	2.44	2.74	2.47	2.78	2.48	2.79	2.49	2.79
75 percentile	3.66	3.97	3.64	3.96	3.39	3.71	3.49	3.8	3.6	3.91	3.63	3.94	3.64	3.94
90 percentile	5.36	5.65	5.28	5.6	4.72	5.05	4.87	5.17	5.13	5.42	5.23	5.53	5.28	5.56
95 percentile	6.78	7.11	6.64	6.97	5.75	6.1	5.96	6.25	6.42	6.69	6.54	6.88	6.7	6.94
97.5 percentile	8.35	8.76	8.15	8.55	6.92	7.27	7.13	7.39	7.8	8.07	8.01	8.41	8.34	8.51

Figure 2. Cd Intake Distribution Estimate for Scenario 1 (Estimates 1 and 2)

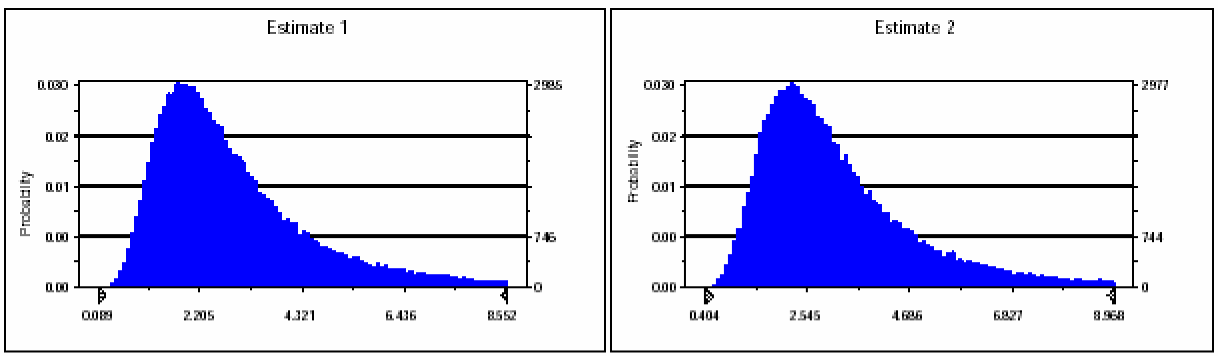
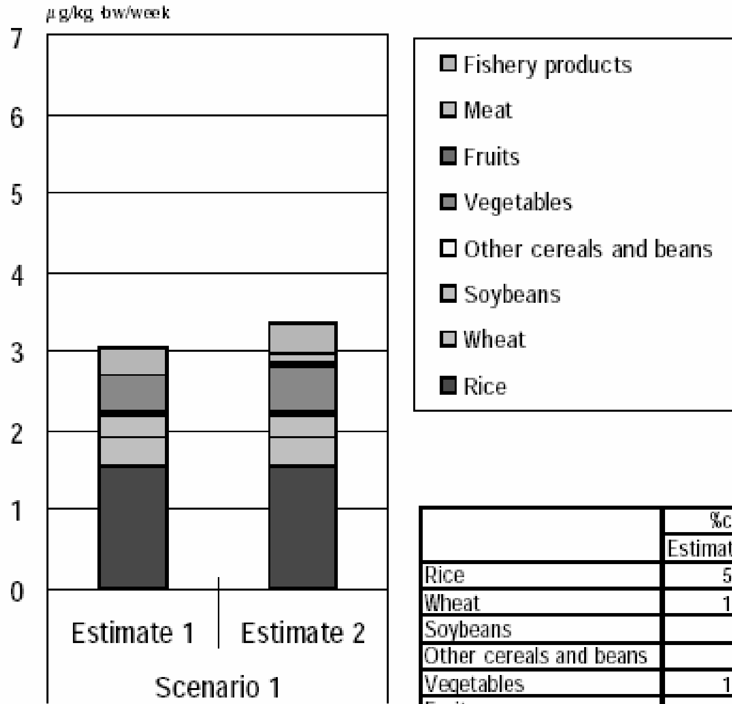
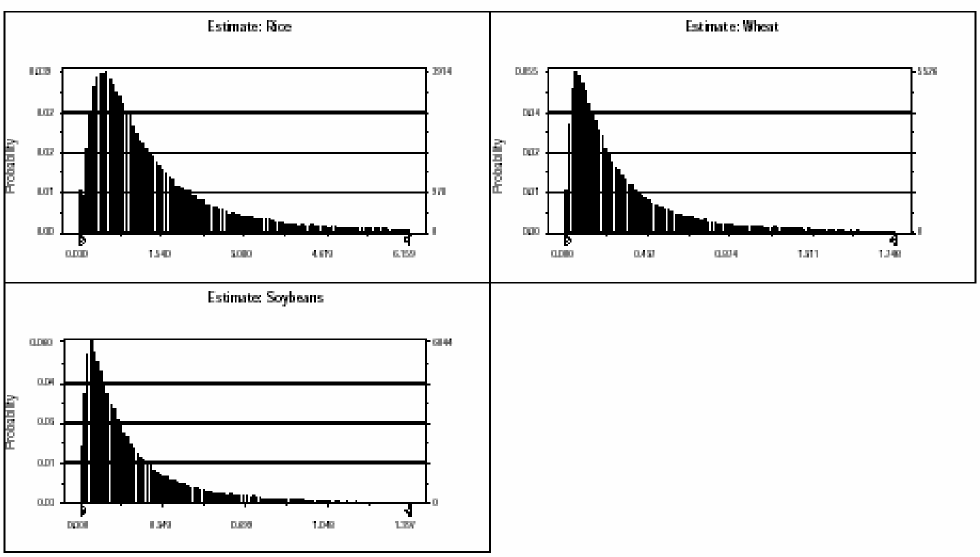


