Supplementary information

Title: Spatial distribution and partitioning of polychlorinated biphenyls in Tokyo Bay, Japan

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Table S1a Concentrations of PCB congeners presented at >3% of ΣPCBs in any sample, 7 indicator PCB congeners (#28, #52, #101, #118, #138, #153, and #180), the 12 dioxin-like PCB congeners, and homologues in the particulate phase in water samples (pg L^{-1})

Homologue	Congener	Sampling layer	St. 1	St. 2	St. 3	St. 4	St. 5	St. 6	St. 7	St. 8	St. 9	St. 10
Di-CBs	#11	Surface	6.0	4.6	8.3	9.9	6.9	10	<1.5[a]	5.1	19	5.7
		Bottom	3.0	5.6	9.1	4.7	4.3	31	6.2	5.0	12	8.7
Tri-CBs	#18	Surface	1.4	1.4	5.5	3.7	<0.91	1.5	<1.1	<1.5	<1.6	<1.2
		Bottom	0.95	1.2	5.6	1.6	0.93	1.6	<1.6	<1.6	<1.6	<1.6
	#31	Surface	5.3	4.0	20	12	3.3	6.6	3.1	<1.5	<1.6	2.2
		Bottom	2.7	4.9	24	3.0	2.4	4.4	3.5	<1.5	1.7	5.1
	#28	Surface	5.9	4.4	24	17	4.4	7.4	3.5	1.7	2.1	2.4
		Bottom	3.9	7.5	31	4.3	2.5	5.6	6.3	2.1	2.1	8.9
Tetra-CBs	#52/#69	Surface	8.6	7.9	28	15	7.0	11	4.0	1.9	3.7	3.3
		Bottom	6.4	7.7	20	4.3	4.5	6.2	5.7	2.2	2.4	3.8
	#49	Surface	7.2	6.3	22	13	5.2	9.7	2.9	1.6	2.4	2.7
		Bottom	5.4	7.2	19	3.3	3.4	4.2	4.5	1.9	2.4	5.8
	#44	Surface	6.0	6.2	21	10	5.4	8.7	3.2	2.0	1.8	2.3
		Bottom	3.7	6.1	17	2.6	3.6	3.5	4.0	1.3	1.7	3.0
	#70	Surface	11	14	40	26	10	18	5.1	3.5	4.0	5.0
		Bottom	9.4	14	45	6.2	9.2	10	9.5	2.6	4.0	9.6
	#66	Surface	12	13	42	26	9.5	18	4.9	3.5	4.5	5.3
		Bottom	9.3	15	52	6.6	7.5	11	11.6	3.7	4.9	15
	#81	Surface	<0.20	<0.33	<0.33	<0.38	<0.28	<0.26	<0.61	<0.56	<0.63	<0.55
		Bottom	<0.35	<0.24	<0.58	<0.29	<0.35	<0.31	<0.75	<0.39	<0.60	<0.43
	#77	Surface	0.88	1.3	8.3	4.4	1.7	3.0	<0.61	<0.56	0.54	0.52
		Bottom	0.88	1.5	8.7	0.87	1.4	1.2	1.4	0.34	0.37	2.2
Penta-CBs	#101	Surface	7.1	6.4	18	13	5.1	10	4.0	2.8	3.1	3.1
		Bottom	6.7	10	24	4.8	7.6	9.6	6.1	3.1	3.4	6.2
	#120/#110	Surface	8.3	5.3	22	15	6.1	11	4.5	3.3	3.3	3.9
		Bottom	6.1	9.6	28	4.8	8.7	11	7.5	2.7	3.5	5.6
	#123	Surface	<0.10	<0.22	<0.33	<0.26	<0.11	<0.15	<0.60	<0.39	<0.16	<0.38
