Appendix A2

List of Samples and Lab Analytical Parameters

Appendix A2.1: Dioxin-like PCBs and PCDD/PCDF concentrations in soil/sediment samples; CALUX Analysis

Sample No.	Sample type		Sample volume(g)	CALUX Raw Data					WHO-TEF1998			WHO-TEF2006		
				PCDDs/Fs	DL-PCBs	DXNs	LOD	LOQ	PCDDs/Fs	DL-PCBs	DXNs	PCDDs/Fs	DL-PCBs	DXNs
				pg-CALUX-TEQ/g					$pg\text{-}TEQ_{(WHO1998)}/g$			$pg\text{-}TEQ_{(WHO2006)}/g$		
1	08MAL001B	Soil	2.85	2.3	<	2.3	0.55	1.1	0.53	<	0.53	0.49	<	0.49
2	08MAL002B	Sediment	2.97	(0.76)	<	0.8	0.53	1.1	(0.17)	<	(0.17)	(0.19)	<	(0.19)
3	08MAL003B	Sediment	1.78	2.1	<	2.1	0.88	1.8	0.48	<	0.48	0.52	<	0.52
4	08MAL004B	Sediment	2.87	1.7	<	1.7	0.55	1.1	0.38	<	0.38	0.41	<	0.41
5	08MAL005B	Sediment	2.84	4.7	<	4.7	0.55	1.1	1.1	<	1.1	1.2	<	1.2
6	08MAL006B	Sediment	2.97	(0.83)	<	0.83	0.53	1.1	(0.19)	<	(0.19)	(0.20)	<	(0.20)
7	08MAL007B	Sediment	2.92	(0.70)	<	0.70	0.54	1.1	(0.16)	<	(0.16)	(0.17)	<	(0.17)
8	08MAL008B	Soil	3.00	11	<	11	0.52	1.0	2.5	<	2.5	2.3	<	2.3
9	08MAL009B	Sediment	2.25	54	1.5	56	0.69	1.4	12	4.8	17	13	2.8	16
10	08MAL010B	Soil	3.05	3.0	<	3.0	0.51	1.0	0.68	<	0.68	0.63	<	0.63
11	08MAL011B	Soil	3.11	2.1	<	2.1	0.50	1.0	0.48	<	0.48	0.45	<	0.45
12	08MAL012B	Soil	3.10	1.6	<	1.6	0.50	1.0	0.36	<	0.36	0.34	<	0.34
13	08MAL013	field BL	-	<	<	<	0.89	1.8	<	<	<	<	<	<

Factors used to convert CALUX raw data to WHO TEQ concentrations[1]

		WHO-TEF1998			WHO-TEF2006		
		①PCDD/Fs	②DL-PCBs	③DXNs	④PCDD/Fs	⑤DL-PCBs	⑥DXNs
Soil	Conversion factor	0.231	2.53	① + ②	0.214	2.63	④ + ⑤
Sediment	Conversion factor	0.226	3.21	① + ②	0.244	2.04	④ + ⑤

* "<" represent below detection limit (LOD)

** number in bracket represent the number below quantification limit and above detection limit which has been converted into DXNs

*** Average of quantified and measured toxic equivalent value and calculate standard deviation and coefficient of variation(CV) from standard curve obtained from 5 time measured adjusted standard for detection limit and create quality profile. Detection limit (LOD) should be within CV 30% and quantification limit (LOQ) should be within CV 20%

**** Guideline for quality control of dioxin environmental measurement, March 3, 2006 by Ministry of the Environment, was used to set quantification limit and detection limit was

1. Factors were derived by calibrating CALUX raw data to results of HR-GCMS results for both sediments and soils.

Appendix A2.2 PCBs concentrations in soil/sediment and tissue samples; HR-GCMS.

