Appendix 1a

PCDD, PCDF, and Co-PCB concentrations in soil, sediment, seawater, Pacific oyster, Japanese anchovy, marbled sole, and Japanese flounder samples

	soil	sediment S	sediment M	seawater S	seawater M1	seawater I	seawater M2	Pacific oyster1	Pacific oyster2	Pacific oyster3	Japanese anchovy	marbled sole1	marbled sole2	marbled sole3	marbled sole4	Japanese flounder*
body length (cm)											15*1	32.8	28.2	26.6	28.5	35.4 *1
1368-T_4CDD	83	140	210	7.8	2.3	6.2	3.4	640	480	500	3.9	6.3	2.9	11	6.3	1.98 ± 1.55
1379-T_4CDD	32	30	71	2.5	0.7	1.4	1.0	120	96	100	0.4	0.08	0.06	0.15	0.06	0.16 ± 0.25
1378-T_4CDD	3.0	N.D.	2.0	N.D.	N.D.	N.D.	N.D.	1.9	1.1	1.2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1369/1247/1248-T_4CDD	4.0	1.0	3.0	0.1	N.D.	N.D.	N.D.	5.3	4.7	5.2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1268-T_4CDD	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1.3	0.86	0.87	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1478-T_4CDD	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.09	0.07	0.07	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2378-T_4CDD	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.1	0.08	0.08	N.D.	0.07	0.16	0.09	0.09	0.08 ± 0.02
1237-T_4CDD	1.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.62	0.92	0.96	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1234/1246/1249/1238-T_4CDD	4.0	1.0	3.0	0.1	N.D.	N.D.	N.D.	3.5	4.2	4.6	0.05	N.D.	N.D.	N.D.	N.D.	N.D.
1236/1279-T_4CDD	2.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	1.4	1.0	1.1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1469/1278-T_4CDD	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.06	0.05	0.06	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1239-T_4CDD	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.26	0.17	0.17	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1269-T_4CDD	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.09	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1267-T_4CDD	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.44	0.48	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1289-T_4CDD	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
total T_4CDDs	130	172	291	10.5	3.0	7.6	4.4	774.6	589.6	614.8	4.35	6.45	3.12	11.24	6.45	2.22 ± 1.8
12468/12479-P_5CDD	26	2.0	11	0.4	0.3	0.2	0.1	9.0	4.9	4.9	0.07	N.D.	N.D.	N.D.	N.D.	N.D.
12368-P_5CDD	21	10	28	0.9	0.4	0.5	0.4	37	23	23	0.21	0.07	0.05	0.11	0.06	0.04 ± 0.08
12478-P_5CDD	2.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.67	0.26	0.24	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12379-P_5CDD	13	4.0	11	0.3	0.2	0.1	0.1	6.9	3.9	4.0	0.06	N.D.	N.D.	N.D.	N.D.	N.D.
12469/12347-P_5CDD	6.0	N.D.	2.0	N.D.	N.D.	N.D.	N.D.	0.55	0.36	0.4	N.D.	N.D.	N.D.	N.D.	0.07	N.D.
12378-P_5CDD	3.0	1.0	2.0	N.D.	N.D.	N.D.	N.D.	0.46	0.25	0.22	0.27	0.21	0.58	0.34	0.33	0.26 ± 0.05
12369-P_5CDD	2.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.37	0.26	0.34	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12467-P_5CDD	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.15	N.D.	0.05	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12489-P_5CDD	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.14	0.05	0.06	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12346-P_5CDD	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12367-P_5CDD	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.12	0.05	0.05	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12389-P_5CDD	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.12	0.05	0.05	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
total P_5CDDs	77	17	55	1.6	0.9	0.8	0.6	55.5	33.1	33.3	0.61	0.28	0.63	0.45	0.46	0.3 ± 0.07
123468/124679/124689-H_6CDD	64	5.0	28	0.4	0.5	0.4	N.D.	2.7	0.9	0.9	0.1	N.D.	N.D.	0.1	N.D.	N.D.
123679/123689-H_6CDD	29	3.0	13	0.3	0.2	N.D.	N.D.	2.2	0.8	0.8	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
123478-H_6CDD	4.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.2	0.1	0.1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
123678-H_6CDD	8.0	N.D.	3.0	N.D.	N.D.	N.D.	N.D.	0.5	0.2	0.2	0.2	0.2	0.5	0.2	0.25	0.18 ± 0.05
123469-H_6CDD	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
123789-H_6CDD	7.0	N.D.	3.0	N.D.	N.D.	N.D.	N.D.	0.4	0.1	0.1	N.D.	N.D.	0.1	N.D.	0.1	N.D.
123467-H_6CDD	3.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
total H_6CDDs	115	8.0	47	0.7	0.7	0.4	N.D.	6.0	2.1	2.1	0.3	0.2	0.6	0.3	0.35	0.18 ± 0.05
1234679-H_7CDD	74	11	40	1.0	0.4	0.7	0.6	3.1	0.9	0.9	0.3	N.D.	N.D.	N.D.	N.D.	N.D.
1234678-H_7CDD	82	11	27	0.9	0.7	0.4	0.3	1.7	0.6	0.6	0.4	0.2	0.4	0.2	0.2	0.15 ± 0.06
total H_7CDDs	156	22	67	1.9	1.1	1.1	0.9	4.8	1.5	1.5	0.7	0.2	0.4	0.2	0.2	0.15 ± 0.06
O_8CDD	680	110	170	9.7	3.2	2.5	3.5	8.4	3.3	3.6	2.1	N.D.	0.5	0.2	N.D.	N.D.
total PCDDs	1158	329	630	24.4	8.9	12.4	9.4	849.3	629.6	655.3	8.06	7.13	5.25	12.39	7.46	2.84 ± 1.85