		Bottom	<0.24	<0.15	<0.51	<0.22	<0.20	<0.22	<0.70	<0.33	<0.44	<0.48
	#118	Surface	4.6	4.2	18	13	4.3	9.2	4.3	2.7	2.6	3.4
		Bottom	4.2	8.8	29	3.1	7.4	11	7.7	2.1	3.0	8.5
	#114	Surface	<0.10	<0.22	0.45	0.46	<0.11	<0.15	<0.60	<0.39	<0.16	<0.38
		Bottom	<0.24	<0.15	<0.51	<0.22	<0.20	<0.22	<0.70	<0.33	<0.44	<0.48
	#105	Surface	2.2	1.7	6.0	4.3	1.7	3.8	1.4	1.1	1.4	1.4
		Bottom	1.7	2.9	11	1.9	3.5	4.3	3.3	0.74	1.4	3.2
	#126	Surface	<0.10	<0.22	<0.33	<0.26	<0.11	<0.15	<0.60	<0.39	<0.16	<0.38
		Bottom	<0.24	<0.15	<0.51	<0.22	<0.20	<0.22	<0.70	<0.33	<0.44	<0.48
Hexa-CBs	#153	Surface	5.6	4.7	14	9.0	3.9	7.5	3.5	3.3	2.8	4.2
		Bottom	4.9	8.6	18	2.7	6.2	9.4	9.0	3.3	3.5	11
	#138	Surface	3.8	4.1	12	8.5	3.6	6.4	2.8	2.3	2.1	2.7
		Bottom	4.1	7.6	18	2.8	6.7	10	6.9	2.5	3.1	7.9
	#167	Surface	0.17	<0.21	<0.23	0.72	<0.17	0.37	<0.52	<0.36	<0.31	<0.42
		Bottom	<0.12	0.41	0.64	<0.25	<0.14	<0.08	<0.44	<0.87	<0.48	<0.35
	#156	Surface	0.41	0.43	2.3	0.66	0.27	1.4	<0.52	<0.36	<0.31	<0.42
		Bottom	<0.12	0.63	2.3	<0.25	0.93	1.4	0.77	<0.87	<0.48	1.1
	#157	Surface	<0.08	<0.21	0.42	<0.23	<0.17	<0.08	<0.52	<0.36	<0.31	<0.42
		Bottom	<0.12	0.30	0.67	<0.25	<0.14	<0.17	<0.44	<0.87	<0.48	<0.35
	#169	Surface	<0.08	<0.21	<0.23	<0.23	<0.17	<0.08	<0.52	<0.36	<0.31	<0.42
		Bottom	<0.12	<0.13	<0.60	<0.25	<0.14	<0.17	<0.44	<0.87	<0.48	<0.35
Hepta-CBs	#180	Surface	1.3	0.60	2.7	2.6	0.68	2.0	<1.3	<0.56	1.0	1.6
		Bottom	<0.30	2.6	7.1	<0.28	2.1	2.9	3.9	1.3	1.3	5.7
	#189	Surface	<0.33	<0.29	<0.76	<0.41	<0.41	<0.20	<1.6	<0.68	<1.1	<0.61
		Bottom	<0.30	<0.23	<0.93	<0.33	<0.17	<0.33	<0.85	<1.3	<0.60	<1.1
Mono-CBs (sum of 3 congeners)		Surface	<1.2	0.76	1.2	0.69	<1.4	<1.3	2.6	<1.9	<3.6	<3.5
		Bottom	<0.95	<0.52	3.8	2.3	<0.96	<2.1	<1.5	<1.4	<3.1	<3.2
Di-CBs (sum of 12 congeners)		Surface	9.0	7.1	22	18	6.9	14	<1.5	5.1	19	5.7
		Bottom	4.1	11	28	7.5	4.3	31	6.2	5.0	12	15
Tri-CBs (sum of 24 congeners)		Surface	21	19	85	59	13	29	8.6	1.7	2.1	4.7
		Bottom	15	25	110	16	10	25	16	2.1	3.8	23
Tetra-CBs (sum of 42 congeners)		Surface	82	81	270	160	64	120	34	20	29	32
		Bottom	59	90	270	41	46	61	58	16	29	64