Figure 3. Contribution of Each Food Class to Cd Intake (Based on Average Value)



	%contribution	
	Estimate 1	Estimate 2
Rice	50.8	46.2
Wheat	12.2	11.1
Soybeans	9.3	8.4
Other cereals and beans	1.3	1.3
Vegetables	15.2	16.6
Fruits	0.0	2.2
Meat	0.0	2.7
Fishery products	11.2	11.4

Figure 4. Estimation of Cd Intake Distribution by Rice, Wheat, and Soybeans (Scenario 1)



4. Discussion

The method of Cd exposure estimation used in this report is the Monte Carlo Simulation. This method has several advantages and disadvantages compared to the methods using representative values (average, median, etc.) in food product intake and Cd concentration distribution in food products.

The largest advantage is that it is capable of estimating the Cd intake distribution, which is the product of both relatively easy and precise distributions when there is large offset in distribution. Furthermore, it is easy to grasp the effects on the entire distribution when some presumptions are changed, as shown in the examination of the trial calculation scenario in this study.

In addition, Scenario 2 which is assumed to reflect the current state in Japan delivered the results of average values of 173 μg/person/week in Estimate 1 and 191 μg/person/week in Estimate 2 with the average weight of 57.8kg, which is similar to the result of the Total Diet Study implemented by the Ministry of Health, Labour and Welfare[6,7], 192 μg/person/week (yearly average of 1995-2000).

On the other hand, the simulation results may vary depending on what kind of probability distribution is presumed for the intake of each food product and Cd concentration. It is especially considered that statistics that express the bottom section of distribution such as 95 percentile and 97.5 percentile are prone to such effects. Normally, a method called sensitivity analysis is used to quantitatively evaluate the effects of presumptions, etc. on the results when the degree of such effects is to be evaluated. In this report, it was impossible to provide the sensitivity analysis results due to restrictions in time. Thus, examination of the reliability of estimate values shown in Table 3 is not sufficient, and it must be noted especially that the values for 95 percentile and 97.5 percentile have larger uncertainty compared to the average and median values. Moreover, reliability may be overrated if the bottom of lognormal distribution presumed in this report is longer than the true distribution.

Furthermore, the following uncertainties may be contained in the estimation provided in this report due to data used or insufficient preparation of necessary data.