Appendix 1b

1368-T_4CDF	2.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.53	0.37	0.4	N.D.	0.08	0.05	0.13	0.09	N.D.
1378/1379-T_4CDF	3.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.39	0.23	0.24	N.D.	0.05	N.D.	0.07	0.06	N.D.
1347-T_4CDF	2.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.28	0.28	0.27	N.D.	N.D.	N.D.	0.05	N.D.	N.D.
1468-T_4CDF	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.73	0.53	0.57	N.D.	0.08	N.D.	0.15	0.10	N.D.
1247/1367-T_4CDF	4.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.61	0.42	0.47	N.D.	N.D.	N.D.	N.D.	0.05	N.D.
1348-T_4CDF	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.24	0.17	0.18	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1346/1248-T_4CDF	3.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.69	0.42	0.48	N.D.	N.D.	N.D.	0.06	0.05	N.D.
1246/1268-T_4CDF	4.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.8	0.55	0.61	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1478/1369/1237-T_4CDF	4.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.63	0.39	0.43	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1678/1234-T_4CDF	3.0	N.D.	N.D.	0.7	N.D.	N.D.	N.D.	0.18	0.19	0.12	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2468/1238/1467/1236-T_4CDF	8.0	4.0	9.0	1.0	N.D.	0.2	N.D.	20	19	19	0.1	0.1	N.D.	0.15	0.07	0.04 ± 0.07
1349-T_4CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1278-T_4CDF	3.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.3	0.25	0.28	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1267/1279-T_4CDF	3.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.34	0.25	0.27	N.D.	N.D.	N.D.	N.D.	N.D.	0.02 ± 0.05
1469-T_4CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1249/2368-T_4CDF	4.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	1.0	0.71	1.7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2467-T_4CDF	5.0	N.D.	2.0	N.D.	N.D.	N.D.	N.D.	1.1	0.92	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1239-T_4CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.28	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2347-T_4CDF	3.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.31	N.D.	0.31	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1269-T_4CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.06	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2378-T_4CDF	3.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.51	0.42	0.36	0.32	0.53	1.0	0.83	0.77	0.32 ± 0.03
2348-T_4CDF	2.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.25	0.27	0.27	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2346-T_4CDF	3.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.37	0.34	0.38	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2367-T_4CDF	5.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.67	0.45	0.48	0.08	0.11	0.09	0.17	0.16	N.D.
3467-T_4CDF	4.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.41	0.37	0.39	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1289-T_4CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
total T_4CDFs	70	4.0	21	1.7	N.D.	0.2	N.D.	30.5	26.8	27.2	0.5	0.95	1.14	1.61	1.35	0.38 ± 0.06
13468-P_5CDF	3.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.35	0.17	0.16	N.D.	0.08	0.06	0.13	0.11	N.D.
12468-P_5CDF	9.0	N.D.	2.0	0.2	0.1	N.D.	N.D.	1.6	0.77	0.77	N.D.	0.13	0.1	0.25	0.11	0.03 ± 0.03
13678-P_5CDF	2.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.12	0.07	0.08	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
13479-P_5CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12368/13478-P_5CDF	6.0	N.D.	2.0	N.D.	0.2	N.D.	N.D.	0.51	0.25	0.25	0.06	0.20	0.37	0.28	0.30	0.03 ± 0.03
12478-P_5CDF	5.0	N.D.	2.0	N.D.	N.D.	N.D.	N.D.	0.71	0.25	0.24	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12479/13467-P_5CDF	3.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.3	0.15	0.16	N.D.	0.09	0.1	0.14	N.D.	N.D.
12467-P_5CDF	3.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.4	0.16	0.17	N.D.	N.D.	N.D.	0.06	N.D.	N.D.
14678/12347-P_5CDF	4.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.18	0.08	0.09	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
13469-P_5CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.07	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12348/12378-P_5CDF	5.0	N.D.	1.0	N.D.	0.1	N.D.	N.D.	0.18	0.07	0.08	0.14	0.10	0.25	0.14	0.18	0.13 ± 0.02
12346-P_5CDF	2.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.15	0.1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12379-P_5CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.11	0.08	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12367-P_5CDF	3.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.19	0.09	0.09	N.D.	0.07	0.09	0.11	0.11	N.D.
12469/12678-P_5CDF	4.0	N.D.	1.0	N.D.	0.1	N.D.	N.D.	0.3	0.13	0.14	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12679-P_5CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12369-P_5CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
23468-P_5CDF	6.0	1.0	3.0	0.2	0.1	N.D.	N.D.	1.9	1.1	1.1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12349-P_5CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12489-P_5CDF	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.05	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
23478-P_5CDF	5.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.37	0.21	0.19	0.44	0.2	0.43	0.36	0.28	0.41 ± 0.05
12389-P_5CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
23467-P_5CDF	9.0	N.D.	2.0	0.1	0.2	N.D.	N.D.	0.73	0.36	0.35	0.09	0.09	0.11	0.11	0.14	N.D.
total P_5CDFs	70	1.0	16	0.5	0.8	N.D.	N.D.	7.96	4.12	4.05	0.73	0.96	1.51	1.58	1.23	0.6 ± 0.09