Penta-CBs (sum of 46 congeners)		Surface	40	32	120	77	30	60	22	14	16	19
		Bottom	32	55	150	23	42	59	35	12	18	36
Hexa-CBs (sum of 42 congeners)		Surface	21	19	67	45	15	36	12	10	8.5	14
		Bottom	17	38	91	11	30	45	31	8.6	12	40
Hepta-CBs (sum of 24 congeners)		Surface	3.2	1.6	8.9	6.4	1.9	5.0	<1.6	0.80	<1.1	2.7
		Bottom	<0.30	8.5	18	<0.33	5.3	6.8	6.1	1.3	3.4	20
Octa-CBs (sum of 12 congeners)		Surface	0.39	0.31	0.42	0.32	<0.19	0.24	<1.2	<0.76	<0.76	<0.73
		Bottom	0.21	1.2	1.2	<0.32	0.43	<0.42	<0.55	<0.77	<0.68	5.5
Nona-CBs (sum of 3 congeners)		Surface	<0.07	<0.30	<0.82	<0.25	<0.16	<0.29	<1.0	<1.4	<1.1	<0.76
		Bottom	<0.27	<0.19	<0.66	<0.58	<0.21	<0.76	<1.1	<1.1	<0.88	<1.1
Deca-CB		Surface	0.24	<0.19	0.97	0.50	<0.10	<0.10	<0.83	<1.1	<1.1	<0.68
		Bottom	<0.08	0.20	0.45	<0.20	<0.23	<0.58	<0.81	<1.3	<0.73	<1.5
ΣPCBs (sum of 209 congeners)		Surface	180	160	580	370	130	260	78	52	74	79
		Bottom	130	230	680	100	140	230	150	45	79	200

[a]Detection limits were calculated for a signal-to-noise ratio of 3.

Table S1b Concentrations of PCB congeners presented at >3% of ΣPCBs in any sample, 7 indicator PCB congeners (#28, #52, #101, #118, #138, #153, and #180), the 12 dioxin-like PCB congeners, and homologues in the dissolved phase in water samples (pg L^{-1})

Homologue	Congener	Sampling layer	St. 1	St. 2	St. 3	St. 4	St. 5	St. 6	St. 7	St. 8	St. 9	St. 10
Di-CBs	#11	Surface	<1.7[a]	7.3	12	2.8	7.0	4.2	3.3	5.8	6.4	2.4
		Bottom	<1.1	2.4	2.1	1.8	2.2	2.7	1.9	5.3	25	2.4
Tri-CBs	#18	Surface	5.7	7.2	45	37	8.6	10	5.8	3.9	4.2	4.0
		Bottom	4.0	14	12	4.6	4.2	<1.3	5.2	<0.85	7.1	<0.72
	#31	Surface	<1.2	7.4	31	18	6.9	13	3.5	4.3	4.2	<1.3
		Bottom	<0.80	9.9	<0.59	<0.68	3.0	<1.3	3.3	3.1	8.0	<0.72
	#28	Surface	1.5	8.4	39	35	8.5	8.5	4.8	4.8	5.5	3.4
		Bottom	1.1	13	6.5	2.2	<1.3	<1.3	<1.7	3.3	5.9	0.70
Tetra-CBs	#52/#69	Surface	8.2	6.2	24	44	10	12	5.5	3.5	5.1	4.1
		Bottom	12	16	23	9.2	2.8	2.9	5.7	4.0	5.6	1.7
	#49	Surface	7.1	5.0	17	26	6.6	8.3	4.8	3.3	3.8	2.4
		Bottom	9.0	9.5	15	6.6	1.8	<0.76	4.8	<0.81	5.3	1.6