First, there are several restrictions in National Nutrition Survey data. Since this survey is implemented in November every year, it may cause overrating or underrating on food products with large intake fluctuations by season. While it is assumed that seasonal fluctuation is not so large for rice, wheat and soybeans that are presumed to have large contributions to Cd intake when seen from the average value basis, some of the fishery products are assumed to have large seasonal fluctuations. In addition, this survey is a one-day survey, which cannot obtain data related to individual intake patterns such as intake frequency distribution for the subject people. While the intake proportion of the subject group by the food product was used as the estimated intake probability (individual) for the corresponding food product in the estimation of this report, its validity has not been examined sufficiently. Especially, those food products with high Cd concentration and low intake proportion by the group but where some individuals may take a large amount (customary eaters) may have been underrated. As to this point, the effect is expected to be larger in the estimation of bottom sections of the Cd intake distribution such as the 95 percentile and above.

Sufficient specimens have been obtained for Cd concentration data in food products except for a few items. However, the analysis results of these specimens include many values below the detection limit. Thus, the resulting estimations differed slightly by how such data below the detection limit are treated. Furthermore, it is difficult to determine the Cd concentration distribution parameters for items with a few analytical data above the detection limit, and estimation was conducted without presuming the distribution but only by fixing with the median value for items other than rice, wheat, and soybeans. As a result, the overall width of Cd intake distribution may be smaller than the actual value. It is also possible that difference by the scenario did not appear as clearly because the median value was used. It is planned in the final report that the effect on Cd intake distribution be evaluated by presuming the distribution with fixed parameters by some estimation for items other than rice, wheat and soybeans. Moreover, it has been proven by various data that the food of our nation depends largely on imports from other nations. This report estimated with consideration of this point for wheat and soybeans, which are expected to have low domestic self-sufficiency and large contribution to Cd intake level. However, Cd concentration data for other imported food products have not been considered, and the values for wheat and soybeans have been taken from existing materials, indicating that the estimation may be overrating or underrating. In addition, there are only approximately 130 items for which data have been obtained in a Cd survey among over 900 food products in National Nutrition Survey. It means that a considerable number of food products have not been provided with Cd concentrations. Though many have low individual intake frequencies and intake levels, it may be underrated overall if some of these have high Cd concentrations. As to these points, it may be possible to improve the precision of estimation by collecting data for vegetables, etc. with large effects on Cd intake levels, collecting the existing materials for food products with large import rates, and collecting data on food products for which a Cd survey has not been conducted.

Since only correlation among rice, wheat and soybeans has been considered regarding correlation among food intake levels of food groups, it is necessary that how correlation among intake levels including other food products that may affect the estimation be evaluated in the future. In addition, this report presumes that the Cd concentration distribution and intake level distribution are independent from each other. Therefore, it may affect the estimation of Cd intake distribution bottom sections (high percentile) if those who take one food product in large amounts tend to take products with a higher Cd concentration for example.

As to conversion coefficients that correlate the food product obtained in National Nutrition

Survey and agricultural and fishery products as raw materials, values from the existing materials are used without change in principle. Those data is based on the weight change in processed food product and charge percent as the raw material, etc. and was not intended originally for Cd intake estimation. Changes in Cd concentration by cooking and processing have not been considered. Although conversion coefficients considering this point have been used for rice and wheat, more detailed examination is necessary for other food products in the future.

Although Cd intake estimation was conducted using scenarios by omitting data with concentrations exceeding maximum levels, it is assumed that in reality, the entire distribution would be shifted to Cd reduction due to the attempts to reduce pollution by the producers. It may be necessary to consider this point as well.

The above discussed the points that may cause overrating or underrating due to the properties of data used in this study and the methods of statistical analysis. Furthermore, it is necessary to consider that the direction of effect may vary depending on the statistics taken if these factors do affect the shape of the estimated Cd intake distribution. For example, it is possible that underrating may occur for median values and overrating for the 95 percentile. Though this estimation requires further precision improvement in the future, it uses as much available data as possible and the best statistical analysis methods at present.

5. Conclusion

In this report, Cd intake distribution via food products for adults in Japan was estimated based on the data currently available to provide some comparison results of several trial calculations differing in maximum levels for food products. There are some uncertainties for trial calculation results, and it is necessary that these uncertainties be reduced and how such uncertainties affect the trial calculation results be evaluated quantitatively in the future.

References

1) Nobuo Yoshiike: Examination of standard data of food intake levels for trial calculation of exposure to residual agricultural chemicals —National Nutrition Survey 1995 – 1997, Food Hygiene Research, 2000, 50, 7-27.