CLIENT ID	'08MAL009A	'08MAL010A
Sample Type	Soil/Sediment	Soil/Sediment
Sample Size	9.90 g (dry)	10.6 g (dry)
UNITS	pg/g	pg/g
Analysis Type	WHO Toxic[1]	USEPA 1668A[2]
CL1-PCB-1	20.6	
CL1-PCB-2	93.1	
CL1-PCB-3	69.7	
CL2-PCB-4	68.9	
CL2-PCB-5	11	
CL2-PCB-6	142	
CL2-PCB-7	29.6	
CL2-PCB-8	662	
CL2-PCB-9	28.1	
CL2-PCB-10	8.25	
CL2-PCB-11	14200	
CL2-PCB-12/13	265	
CL2-PCB-14	16.5	
CL2-PCB-15	937	
CL3-PCB-16	1590	
CL3-PCB-17	1170	
CL3-PCB-30/18	2050	
CL3-PCB-19	158	
CL3-PCB-28/20	11200	
CL3-PCB-21/33	9080	
CL3-PCB-22	6480	
CL3-PCB-23	10.1	
CL3-PCB-24	30.9	
CL3-PCB-25	693	
CL3-PCB-26/29	1470	
CL3-PCB-27	217	
CL3-PCB-31	8410	
CL3-PCB-32	1180	
CL3-PCB-34	29.4	
CL3-PCB-35	1110	
CL3-PCB-36	57.5	
CL3-PCB-37	8550	
CL3-PCB-38	28.5	
CL3-PCB-39	107	
CL4-PCB-41/40/71	12200	
CL4-PCB-42	4880	
CL4-PCB-43	575	
CL4-PCB-44/47/65	14000	
CL4-PCB-45/51	1820	
CL4-PCB-46	763	
CL4-PCB-48	3420	
CL4-PCB-69/49	7080	
CL4-PCB-50/53	1040	
CL4-PCB-52	10700	
CL4-PCB-54	11.7	
CL4-PCB-55	630	
CL4-PCB-56	11500	
CL4-PCB-57	102	
CL4-PCB-58	42.3	
CL4-PCB-59/62/75	1580	
CL4-PCB-60	6410	
CL4-PCB-61/70/74/76	31500	
CL4-PCB-63	692	
CL4-PCB-64	7520	
CL4-PCB-66	18400	
CL4-PCB-67	742	
CL4-PCB-68	67.6	
CL4-PCB-72	85.1	
CL4-PCB-73	8300	
CL4-PCB-77	2370	0.233
CL4-PCB-78	< 13.9	
CL4-PCB-79	163	
CL4-PCB-80	< 13.3	
CL4-PCB-81	108	< 0.134
CL5-PCB-82	2110	
CL5-PCB-83/99	6440	
CL5-PCB-84	3890	
CL5-PCB-117/116/85	2530	
CB-108/119/86/97/125/87	10300	
CL5-PCB-88/91	3480	
CL5-PCB-89	236	
CL5-PCB-113/90/101	11800	
CL5-PCB-92	2030	
L5-PCB-95/100/93/102/98	9060	
CL5-PCB-94	68.1	
CL5-PCB-96	93.4	
CL5-PCB-103	49.1	
CL5-PCB-104	4.55	
CL5-PCB-105	6990	NDR 0.876
CL5-PCB-106	< 19	
CL5-PCB-107/124	585	
CL5-PCB-109	983	
CL5-PCB-110/115	15900	
CL5-PCB-111	< 3.59	
CL5-PCB-112	< 3.53	
CL5-PCB-114	412	< 0.16
CL5-PCB-118	13700	1.67
CL5-PCB-120	10.9	