	#44	Surface	4.9	<0.31	16	31	7.7	5.4	4.5	3.4	3.1	3.2
		Bottom	6.5	7.8	14	7.6	2.0	3.3	3.7	1.8	4.2	1.6
	#70	Surface	2.6	4.8	18	24	5.5	6.6	<1.0	3.5	4.1	1.6
		Bottom	1.3	6.8	3.7	1.4	3.3	<0.76	3.2	<0.81	7.1	1.7
	#66	Surface	4.2	3.3	14	24	6.4	6.0	3.5	2.4	3.1	1.8
		Bottom	<0.54	8.6	7.7	3.9	2.0	<0.76	3.1	3.0	7.0	1.9
	#81	Surface	<0.48	<0.37	<0.42	<0.79	<0.91	<0.61	<1.0	<0.51	<0.80	<0.83
		Bottom	<0.65	<0.59	<0.54	<0.38	<0.50	<0.76	<0.53	<0.81	<2.5	<0.58
	#77	Surface	<0.48	<0.37	<0.42	<0.79	<0.91	<0.61	<1.0	<0.51	<0.80	<0.83
		Bottom	<0.65	<0.59	<0.54	<0.38	<0.50	<0.76	<0.53	<0.81	<2.5	<0.58
Penta-CBs	#101	Surface	2.7	1.5	4.2	8.7	1.5	1.9	<0.58	0.91	1.6	1.5
		Bottom	3.6	4.1	6.7	3.8	1.3	<0.46	2.1	<0.41	3.3	1.5
	#120/#110	Surface	2.1	1.7	7.0	12	2.5	3.3	<0.58	<0.39	1.3	1.8
		Bottom	2.6	4.4	5.8	4.3	<0.44	2.5	2.3	1.5	3.7	0.73
	#123	Surface	<0.37	<0.27	<0.26	<0.21	<0.51	<0.34	<0.58	<0.39	<0.53	<0.47
		Bottom	<0.30	<0.43	<0.42	<0.70	<0.44	<0.46	<0.65	<0.41	<1.3	<0.25
	#118	Surface	<0.37	1.5	2.8	4.8	1.3	1.8	<0.58	0.77	0.73	1.1
		Bottom	1.3	2.6	<0.42	1.7	1.2	2.1	<0.65	1.2	1.9	0.70
	#114	Surface	<0.37	<0.27	<0.26	<0.21	<0.51	<0.34	<0.58	<0.39	<0.53	<0.47
		Bottom	<0.30	<0.43	<0.42	<0.70	<0.44	<0.46	<0.65	<0.41	<1.3	<0.25
	#105	Surface	<0.30	0.76	1.3	2.0	0.64	<0.29	<0.48	0.45	<0.44	<0.39
		Bottom	<0.25	<0.36	1.5	<0.58	<0.36	<0.36	<0.54	<0.34	<1.1	<0.20
	#126	Surface	<0.37	<0.27	<0.26	<0.21	<0.51	<0.34	<0.58	<0.39	<0.53	<0.47
		Bottom	<0.30	<0.43	<0.42	<0.70	<0.44	<0.46	<0.65	<0.41	<1.3	<0.25
Hexa-CBs	#153	Surface	<0.40	5.1	5.5	33	1.8	1.7	0.85	1.8	2.4	1.1
		Bottom	2.4	6.4	11	6.0	<0.35	4.8	3.7	2.1	5.9	<0.27
	#138	Surface	<0.40	2.4	3.7	17	1.0	1.2	1.2	1.0	1.3	<0.59
		Bottom	2.4	4.9	2.5	6.1	<0.35	3.2	2.1	1.9	4.4	<0.27
	#167	Surface	<0.40	<0.26	<0.23	<0.36	<0.62	<0.35	<0.54	<0.25	<0.64	<0.59
		Bottom	<0.26	<0.74	<0.33	<0.27	<0.35	<0.86	<0.76	<0.74	<2.4	<0.27
	#156	Surface	<0.40	<0.26	<0.23	<0.36	<0.62	<0.35	<0.54	<0.25	<0.64	<0.59
		Bottom	<0.26	<0.74	<0.33	<0.27	<0.35	<0.86	<0.76	<0.74	<2.4	<0.27
	#157	Surface	<0.40	<0.26	<0.23	<0.36	<0.62	<0.35	<0.54	<0.25	<0.64	<0.59