Appendix 1c

123468-H_6CDF	8.0	N.D.	2.0	N.D.	N.D.	N.D.	N.D.	0.1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.1	N.D.
134678/134679-H_6CDF	9.0	N.D.	3.0	N.D.	0.2	N.D.	N.D.	0.3	0.1	0.1	N.D.	0.1	0.2	0.1	N.D.	N.D.
124678-H_6CDF	14	N.D.	4.0	N.D.	0.2	N.D.	N.D.	0.9	0.3	0.3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
124679-H_6CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
123478/123479-H_6CDF	6.0	N.D.	2.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.1	N.D.	0.1	N.D.	0.1	0.03 ± 0.05
123678-H_6CDF	6.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.2	N.D.	N.D.	0.1	N.D.	0.2	N.D.	0.2	N.D.
124689-H_6CDF	6.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.3	0.1	0.1	N.D.	0.1	0.3	0.2	N.D.	0.03 ± 0.05
123467-H_6CDF	8.0	N.D.	2.0	N.D.	N.D.	N.D.	N.D.	0.1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
123679-H_6CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
123469/123689-H_6CDF	3.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
123789-H_6CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
123489-H_6CDF	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.2	N.D.
234678-H_6CDF	10	N.D.	3.0	N.D.	N.D.	N.D.	N.D.	0.6	0.2	0.2	0.3	0.2	0.4	0.2	0.6	0.08 ± 0.05
total H_6CDFs	70	N.D.	16	N.D.	0.4	N.D.	N.D.	2.6	0.7	0.7	0.5	0.4	1.2	0.5	N.D.	0.13 ± 0.13
1234678-H_7CDF	35	3.0	8.0	0.4	0.3	N.D.	N.D.	0.2	N.D.	N.D.	0.2	N.D.	0.1	N.D.	N.D.	N.D.
1234679-H_7CDF	7.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1234689-H_7CDF	24	3.0	7.0	0.3	N.D.	N.D.	N.D.	0.1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1234789-H_7CDF	5.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
total H_7CDFs	71	6.0	15	0.7	0.3	N.D.	N.D.	0.3	N.D.	N.D.	0.2	N.D.	0.1	N.D.	N.D.	N.D.
O_8CDF	50	17	9.0	N.D.	N.D.	N.D.	N.D.	0.3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	3.18	N.D.
total PCDFs	331	28	77	2.9	1.5	0.2	N.D.	41.7	31.6	32.0	1.93	2.31	3.95	3.69	10.64	1.1 ± 0.23
3,3',4,4'-T_4CB(#77)	16	6.0	21	2.2	0.6	0.3	0.7	8.8	11	6.7	13	15	24	22	21	13 ± 1.83
3,4,4',5-T_4CB(#81)	1.0	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	0.9	1.0	0.7	1.1	1.8	3.1	2.6	2.5	0.75 ± 0.13
3,3',4,4',5-P_5CB(#126)	9.0	N.D.	1.0	0.2	N.D.	N.D.	N.D.	1.9	1.5	1.2	5.6	3.7	7.5	5.0	4.6	7.2 ± 0.91
3,3',4,4',5,5'-H_6CB(#169)	2.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.4	0.3	0.2	1.4	1.0	2.1	1.2	1.2	1.9 ± 0.18
total non-*ortho* PCBs	28	6.0	23	2.4	0.6	0.3	0.7	12	13.8	8.8	21.1	21.5	36.7	30.8	29.3	22.85 ± 3.02
2,3,3',4,4'-P_5CB(#105)	57	22	73	2.1	1.6	0.7	0.5	59	45	46	140	110	340	160	150	252.5 ± 75
2,3,4,4',5-P_5CB(#114)	4.0	2.0	3.0	1.4	N.D.	N.D.	N.D.	2.7	2.4	3.0	10	7.7	19	11	8.8	17 ± 5.0
2,3',4,4',5-P_5CB(#118)	140	49	220	5.0	4.3	2.2	1.7	310	160	160	460	310	1100	510	480	840 ± 267.3
2',3,4,4',5-P_5CB(#123)	4.0	1.0	9.0	N.D.	N.D.	N.D.	N.D.	5.3	3.4	3.6	7.3	8.1	23	11	10	14.8 ± 3.9
2,3,3',4,4',5-H_6CB(#156)	31	4.0	19	0.4	0.4	N.D.	N.D.	10	6.2	7.0	43	31	110	45	43	85.3 ± 25.8
2,3,3',4,4',5'-H_6CB(#157)	11	N.D.	5.0	N.D.	N.D.	N.D.	N.D.	5.1	3.3	3.3	12	12	34	15	14	22 ± 5.6
2,3',4,4',5,5'-H_6CB(#167)	17	1.0	10	N.D.	N.D.	N.D.	N.D.	16	7.5	7.6	24	20	74	29	29	43.8 ± 11.2
2,3,3',4,4',5,5'-H_7CB(#189)	5.0	N.D.	3.0	N.D.	N.D.	N.D.	N.D.	0.6	0.2	0.2	6.7	5.3	10	5.8	5.5	8.5 ± 1.2
total mono-*ortho* PCBs	269	79	342	8.9	6.3	2.9	2.2	408.7	228	230.7	703	504.1	1710	786.8	740.3	1283.8 ± 394.5
total Co-PCBs	297	85	365	11.3	6.9	3.2	2.9	420.7	241.8	239.5	724.1	525.6	1746.7	817.6	769.6	1306.6 ± 396.9

*unpublished data (N = 4, Mean±S.D.)

*1 average

unit; pg/g dry weight for soil and sediment
pg/L for seawater
pg/g wet weight for biological samples

The detection limits for the tetra-, penta-, hexa-, hepta-, and octachlorinated PCDD/F congeners and the Co-PCBs in the sediment and soil samples were 1, 1, 2, 2, 5, and 1 pg/g dry weight, respectively.

The detection limits in seawater were 0.05, 0.05, 0.1, 0.1, 0.2, and 0.1 pg/L, respectively.

The detection limits in biological samples were 0.05, 0.05, 0.1, 0.1, 0.2, and 0.1 pg/g wet weight, respectively.

Sediment S and seawater S samples were collected from shallow inshore (5-10 m depth) off Sendai city.

Sediment M, seawater M1 and M2 samples were colleted in Matsushima Bay (0.5-2 m depth) which is within to Sendai Bay.

Seawater I sample was collected from offshore (30 m depth) of Ishinomaki city.

Fig.1a The chromatograms of TeCDD for soil (ESI)