CLIENT ID	'08MAL009A	'08MAL010A
Sample Type	Soil/Sediment	Soil/Sediment
Sample Size	9.90 g (dry)	10.6 g (dry)
UNITS	pg/g	pg/g
Analysis Type	WHO Toxic[1]	USEPA 1668A[2]
CL5-PCB-121	10.5	
CL5-PCB-122	214	
CL5-PCB-123	349	< 0.158
CL5-PCB-126	NDR 36.1	< 0.172
CL5-PCB-127	< 19.8	
CL6-PCB-128/166	2400	
CL6-PCB-138/163/129/160	13400	
CL6-PCB-130	911	
CL6-PCB-131	232	
CL6-PCB-132	5440	
CL6-PCB-133	147	
CL6-PCB-134/143	826	
CL6-PCB-151/135/154	2620	
CL6-PCB-136	1240	
CL6-PCB-137	728	
CL6-PCB-139/140	271	
CL6-PCB-141	2100	
CL6-PCB-142	< 12.5	
CL6-PCB-144	446	
CL6-PCB-145	7.23	
CL6-PCB-146	1460	
CL6-PCB-147/149	8950	
CL6-PCB-148	8.14	
CL6-PCB-150	9.57	
CL6-PCB-152	NDR 8.2	
CL6-PCB-153/168	8030	
CL6-PCB-155	48	
CL6-PCB-156/157	1690	0.681
CL6-PCB-158	1500	
CL6-PCB-159	42.1	
CL6-PCB-161	< 8.93	
CL6-PCB-162	< 9.22	
CL6-PCB-164	919	
CL6-PCB-165	< 9.66	
CL6-PCB-167	495	0.264
CL6-PCB-169	< 10	< 0.0943
CL7-PCB-170	1250	1.02
CL7-PCB-171/173	403	
CL7-PCB-172	183	
CL7-PCB-174	1010	
CL7-PCB-175	45.2	
CL7-PCB-176	127	
CL7-PCB-177	570	
CL7-PCB-178	167	
CL7-PCB-179	342	
CL7-PCB-180/193	2140	2.13
CL7-PCB-181	23.1	
CL7-PCB-182	NDR 8.85	
CL7-PCB-183/185	669	
CL7-PCB-184	54	
CL7-PCB-186	< 1.47	
CL7-PCB-187	930	
CL7-PCB-188	< 1.36	
CL7-PCB-189	66.8	NDR 0.219
CL7-PCB-190	203	
CL7-PCB-191	49	
CL7-PCB-192	< 1.61	
CL8-PCB-194	376	
CL8-PCB-195	128	
CL8-PCB-196	139	
CL8-PCB-197/200	43.2	
CL8-PCB-198/199	263	
CL8-PCB-201	34.9	
CL8-PCB-202	55.1	
CL8-PCB-203	166	
CL8-PCB-204	1.41	
CL8-PCB-205	21.3	
CL9-PCB-206	83.4	
CL9-PCB-207	24.6	
CL9-PCB-208	42.7	
CL10-PCB-209	223	
PCB TOTAL 68T AND 68F		
PCB MAX CONG 68T AND 68F		
% Moisture	40.5	11.7
Total Monochloro Biphenyl	183	
Total Dichloro Biphenyl	16400	
Total Trichloro Biphenyl	53600	
Total Tetrachloro Biphenyl	147000	
Total Pentachloro Biphenyl	91200	
Total Hexachloro Biphenyl	53900	
Total Heptachloro Biphenyl	8230	
Total Octachloro Biphenyl	1230	
Total Nonachloro Biphenyl	151	
Decachloro Biphenyl	223	
TOTAL PCBs	372000	
TEQ (WHO 1998) ND=0	3.41	0.000533
TEQ (WHO 1998) ND=1/2DL	4.71	0.00967
TEQ (WHO 2005) ND=0	0.98	0.000102
TEQ (WHO 2005) ND=1/2DL	2.38	0.0101

NDR = peak detected but did not meet quantification criteria. Number following this flag represents the estimated maximum possible concentration

< = less than the detection limit Number following this symbol represents the detection limit

For homologue totals sums, please see the individual congener data for the detection limit.

1. Analysis of WHO toxic PCBs only. Can be used to calculated 2378 TCDD toxic equivalence concentrations.

2. Analysis of PCBs following USEPA method 1668A. Includes all 209 congeners. Also permits calcualtion of homologues, total PCB and TEQ concentrations.

Appendix A2.3 PCDD/PCDF concentrations in a soil/sediment sample; HR-GCMS.