2) Report of a Joint FAO/WHO Workshop (WHO Headquarters, Geneva, 7-8 June 2000) : Methodology for exposure assessment of contaminants and toxins in food, WHO/SDE/PHE/FOS/00.5, WHO, 2000.

3) World Health Organization :Instructions for Electronic Submission of Data on Chemical Contaminants in Food and the Diet, WHO Food Safety Department, Geneva, 2003.

4) Tomoaki Moriyama, et al.: "Clarification of cadmium dynamics in rice polishing and milling processes," General Life Safety Research Project by a Special Health, Labour and Welfare Science Research Grant "Evaluation of health effects by residual cadmium in food products" 2001 fiscal year shared research report, 2002

5) International Programme on Chemical Safety :Environmental Health Criteria 134 Cadmium, 1992.

6) Division of Foods, National Institute of Health Sciences: Total diet survey in Japan, 2000

7) Eriko Matsuda, et al.: "Contaminant intake level in daily foods and contaminant monitoring research," General Life Safety Research Project by a Special Health, Labour and Welfare Science Research Grant, and "Research related to evaluation of harmful substances, etc. in foods", 2001 fiscal year shared research report, 2002.

MEXICO:

The regulation for meat products in our country is 0.1 mg/kg, while in fresh fish products this is 0.50 mg/kg.

NEW ZEALAND:

New Zealand has concerns regarding the proposed draft maximum level (ML) for cadmium in molluscs of 1.0 mg/kg. The naturally occurring levels of cadmium in a number of New Zealand shellfish species can consistently exceed the proposed 1.0 mg/kg. However we recognise that molluscs constitute a only a small proportion of the New Zealand diet and that setting a ML, particularly such a low ML, may unnecessarily eliminate some species from being consumed. This would also appear to be inconsistent with the principles to be met in elaborating MLs for contaminants, as set out in the Preamble to the General Standard for Contaminants and Toxins. Principle 2 states that MLs shall be set “Only for those foods that are significant for the total exposure of the consumer to the contaminant.”

The 34th Session of CCFAC agreed to request JECFA to 1) to give distribution curves for the cadmium contamination levels for a number of food groups including and, 2) to perform an exposure and risk assessment for cadmium resulting from consumption of foods in the above mentioned food groups taking into account three different levels, i.e., the draft maximum levels presently at step 3, one level lower and one level higher than the proposed draft (ALNORM 03/12, paragraph 143). New Zealand believes that further development of the proposed ML for cadmium would be premature given that JECFA has not completed its assessment.

New Zealand suggests the Committee await the JECFA findings before establishing a ML for cadmium therefore ensuring the Committee has all the necessary data to develop the most appropriate risk management strategy for this issue.

POLAND:

Maximum cadmium levels for wheat grain, rice polished, potatoes and fruits proposed in the document are also too high in comparison with those set in Polish regulation. Most outcomes of analysis carried out in our country prove that there is a possibility of meeting the following requirements, which are in force in Poland at present:

- Wheat grain, rice – 0,10 mg/kg
- Potatoes (peeled) – 0,05 mg/kg
- Fruits: of berries – 0,03 mg/kg

  strawberries – 0,04 mg/kg

  other fruits - 0,02 mg/kg.

UNITED STATES OF AMERICA:

Proposed Draft Maximum Level for Cadmium in Molluscs (ALINORM 03/12A, para. 165)

At the 35th Session of the CCFAC, the Committee returned the proposed draft ML of 1.0 mg/kg for cadmium in molluscs to Step 3 for circulation, comments and further consideration at its 36th Session.

In response to CL 2001/13-FAC, requesting comments on several items for consideration by the 34th Session of the CCFAC, on November 14, 2001, the U.S. submitted comments on the proposed cadmium ML of 1.0 mg/kg in molluscs.

At that time, based on the U.S. Food and Drug Administration’s (FDA’s) compliance monitoring data from 1989-1999, with the exception of oysters, the U.S. believed that cadmium levels below the proposed ML of 1.0 mg/kg were achievable in clams, mussels, and scallops. The U.S. noted that, if quality data became available, CCFAC might need to consider raising the proposed cadmium ML of 1.0 mg/kg in certain sub-species of bivalve molluscs due to the accumulation of naturally occurring cadmium in these organisms.