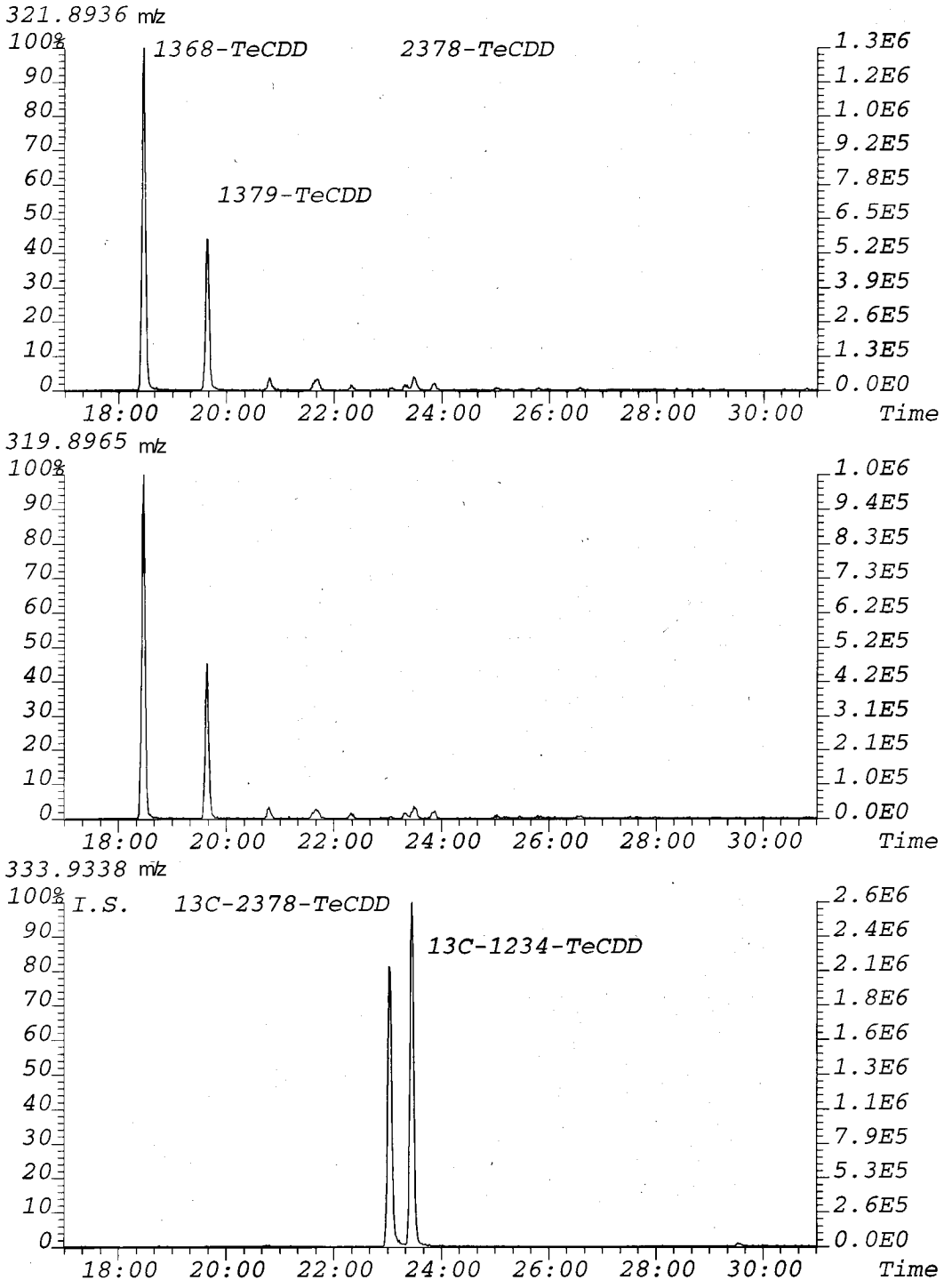

Fig.1b The chromatograms of TeCDD for sediment (ESI)