CLIENT ID		'08MAL010A		'08MAL009A
AXYS ID		L11830-20		L11830-19
WORKGROUP		WG26790		WG26805
Sample Size		20.0 g (dry)		6.86 g (dry)
UNITS		pg/g		pg/g
2,3,7,8-TCDD	NDR	0.047		0.489
1,2,3,7,8-PeCDD	NDR	0.117		1.95
1,2,3,4,7,8-HxCDD	NDR	0.112		4.71
1,2,3,6,7,8-HxCDD		0.223		13.1
1,2,3,7,8,9-HxCDD		0.835		15.1
1,2,3,4,6,7,8-HpCDD		2.31		464
OCDD		152		4060
2,3,7,8-TCDF		0.4		21.7
1,2,3,7,8-PeCDF		0.128		2.41
2,3,4,7,8-PeCDF		0.182		3.38
1,2,3,4,7,8-HxCDF		0.289	NDR	3.92
1,2,3,6,7,8-HxCDF		0.216		4.12
1,2,3,7,8,9-HxCDF		0.044	NDR	0.398
2,3,4,6,7,8-HxCDF		0.27		4.84
1,2,3,4,6,7,8-HpCDF		0.99		30.9
1,2,3,4,7,8,9-HpCDF		0.129		4.28
OCDF		0.7		48.7
Total Tetra-Dioxins		2.23		82.5
Total Penta-Dioxins		2.44		67.1
Total Hexa-Dioxins		3.68		170
Total Hepta-Dioxins		5.33		931
Total Tetra-Furans		2.75		171
Total Penta-Furans		2.3		126
Total Hexa-Furans		2.35		68.2
Total Hepta-Furans		1.12		76.2
% Moisture		13.7		37.7
2,3,7,8-TCDF (C)		0.155		2.88
TEQ (WHO 1998) ND=0		0.35		14.1
TEQ (WHO 1998) ND=1/2DL		0.377		14.1
TEQ (WHO 2005) ND=0		0.342		14.2
TEQ (WHO 2005) ND=1/2DL		0.368		14.2

Appendix A2.4 Chlorinated pesticide concentrations in tissue and soil/sediment samples; HR-G CMS.

CLIENT ID	'08MAL003A	'08MAL004A	'08MAL008A	08MAL009A	'08MAL010A	'08MAL011A
Sample Type	**Soil/Sediment**	**Soil/Sediment**	**Soil/Sediment**	**Soil/Sediment**	**Soil/Sediment**	**Soil/Sediment**
Sample Size	21.7 g (dry)	12.7 g (dry)	12.0 g (dry)	6.86 g (dry)	12.4 g (dry)	11.5 g (dry)
UNITS	ng/g (dry weight basis)	ng/g (dry weight basis)	ng/g (dry weight basis)	ng/g (dry weight basis)	ng/g (dry weight basis)	ng/g (dry weight basis)
HCB	0.012	0.018	0.183	0.183	0.016	0.015
alpha-HCH	< 0.001	< 0.0013	< 0.001	0.083	< 0.0017	< 0.0019
beta-HCH	< 0.001	NDR 0.002	< 0.0016	0.087	< 0.0028	< 0.0031
gamma-HCH	NDR 0.001	0.003	0.013	0.919	< 0.002	< 0.0022
HEPTACHLOR	< 0.001	0.01	< 0.001	0.29	< 0.001	< 0.001
ALDRIN	NDR 0.001	< 0.001	< 0.001	0.59	NDR 0.002	< 0.001
OXYCHLORDANE	< 0.0011	< 0.0024	NDR 0.072	NDR 0.473	< 0.002	< 0.0027
t-CHLORDANE	NDR 0.002	0.177	0.232	4.91	0.004	NDR 0.003
c-CHLORDANE	NDR 0.003	0.165	0.241	4.12	NDR 0.004	NDR 0.003
t-NONACHLOR	0.001	0.128	0.292	2.01	NDR 0.003	NDR 0.003
c-NONACHLOR	< 0.001	0.034	0.152	1.59	< 0.001	NDR 0.006
o,p-DDD	< 0.003	< 0.006	< 0.0061	0.549	< 0.0058	< 0.0082
p,p-DDD	< 0.0035	0.015	< 0.0071	0.99	< 0.0067	< 0.0095
o,p-DDE	< 0.0022	< 0.0034	< 0.0032	1.58	< 0.004	< 0.0055
p,p-DDE	0.007	0.058	0.02	10.2	0.008	< 0.007
o,p-DDT	< 0.0052	< 0.0097	< 0.0094	0.164	< 0.0089	< 0.0128
p,p-DDT	< 0.0063	NDR 0.02	0.02	0.706	0.014	< 0.017
MIREX	0.001	0.075	0.095	0.359	0.009	NDR 0.005
delta-HCH	< 0.001	NDR 0.002	< 0.0016	37.7	NDR 0.002	< 0.001
Heptachlor-Epoxide	< 0.001	0.006	0.041		< 0.001	< 0.001
alpha-Endosulphan		NDR 0.039	NDR 0.017		NDR 0.024	NDR 0.027
Dieldrin	0.004	0.03	0.044		0.009	NDR 0.003
Endrin	NDR 0.003	< 0.0012	NDR 0.004		NDR 0.002	< 0.0019
beta-Endosulphan		NDR 0.008	NDR 0.049		NDR 0.033	NDR 0.041
Endosulphan-Sulphate		NDR 0.03	NDR 0.021		NDR 0.017	NDR 0.011
Endrin-Aldehyde	0.002	< 0.0022	< 0.0019		< 0.0026	NDR 0.002
Endrin-Ketone	< 0.001	< 0.001	< 0.001		< 0.001	< 0.0011
Methoxychlor	< 0.0029	< 0.003	< 0.0064		< 0.0023	< 0.0019
Total Toxaphene			< 0.0597	< 1.2		
% Moisture	51.5	19.6	14.2	37.7	13.1	12.2