Based on additional FDA compliance monitoring data from 2000-2003 (Table 1) and data from the U.S. National Oceanic and Atmospheric Administration Mussel Watch Project (Table 2), the U.S. continues to believe that the proposed cadmium ML of 1.0 mg/kg may not be achievable in oysters. Additional data also suggests that the proposed ML of 1.0 mg/kg may not be achievable in mussels and scallops. The U.S. continues to believe that the proposed cadmium ML of 1.0 mg/kg may be achievable in clams. The U.S. again notes that, if additional quality data becomes available, CCFAC might need to consider raising the proposed cadmium ML of 1.0 mg/kg in other sub-species of bivalve molluscs due to the accumulation of naturally occurring cadmium in these organisms.

The U.S. further notes that the 34th CCFAC agreed to request the Joint FAO/WHO Expert Committee on Food Additives (JECFA) to 1) provide distribution curves for cadmium in the various food groups and 2) perform exposure/risk assessment for cadmium from consumption of the various food groups, taking into account the proposed draft MLs, one level lower and one level higher than the proposed draft maximum levels.

The U.S. fully supports JECFA providing distribution curves for cadmium in the various food groups, including bivalve molluscs, and performing exposure/risk assessment for cadmium in those food groups at the proposed draft MLs and the levels above and below the draft MLs. The U.S. recommends that the CCFAC defer further elaboration of these MLs at Step 3 until JECFA has provided this information to CCFAC. We believe that this information is critical for enabling CCFAC to determine whether the proposed draft MLs for the various food groups are appropriate to protect the public health while facilitating international trade.

TABLE 1

Cadmium Levels in Bivalve Molluscs, FDA Compliance Monitoring Program
(2000-2003)

A. Clams

Mean	0.183	mg/kg
Standard Deviation	0.139	mg/kg
Count	61	
Minimum	0.008	mg/kg
Maximum	0.723	mg/kg
Median	0.135	mg/kg
Proposed ML	1.000	mg/kg

Cd (mg/kg)	No. Samples	Cumulative %
0.000	0	.00%
0.050	7	11.48%
0.100	12	31.15%
0.150	14	54.10%
0.200	3	59.02%
0.250	7	70.49%
0.300	8	83.61%
0.350	5	91.80%
0.400	1	93.44%
0.450	1	95.08%
0.500	1	96.72%
0.550	0	96.72%
0.600	1	98.36%
0.650	0	98.36%
0.700	0	98.36%
0.750	1	100.00%
> 0.750	0	100.00%

TABLE 1

Cadmium Levels in Bivalve Molluscs, FDA Compliance Monitoring Program
(2000-2003) (cont.)

B. Mussels

Mean	0.413	mg/kg
Standard Deviation	1.180	mg/kg
Count	57	
Minimum	0.025	mg/kg
Maximum	9.000	mg/kg
Median	0.200	mg/kg
Proposed ML	1.000	mg/kg

Cd (mg/kg)	No. Samples	Cumulative %
0.000	0	.00%
0.050	4	7.02%
0.100	8	21.05%
0.150	8	35.09%
0.200	9	50.88%
0.250	7	63.16%
0.300	4	70.18%
0.350	5	78.95%
0.400	4	85.96%
0.450	0	85.96%
0.500	0	85.96%
0.550	2	89.47%
0.600	0	89.47%
0.650	0	89.47%
0.700	2	92.98%
0.750	1	94.74%
0.800	0	94.74%
0.850	0	94.74%
0.900	0	94.74%
0.950	1	96.49%
1.000	0	96.49%
> 1.000	2	100.00%

TABLE 1

Cadmium Levels in Bivalve Molluscs, FDA Compliance Monitoring Program
(2000-2003) (cont.)