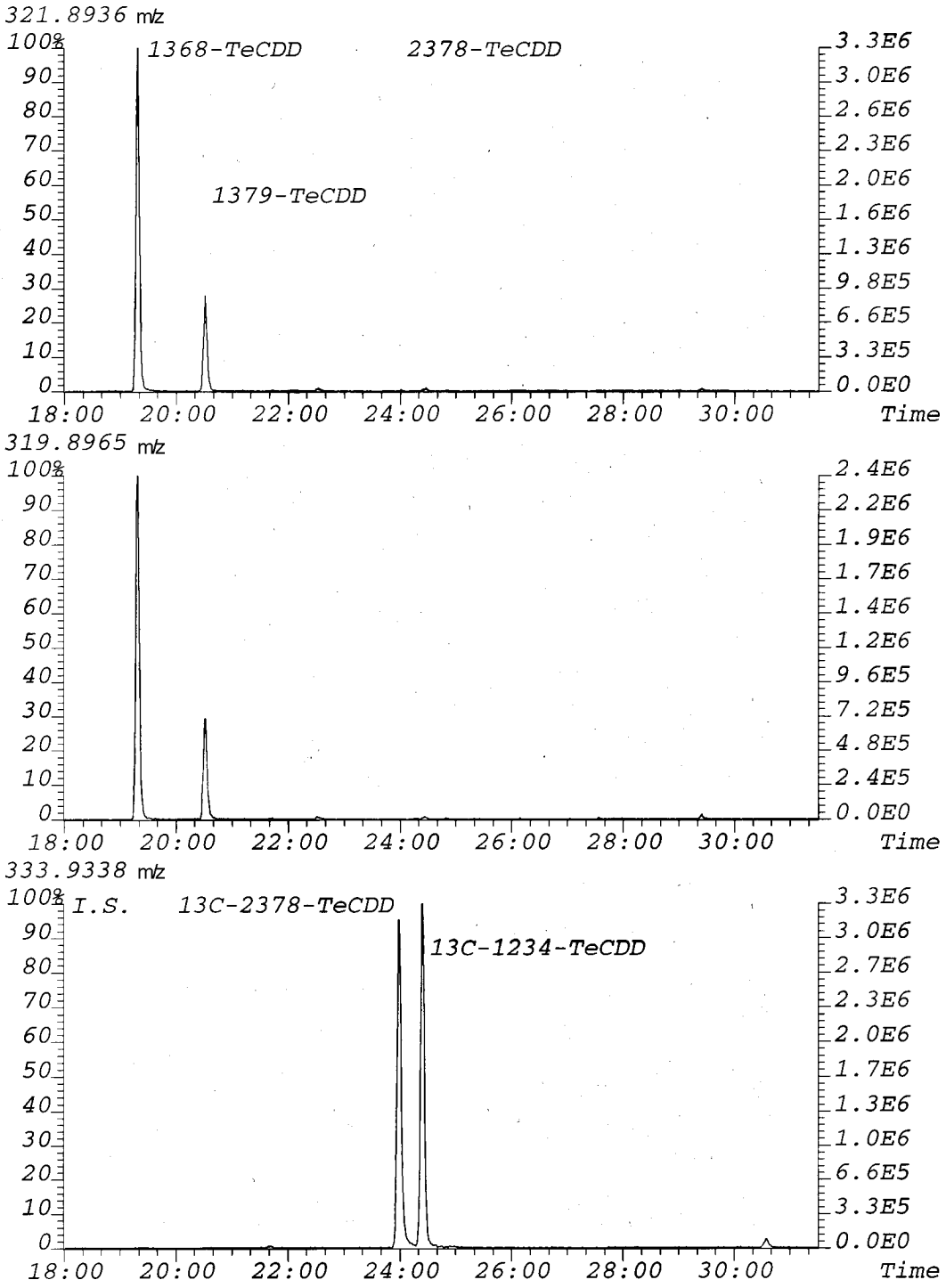

Fig.1c The chromatograms of TeCDD for seawater (ESI)