Appendix A2.5 PBDE concentrations in a soil/sediment sample; HR- G CMS

CLIENT ID	'08MAL010A
AXYS ID	L11830-20
WORKGROUP	WG26767
Sample Type	Soil/Sediment
Sample Size	10.1 g (dry)
UNITS	pg/g (dry weight basis)
Br2-DPE-7	< 0.133
Br2-DPE-8/11	< 0.100
Br2-DPE-10	< 0.151
Br2-DPE-12/13	< 0.0995
Br2-DPE-15	< 0.0995
Br3-DPE-17/25	< 0.228
Br3-DPE-28/33	0.192
Br3-DPE-30	< 0.240
Br3-DPE-32	< 0.186
Br3-DPE-35	< 0.150
Br3-DPE-37	< 0.137
Br4-DPE-47	8.97
Br4-DPE-49	1.04
Br4-DPE-51	0.134
Br4-DPE-66	0.66
Br4-DPE-71	NDR 0.138
Br4-DPE-75	< 0.0995
Br4-DPE-77	NDR 0.129
Br4-DPE-79	< 0.0995
Br5-DPE-85	0.67
Br5-DPE-99	12.1
Br5-DPE-100	4.28
Br5-DPE-105	< 0.355
Br5-DPE-116	< 0.469
Br5-DPE-119/120	0.645
Br5-DPE-126	< 0.128
Br6-DPE-128	< 1.80
Br6-DPE-138/166	NDR 1.32
Br6-DPE-140	NDR 1.38
Br6-DPE-153	5.19
Br6-DPE-154	7.46
Br6-DPE-155	1.47
Br7-DPE-181	1.88
Br7-DPE-183	13.2
Br7-DPE-190	3.89
Br8-DPE-203	37.8
Br9-DPE-206	395
Br9-DPE-207	700
Br9-DPE-208	427
Br10-DPE-209	4450
% Moisture	13.8

Appendix A2.6 Prefluorinated organic compound concentrations in a soil/sediment sample; HR- GCMS

CLIENT ID	**'08MAL009A**	**'08MAL010A**
Sample Type	**Soil/Sediment**	**Soil/Sediment**
Sample Size	0.885 g (dry)	5.26 g (dry)
UNITS	ng/g (dry weight basis)	ng/g (dry weight basis)
PFBA	< 2.10	1.44
PFPeA	< 17.1	< 0.0951
PFHxA	159	< 0.0951
PFHpA	830	< 0.0951
PFOA	1620	< 0.0951
PFNA	390	< 0.0951
PFDA	312	< 0.0951
PFUnA	49.6	< 0.0951
PFDoA	64	< 0.0951
PFBS	61.2	< 0.190
PFHxS	1930	< 0.190
PFOS	6140	0.203
PFOSA	4.55	< 0.0951
% Moisture	39.4	12.1