C. Oysters

Mean	1.030	mg/kg
Standard Deviation	0.721	mg/kg
Count	70	
Minimum	0.000	mg/kg
Maximum	3.680	mg/kg
Median	0.830	mg/kg
Proposed ML	1.000	mg/kg

Cd (mg/kg)	No. Samples	Cumulative %
0.000	1	1.41%
0.050	2	4.23%
0.100	0	4.23%
0.150	0	4.23%
0.200	0	4.23%
0.250	2	7.04%
0.300	3	11.27%
0.350	1	12.68%
0.400	3	16.90%
0.450	1	18.31%
0.500	1	19.72%
0.550	5	26.76%
0.600	1	28.17%
0.650	1	29.58%
0.700	4	35.21%
0.750	7	45.07%
0.800	1	46.48%
0.850	4	52.11%
0.900	3	56.34%
0.950	1	57.75%
1.000	3	61.97%
> 1.000	27	100.00%

TABLE 1

Cadmium Levels in Bivalve Molluscs, FDA Compliance Monitoring Program
(2000-2003) (cont.)

D. Scallops

Mean	0.232	mg/kg
Standard Deviation	0.312	mg/kg
Count	13	
Minimum	0.062	mg/kg
Maximum	1.220	mg/kg
Median	0.146	mg/kg
Proposed ML	1.000	mg/kg

Cd (mg/kg)	No. Samples	Cumulative %
0.000	0	.00%
0.050	0	.00%
0.100	4	30.77%
0.150	3	53.85%
0.200	3	76.92%
0.250	1	84.62%
0.300	0	84.62%
0.350	0	84.62%
0.400	0	84.62%
0.450	1	92.31%
0.500	0	92.31%
0.550	0	92.31%
0.600	0	92.31%
0.650	0	92.31%
0.700	0	92.31%
0.750	0	92.31%
0.800	0	92.31%
0.850	0	92.31%
0.900	0	92.31%
0.950	0	92.31%
1.000	0	92.31%
> 1.000	1	100.00%

TABLE 2

Cadmium Levels in Bivalve Molluscs, U.S. National Oceanic Atmospheric Administration Mussel Watch Project (1986-1998)

A. Oysters

1. *Crassostrea virginica* (Eastern, Virginia, Atlantic or common oyster)

Mean	0.635	mg/kg
Standard Deviation	0.481	mg/kg
Count	2058	
Minimum	0.000	mg/kg
Maximum	6.752	mg/kg
Median	0.517	mg/kg
Proposed ML	1.000	mg/kg

Cd (mg/kg)	No. Samples	Cumulative %
0.000	1	.05%
0.050	13	.68%
0.100	13	1.31%
0.150	60	4.23%
0.200	126	10.35%
0.250	125	16.42%
0.300	110	21.77%
0.350	131	28.13%
0.400	156	35.71%
0.450	138	42.42%
0.500	115	48.01%
0.550	107	53.21%
0.600	105	58.31%
0.650	94	62.88%
0.700	90	67.25%
0.750	78	71.04%
0.800	92	75.51%
0.850	48	77.84%
0.900	67	81.10%
0.950	57	83.87%
1.000	31	85.37%
> 1.000	301	100.00%

TABLE 2

Cadmium Levels in Bivalve Molluscs, U.S. National Oceanic Atmospheric Administration Mussel Watch Project (1986-1998) (cont.)

2. *Ostrea sandvicensis* (Hawaian or Tropical oyster)

Mean	0.114	mg/kg
Standard Deviation	0.083	mg/kg
Count	42	
Minimum	0.045	mg/kg
Maximum	0.400	mg/kg
Median	0.079	mg/kg
Proposed ML	1.000	mg/kg

Cd (mg/kg)	No. Samples	Cumulative %
0.000	0	0.00%
0.050	4	9.52%
0.100	23	64.29%
0.150	8	83.33%
0.200	0	83.33%
0.250	2	88.10%
0.300	4	97.62%
0.350	0	97.62%
0.400	1	100.00%
>0.400	0	100.00%

3. *Crassostrea rhizorphorae* (Carribbean oyster)

Mean	0.092	mg/kg
Standard Deviation	0.038	mg/kg
Count	17	
Minimum	0.040	mg/kg
Maximum	0.187	mg/kg
Median	0.082	mg/kg
Proposed ML	1.000	mg/kg

Cd (mg/kg)	No. Samples	Cumulative %
0.000	0	00%
0.050	1	5.88%
0.100	9	58.82%
0.150	5	88.24%
0.200	2	100.00%
> 0.200	0	100.00%

TABLE 2

Cadmium Levels in Bivalve Molluscs, U.S. National Oceanic Atmospheric Administration Mussel Watch Project (1986-1998) (cont.)