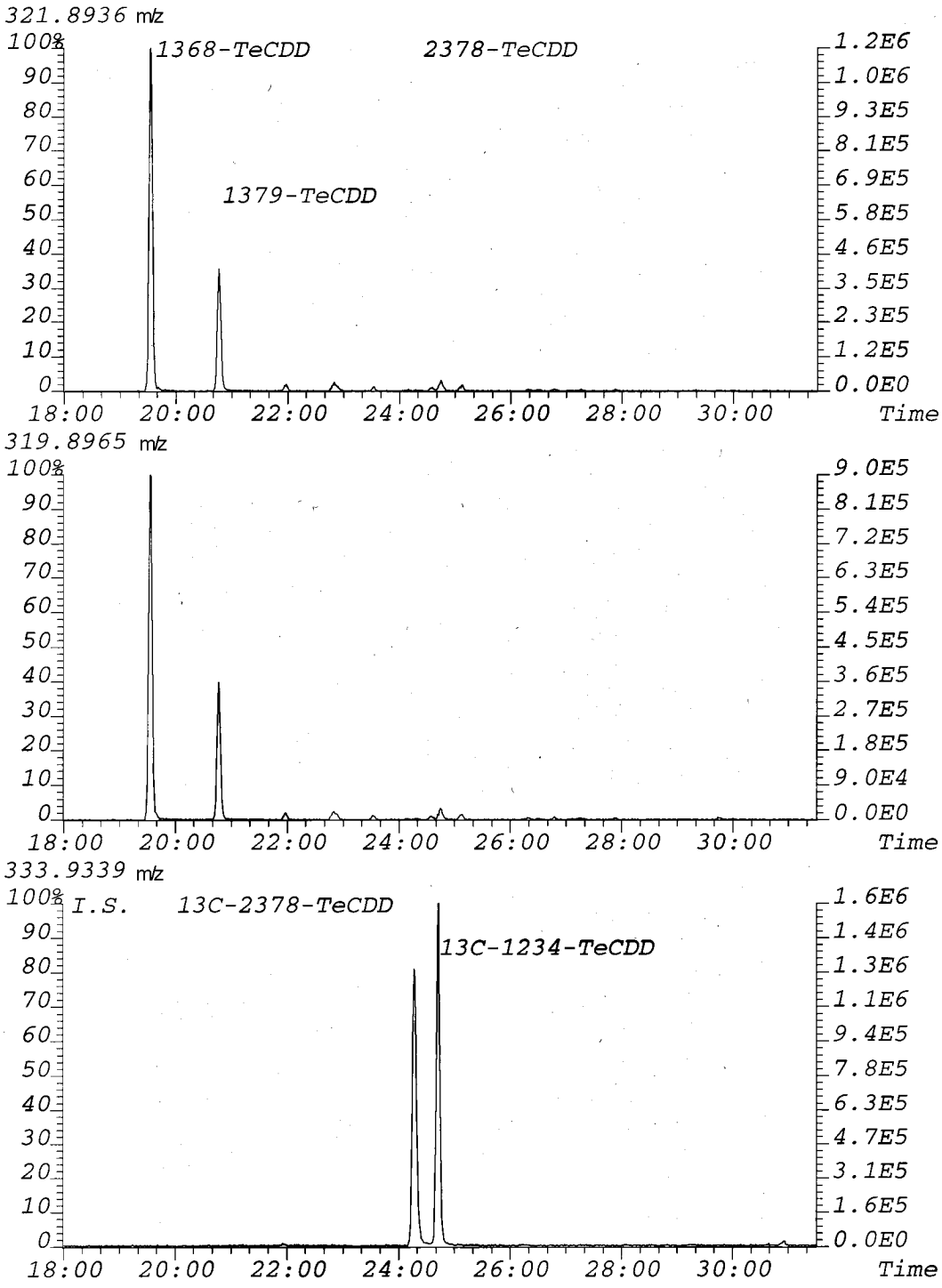

Table 1. Example of reproducibility ofmeasurement of dioxins concentrations in water samples (ESI)

	No.1	No.2	Scatter
2,3,7,8-T_4CDD	N.D.	N.D.	—
1,3,6,8-T_4CDD	5.5	5.7	1.8%
1,3,7,9-T_4CDD	1.6	1.7	3.0%
1,2,3,7,8-P_5CDD	N.D.	N.D.	—
1,2,3,4,7,8-H_6CDD	N.D.	N.D.	—
1,2,3,6,7,8-H_6CDD	0.03	N.D.	—
1,2,3,7,8,9-H_6CDD	N.D.	N.D.	—
1,2,3,4,6,7,8-H_7CDD	0.48	0.42	6.7%
O_8CDD	7.4	7.9	3.3%
2,3,7,8-T_4CDF	N.D.	N.D.	—
1,3,6,8-T_4CDF	N.D.	N.D.	—
1,2,7,8-T_4CDF	N.D.	N.D.	—
1,2,3,7,8-P_5CDF	N.D.	N.D.	—
2,3,4,7,8-P_5CDF	N.D.	N.D.	—
1,2,3,4,7,8-H_6CDF	N.D.	N.D.	—
1,2,3,6,7,8-H_6CDF	N.D.	N.D.	—
1,2,3,7,8,9-H_6CDF	N.D.	N.D.	—