		Bottom	<0.26	<0.74	<0.33	<0.27	<0.35	<0.86	<0.76	<0.74	<2.4	<0.27
	#169	Surface	<0.40	<0.26	<0.23	<0.36	<0.62	<0.35	<0.54	<0.25	<0.64	<0.59
		Bottom	<0.26	<0.74	<0.33	<0.27	<0.35	<0.86	<0.76	<0.74	<2.4	<0.27
Hepta-CBs	#180	Surface	<1.3	2.1	3.2	19.4	<1.4	<1.6	<1.5	1.2	<1.3	<1.4
		Bottom	2.8	4.4	4.3	6.1	<1.9	3.0	<2.1	<2.0	1.8	1.6
	#189	Surface	<1.3	<0.89	<0.97	<0.85	<1.4	<1.6	<1.5	<1.0	<1.3	<1.4
		Bottom	<1.2	<1.4	<1.3	<1.6	<1.9	<2.3	<2.1	<2.0	<1.8	<1.5
Mono-CBs (sum of 3 congeners)		Surface	<1.3	<0.89	3.0	<1.0	<0.92	<0.62	<0.88	<0.61	<0.56	<0.52
		Bottom	<1.1	<0.67	<0.84	<0.86	<1.4	<0.51	<1.0	<0.75	6.5	<0.47
Di-CBs (sum of 12 congeners)		Surface	<1.8	11	83	18	19	17	5.9	11	14	3.3
		Bottom	<1.4	7.4	2.1	1.8	2.2	3.9	1.9	5.3	37	3.0
Tri-CBs (sum of 24 congeners)		Surface	13	37	220	150	44	58	20	21	25	9.7
		Bottom	6.8	58	36	16	11	<1.3	10	12	30	1.0
Tetra-CBs (sum of 42 congeners)		Surface	43	36	160	270	53	70	26	26	31	19
		Bottom	50	79	110	56	15	11	31	13	44	11
Penta-CBs (sum of 46 congeners)		Surface	5.9	8.0	25	51	9.0	13	1.8	3.0	7.6	5.6
		Bottom	12	18	33	17	3.7	6.6	8.2	3.6	11	4.4
Hexa-CBs (sum of 42 congeners)		Surface	2.7	14	15	110	4.7	4.1	2.1	4.3	6.2	2.5
		Bottom	7.7	16	23	21	<0.35	11	11	4.0	17	<0.27
Hepta-CBs (sum of 24 congeners)		Surface	<1.3	8.0	8.1	42	<1.4	<1.6	<1.5	1.2	<1.3	<1.4
		Bottom	4.4	9.5	18	16	<19	3.0	<2.1	<2.0	6.3	1.6
Octa-CBs (sum of 12 congeners)		Surface	<0.46	<0.65	<0.86	<0.68	<0.94	<0.99	<0.63	<0.31	<0.52	<0.72
		Bottom	<0.81	<1.5	<2.2	<1.2	<1.4	<1.0	<1.3	<0.98	<1.9	<0.36
Nona-CBs (sum of 3 congeners)		Surface	<1.4	<0.72	<1.5	<0.97	<1.7	<0.57	<1.2	<0.64	<0.43	<0.44
		Bottom	<1.2	<1.7	<1.6	<0.93	<1.3	<0.45	<2.4	<1.0	<0.94	<0.40
Deca-CB		Surface	<1.7	<1.1	<0.86	<1.1	<0.50	<0.65	<1.2	<0.53	<0.29	<0.70
		Bottom	<2.0	<1.7	<2.5	<0.60	<1.2	<0.57	<0.70	<1.1	<2.3	<0.21
ΣPCBs (sum of 209 congeners)		Surface	65	110	520	640	130	160	56	67	81	40
		Bottom	81	190	230	130	31	36	63	38	150	20

[a]Detection limits were calculated for a signal-to-noise ratio of 3.