4. *Chama sinuosa* (smooth-edged jewel box oyster)

Mean	0.490	mg/kg
Standard Deviation	0.235	mg/kg
Count	6	
Minimum	0.078	mg/kg
Maximum	0.786	mg/kg
Median	0.495	mg/kg
Proposed ML	1.000	mg/kg

Cd (mg/kg)	No. Samples	Cumulative %
0.000	0	00%
0.050	0	00%
0.100	1	16.67%
0.150	0	16.67%
0.200	0	16.67%
0.250	0	16.67%
0.300	0	16.67%
0.350	0	16.67%
0.400	0	16.67%
0.450	0	16.67%
0.500	2	50.00%
0.550	1	66.67%
0.600	0	66.67%
0.650	1	83.33%
0.700	0	83.33%
0.750	0	83.33%
0.800	1	100.00%
> 0.800	0	100.00%

TABLE 2

Cadmium Levels in Bivalve Molluscs, U.S. National Oceanic Atmospheric Administration Mussel Watch Project (1986-1998) (cont.)

B. Mussels

1. *Mytilus edulis* (Blue or Common mussel)

Mean	0.385	mg/kg
Standard Deviation	0.294	mg/kg
Count	1455	
Minimum	0.008	mg/kg
Maximum	2.560	mg/kg
Median	0.304	mg/kg
Proposed ML	1.000	mg/kg

Cd (mg/kg)	No. Samples	Cumulative %
0.000	0	0.00%
0.050	4	0.27%
0.100	18	1.51%
0.150	147	11.62%
0.200	257	29.28%
0.250	176	41.37%
0.300	109	48.87%
0.350	123	57.32%
0.400	132	66.39%
0.450	89	72.51%
0.500	74	77.59%
0.550	54	81.31%
0.600	61	85.50%
0.650	31	87.63%
0.700	22	89.14%
0.750	17	90.31%
0.800	14	91.27%
0.850	12	92.10%
0.900	16	93.20%
0.950	8	93.75%
1.000	14	94.71%
> 1.000	77	100.00%

TABLE 2

Cadmium Levels in Bivalve Molluscs, U.S. National Oceanic Atmospheric Administration Mussel Watch Project (1986-1998) (cont.)

2. *Mytilus californianus* (California mussel)

Mean	0.607	mg/kg
Standard Deviation	0.426	mg/kg
Count	581	
Minimum	0.000	mg/kg
Maximum	2.608	mg/kg
Median	0.523	mg/kg
Proposed ML	1.000	mg/kg

Cd (mg/kg)	No. Samples	Cumulative %
0.000	1	0.17%
0.050	8	1.55%
0.100	19	4.82%
0.150	34	10.67%
0.200	24	14.80%
0.250	22	18.59%
0.300	35	24.61%
0.350	39	31.33%
0.400	37	37.69%
0.450	38	44.23%
0.500	24	48.36%
0.550	32	53.87%
0.600	31	59.21%
0.650	20	62.65%
0.700	25	66.95%
0.750	20	70.40%
0.800	14	72.81%
0.850	28	77.62%
0.900	12	79.69%
0.950	12	81.76%
1.000	21	85.37%
> 1.000	85	100.00%

CIAA (Confederation of the food and drink industries of the EU):

CIAA considers that the draft level of 0.2 mg/kg is not achievable for all sources of peanuts:

Country of Origin:	Analytical Data [ppm]
USA	0.05 - 0.18
Argentina	0.09 - 0.12
China	0.32 – 0.55

China is the biggest supplier of peanuts into the EU; the application of such a standard for cadmium in peanuts would lead to the EU facing serious shortages and increased prices.

For the EU, assuming an average consumption of peanuts of 3.3g per day, the intake of cadmium from peanuts is very small in comparison with the PTWI for cadmium of 7 µg/kg BW per week. Hence it is proposed that the development of a Codex Standard for cadmium in peanuts of 0.2 mg/kg needs to be reconsidered.

It is suggested that the development of advice in a Code of Practice to reduce cadmium levels would be beneficial.