2,3,4,6,7,8-H_6CDF	N.D.	N.D.	—
1,2,3,4,6,7,8-H_7CDF	0.1	0.14	16.7%
1,2,3,4,7,8,9-H_7CDF	N.D.	N.D.	—
O_8CDF	0.2	0.2	0.0%
3,4,4',5-T_4CB(#81)	N.D.	N.D.	—
3,3',4,4'-T_4CB(#77)	0.36	0.29	10.8%
3,3',4,4',5-P_5CB(#126)	N.D.	N.D.	—
3,3',4,4',5,5'-H_6CB(#169)	N.D.	N.D.	—
2',3,4,4',5-P_5CB(#123)	0.07	0.09	12.5%
2,3',4,4',5-P_5CB(#118)	2.4	3.2	14.3%
2,3,3',4,4'-P_5CB(#105)	0.95	1.3	15.6%
2,3,4,4',5-P_5CB(#114)	0.12	0.13	4.0%
2,3',4,4',5,5'-H_6CB(#167)	0.11	0.15	15.4%
2,3,3',4,4',5-H_6CB(#156)	0.28	0.39	16.4%
2,3,3',4,4',5'-H_6CB(#157)	0.08	0.1	11.1%
2,3,3',4,4',5,5'-H_7CB(#189)	N.D.	N.D.	—
2,2',3,3',4,4',5-H_7CB(#170)	0.36	0.46	12.2%
2,2',3,4,4',5,5'-H_7CB(#180)	0.7	0.8	6.7%