Table S2 Concentrations of PCB congeners presented at >3% of ΣPCBs in any sample, 7 indicator PCB congeners (#28, #52, #101, #118, #138, #153, and #180), the 12 dioxin-like PCB congeners, and homologues in bottom sediment (pg g^{-1}-dry weight)

Homologue	BZ#	St. 1	St. 2	St. 3	St. 4	St. 5	St. 6	St. 7	St. 8	St. 9	St. 10
Di-CBs	#11	310	890	1000	20	730	410	380	150	61	61
Tri-CBs	#18	240	940	250	23	260	180	150	110	56	13
	#31	1400	4800	1600	39	1400	930	690	430	110	46
	#28	2000	6000	2800	66	2300	1700	1300	910	410	100
Tetra-CBs	#52/#69	1100	3500	2200	140	1800	1000	890	400	170	47
	#49	1100	3200	2000	160	1600	1000	1000	500	270	73
	#44	770	2400	1500	47	1000	560	520	210	84	23
	#70	2400	7400	4600	130	3300	2100	1700	740	250	120
	#66	2900	8000	5500	230	4200	2900	2600	1500	690	210
	#81	20	32	<11[a]	<7.6	43	32	<11	<4.1	<4.4	<4.7
	#77	400	1200	720	42	700	360	330	160	66	37
Penta-CBs	#101	1400	3500	2300	140	2200	1300	1200	580	180	68
	#120/#110	1400	4100	2500	170	2200	1500	1300	450	140	65
	#123	25	72	51	<2.4	45	34	26	15	<3.3	<2.9
	#118	1400	3900	2600	230	2400	1700	1600	750	260	120
	#114	24	80	<4.9	<2.4	33	40	34	13	6	<2.9
	#105	590	1400	1100	51	900	630	620	260	90	52
	#126	21	20	34	<2.4	32	<6.8	<3.5	<4.2	<3.3	<2.9
Hx-CBs	#153	1200	2400	2500	240	2600	2000	2200	1000	590	160
	#138	1000	2200	2100	120	2000	1500	1400	620	270	87
	#167	77	140	110	11	120	98	79	36	14	9
	#156	120	340	210	18	210	200	160	76	32	13
	#157	29	69	67	<4.0	64	55	50	21	<3.4	<3.0
	#169	<5.0	<7.0	<7.3	<4.9	<7.5	<8.7	<10	<4.8	<4.1	<3.5
Hp-CBs	#180	470	740	850	35	1100	880	860	510	280	70
	#189	13	23	<11	<11	<17	<21	<13	<11	<9.2	<6.6
Mono-CBs (sum of 3 congeners)		170	410	260	<9.2	290	370	240	110	27	<7.8
Di-CBs (sum of 12 congeners)		1300	4400	2700	160	2000	1700	1600	1100	700	180
Tri-CBs (sum of 24 congeners)		6700	22000	8500	300	7000	5000	3900	2700	1100	310
Tetra-CBs (sum of 42 congeners)		14000	43000	28000	1100	21000	13000	12000	5800	2600	800
Penta-CBs (sum of 46 congeners)		8200	22000	15000	1100	13000	8600	8100	3600	1300	490
Hexa-CBs (sum of 42 congeners)		5300	12000	11000	650	11000	8000	7800	3700	1800	550
Hepta-CBs (sum of 24 congeners)		1600	2800	3400	35	4200	3400	3400	1800	1100	260
Octa-CBs (sum of 12 congeners)		410	590	730	<5.5	770	910	1100	590	350	77
Nona-CBs (sum of 3 congeners)		40	70	77	8	46	110	98	83	49	8
Deca-CB		42	93	120	19	140	110	120	270	34	8
ΣPCBs (sum of 209 congeners)		38000	110000	69000	3400	60000	41000	38000	20000	9100	2700

[a]Detection limits were calculated for a signal-to-noise ratio of 3.