Scatter(%)=｜the average of the 2 samples−the values of No.1｜÷average×100

Table 2. Example of blank tests (ESI)

	water (pg/L)		sediment (pg/g dw)	
	blank	limit of quantitative analysis	blank	limit of quantitative analysis
2,3,7,8-TeCDD	N.D.	0.05	N.D.	0.21
1,3,6,8-TeCDD	N.D.	0.09	0.4	0.4
1,3,7,9-TeCDD	N.D.	0.07	0.21	0.21
1,2,3,7,8-PeCDD	N.D.	0.05	N.D.	0.20
1,2,3,4,7,8-HxCDD	N.D.	0.09	N.D.	0.4
1,2,3,6,7,8-HxCDD	N.D.	0.10	N.D.	0.6
1,2,3,7,8,9-HxCDD	N.D.	0.09	N.D.	0.5
1,2,3,4,6,7,8-HpCDD	N.D.	0.09	N.D.	0.31
OCDD	N.D.	0.4	1.6	1.5
2,3,7,8-TeCDF	N.D.	0.04	N.D.	0.26
1,3,6,8-TeCDF	N.D.	0.05	N.D.	0.25
1,2,7,8-TeCDF	N.D.	0.05	N.D.	0.27
1,2,3,7,8-PeCDF	N.D.	0.08	N.D.	0.26
2,3,4,7,8-PeCDF	N.D.	0.06	N.D.	0.31
1,2,3,4,7,8-HxCDF	N.D.	0.07	N.D.	0.4
1,2,3,6,7,8-HxCDF	N.D.	0.12	N.D.	0.4
1,2,3,7,8,9-HxCDF	N.D.	0.10	N.D.	0.30
2,3,4,6,7,8-HxCDF	N.D.	0.08	N.D.	0.28
1,2,3,4,6,7,8-HpCDF	N.D.	0.07	N.D.	0.5
1,2,3,4,7,8,9-HpCDF	N.D.	0.09	N.D.	0.4
OCDF	N.D.	0.4	N.D.	1.4
3,4,4',5-TeCB(#81)	N.D.	0.08	N.D.	0.4
3,3',4,4'-TeCB(#77)	N.D.	0.11	N.D.	0.5
3,3',4,4',5-PeCB(#126)	N.D.	0.09	N.D.	0.26
3,3',4,4',5,5'-HxCB(#169)	N.D.	0.08	N.D.	0.26
2',3,4,4',5-PeCB(#123)	N.D.	0.10	N.D.	0.7
2,3',4,4',5-PeCB(#118)	0.6	0.5	N.D.	2.4
2,3,3',4,4'-PeCB(#105)	N.D.	0.28	N.D.	1.3
2,3,4,4',5-PeCB(#114)	N.D.	0.10	N.D.	0.6
2,3',4,4',5,5'-HxCB(#167)	N.D.	0.10	N.D.	0.6
2,3,3',4,4',5-HxCB(#156)	N.D.	0.12	N.D.	0.6
2,3,3',4,4',5'-HxCB(#157)	N.D.	0.11	N.D.	0.6
2,3,3',4,4',5,5'-HpCB(#189)	N.D.	0.11	N.D.	0.6
2,2',3,3',4,4',5-HpCB(#170)	N.D.	0.1	N.D.	0.9
2,2',3,4,4',5,5'-HpCB(#180)	N.D.	0.3	N.D.	0.9
total TeCDDs	N.D.	0.05	0.66	0.21
total PeCDDs	N.D.	0.05	N.D.	0.20
total HxCDDs	N.D.	0.10	N.D.	0.6
total HpCDDs	N.D.	0.09	N.D.	0.31
OCDD	N.D.	0.4	1.6	1.5
total TeCDFs	N.D.	0.04	N.D.	0.26
total PeCDFs	N.D.	0.08	N.D.	0.31
total HxCDFs	N.D.	0.12	N.D.	0.4
total HpCDFs	N.D.	0.09	N.D.	0.5
OCDF	N.D.	0.4	N.D.	1.4

N.D.: values lower than limits of quantitative analysis